Effect of Flipped classroom Teaching on Metacognition Classroom Environment and Academic Achievement of B.Ed. Students

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2021

CERTIFICATE OF DECLARATION

This is to certify that the material embodied in the present work entitled "**Effect of Flipped classroom Teaching on Metacognition Classroom Environment and Academic Achievement of B.Ed. Students",** is based on my original research work. It has not been submitted in part or full for any other diploma or degree of any University/ Institution deemed to be University and College/ Institution of National Importance. References from other works have been duly cited at the relevant places.

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CERTIFICATE OF ORIGINALITY

The research work embodied in this thesis entitled **"Effect of Flipped classroom Teaching on Metacognition Classroom Environment and Academic Achievement of B.Ed. Students",** has been carried out by me from the Department of Education, under the School of Arts, Humanities and Social Sciences at Central University of Haryana, JantPaliMahendergarh, Haryana, India. The manuscript has got plagiarism checked by **Turnitin software vide ID: 1567538088 dated: 23.04.2021.** I declare that the work and language included in this thesis is free from any kind of plagiarism.

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ABSTRACT

This study examined how this new paradigm shift of Flip classroom puts its effect upon the level of Metacognition, Classroom Environment, and Academic Achievement. Seeking to address the gap in the research this applied research used an experimental method to look at the changes in teaching and learning due to flipping the class which equally provides a powerful means to improve the level of Meta-cognition which is knowledge about their cognition, classroom environment which involves assimilation. It is also found that integrating technology is a way for a teacher education course to facilitate the prospective teachers.(B.Ed. Pupils) can bring fruitful results. The researcher selected the sample of 60 students purposefully and used Quasi-experimental and control group design to do the analysis and submitted its inferences. The data showed that there found a significant difference in the scores of the experimental and control group on Meta-cognition, Classroom environment, and Academic Achievement of B.Ed. Students.Participants saw the potential for flipping learning to be useful in B.Ed. Students that while participants wanted to use technology and teach digital literacy's in their future classrooms. Considering this research's National Educational importance,it will contribute to ensuring universal access to education to all when both teachers and students will gain the endeavor of techno access.These innovative class activities of flipped pedagogy make the learner more confident about the content as these innovative activities involve a student-centered approach where the teacher is a facilitator and sage on the stage.

According to NEP this indulgence in digitalization will give a boost to the higher rate of digital literacy.Considering the NEP agenda, it will progress project-based,

inquiry-based learning,quizzes,role-play, group work reflective journals, etc... It Can become a part of it.Extensive use of technology also is considered an essential part to nurture talented gifted students. This study also supports NEP for enhancing educational access to disadvantaged groups. Emphasis on effective models of blended learning, content creation, digital repository,dissemination,technology integration in teaching, learning, assessment,digital platforms, and ongoing ICT-based Educational initiations to be optimized and expanded. Expansion of existing e-platforms Diksha,Swayam, etc.

सार

पलटी कक्षा या फ्लिप्ड़ क्लासरूम का अर्थ शाब्दिक तोर पर वह नवोन्मेषी शिक्षा पद्धति हैं जो अनुदेशात्मक रुणनीति तथा ब्लेडेड लर्निंग का एक प्रभावकारी रुपान्तरण हैं | यह विधार्थीयों पर केन्द्रित रह कर ,विभिन्न कार्यविधियों के द्वारा उनमे सीखने की प्रव्रार्ति को बढावा देती हैं | इस पद्धति की यह भी विशेषता हैं कि शिक्षक इसमें स्वयं प्रेरणा – स्त्रोत बन कर रहता हैं और विधार्थी को प्रेरित करते हुए सहायता करता रहता हैं | इसके साथ ही वह एक तपस्वी की तरह अपने शिक्षकों को सन्मार्ग पर चलकर सीखने की शिक्षा देता हैं|

शोध के दोरान शोधार्थी ने यह पाया कि जब शिक्षा देने की पद्धति को तकनीक से जोड़ा जाता हैं तो शिक्षा – स्नातक के छात्रों के लिए यह सूअवसर बन जाता हैं कि वो विधार्थीयों के हितों को ध्यान में रखकर अपनी शैक्षणिक प्रक्रिया को और अधिक रुचिकर बनाने में प्रयासरत हो सके | फ्लिप्ड़ क्लासरूम का प्रयोग सीखकर शिक्षा – स्नातक के विधार्थी अत्यन्त अर्थपूर्ण परिणाम लाने मैं सहायक हो सकता हैं | इसी लक्ष्य को प्राप्त करने के लिए शोधार्थी ने 60 विधार्थीयों को सैम्पल के तोर पर चुना | इसके लिए isauQ प्रयोगात्मक एवम् नियन्त्रण समूह डिज़ाइन का प्रयोग करते हुए विश्लेषण किया गया हैं और उसके परिणामो का आकलन किया हैं | इस डाटा के विश्लेषण मे यह भी पाया गया कि प्रयोगात्मक एवम् नियन्त्रणात्मक समूहों में बहुत ही महत्वपूर्ण अन्तर पड़ता हैं और इस अन्तर का मेटाकॉगनीशन क्लासरूम ,एन्वायरन्मेन्ट और एकेडेमिक अचीवमेन्ट पर बहुत अधिक प्रभाव पड़ता हैं |

शोध के दौरान ,भाग लेने वाले प्रतिभागियों ने पलटी कक्षा या फ्लिप्ड़ क्लासरूम के प्रयोग की सहमति दी | सभी शिक्षा -स्नातको ने अपने विधार्थीयों को ऑनलाइन लेक्चर दिखाकर ,ऑनलाइन चर्चा करने एवम् रिसर्च करने के पक्ष मे अपनी सहमती जताई | इस शोधकार्यो का राष्ट्रीय महत्व इस बात मे निहित हैं कि ऐसा अध्ययन निश्चित तोर पर शिक्षा के वैश्विक पटल पर प्रचार प्रसार मे उपयोगी होने के साथ साथ-विधार्थीयों एवम् शिक्षकों को समान रूप से लाभान्वित करेगा | साथ ही विधार्थीयों को तकनीकी रूप मे

भी सजग एवम् ट्रेंड करेगा | इस शोध के द्वारा यह तथ्य भी प्रमुख तोर पर उभर कर आया कि फ्लिप्ड़ क्लासरूम जैसी नवोन्मेषी शिक्षा पद्दति को जब प्रशिक्षु शिक्षा-स्नातको पर प्रयोग किया जाए तो वे विधार्थीयों मे आत्मविश्वास के साथ-साथ पाठ्य सामग्री को बहेतर तरीके से प्रेषण एवम् संप्रेषण मे सहायक होती हैं | नई शिक्षा नीति के अनुरूप यह शोध-अध्यन डिजिटिकरण की तरफ के साथ-साथ डिजिटल साक्षरता के संधर्भ मे भी सार्थक हैं | नैशनल एजुकेशन पोलिसी ,फ्लिप्ड़ क्लासरूम के साथ-साथ प्रोजेक्ट पर आधारित शोध प्रश्नोतर्री रोलप्ले ,समूह कार्य जैसे विभिन्न क्रिया-कलापों को अभिन्न अंग मानते हुए प्रतिभाशाली एवम् तीक्ष्ण बुधि के विधार्थीयों के लिए वरदान सिद्ध हो सकती हैं | इस प्रकार यह शोध-कार्य शैक्षणिक को वंचित वर्ग के विधार्थीयों के लिए सुगमता से उपलब्ध करवाने की आवश्यकता पर जोर देती हैं | इसके साथ-साथ यह ब्लेडैड लर्निंग के प्रभावकारी मॉडल्स ,शैक्षणिक प्रक्रिया मे तकनीक के समावेश ,अध्यापन-आधिगम कोशल ,आसेस्मेंट ,डिजिटल प्लेटफार्म एवम् आई सी टी पर आधारित शैक्षणिक प्रयासों को सयामित एवम् समजोयित करने की आवश्यकता हैं | इसी के साथ हो वर्तमान मैं प्रचलित ई-प्लेटफार्मस जैसे कि moc.ahskihs.www एवम् moc.mayaws.www का प्रचार एवम् प्रसार किया जाना चाहिए |

CHAPTER -1

INTRODUCTION

The educational sector of India has undergone various modifications in the present scenario to meet the demands of present-day needs of local as well as at global level. Our Honorable Prime Minister Sh. Narender Modi's slogans like *'Shikshit Bharat', 'Unnat Bharat', 'Padega India tau Badega India'* have given a boost to the Digital India campaign across the country.Higher education institutions have taken steps to promote access, equity, and quality education in the years to come. To further support this,a glance of framed National Policy on Education 1986 and modified 1992 has been consulted. As a result of this, an urgent need was felt to amend the several pointed out changes and bring out a Draft for the revision of the Policy. After taking over 2.75 lakh direct initiation of consultations and inputs from citizens were taken online.

1.1. Emergence of Technology In Education

A time-bound grass-root level consultative process has enabled the Ministry of Human Resource Development. A large number of individuals across the country were approached for making education, innovation and technology-enabled, to achieve its successful implementation. To meet the changing needs of the time required by the population of India, the students need to be equipped with basic skills in a charged classroom environment for achieving the best Academic Score.That is why very eagerly researches are going on in this field to bring out fruitful results for the learners- centric approach to achieve this aim of making India

a Digital India. For this trained, technologically skilled teachers are a need of the hour. But we are presently facing the problem of the availability of such skilled and technologically oriented teachers. So future education is in crying need of an altogether transformed model that suits the present demand and supply chain of employability.

Many major changes have taken place in the world of education over the past two decades.Educational technology has grown to be a very important and valuable field of study. It focuses on the implications related to the teaching-learning system's efficiency and effectiveness.Technology in Education and Technology of Education are two subtle facets of educational technology.But it is neither the technology in education nor the technology of education, but its all-pervasive influence that affects the entire teaching-learning process. When it comesto its several aspects, the use of educational technology as a medium of instructional technology can be traced back to the advent of very early means and modes, such as cave paintings.An example of mythology seems relevant here to support the genesis of the technology.According to which our gurus or teachers have been teaching their followers for decades.It dates back to the teaching-learning process in the context of ancient times. If we refer to the ancient teaching methodology practiced in gurukuls,the relationship of Lord Rama's with his teacher Vashistha formed the basis of formal education in his Ashram.These perspectives represent the theoretical phase of learning. Lord Rama grasped the knowledge of Vedas and Puranas.He learned the basic principles of life, the duties of the kings, and the values he should live by, much like the education imparted in present-day educational institutions. On the other hand, Guru Vishwamitra imparted practical knowledge to Lord Rama. He guided Lord Rama

and his brother Laxman to accompany him to fight demons causing hurdles in the yajnas,This way both the brothers used their knowledge in real scenarios, later on, Lord Rama learned the mantras used to call divine weapons and faced real-life challenges.

Most histories begin with an educational film from the 1900s or Sidney Pressey's mechanical teaching machines since 1920.Two main designs from the 1950s are still common today.In the next era, considering the formulation of behavioral goals of instruction Skinners' work resulted in "programmed teaching". This resulted in the division of instructional material into small units, and the early and frequent rewarding process comes after accurate responses.Further,according to Bloom’s Taxonomy, stress was laid upon those instructional methods which varied in terms of instructions as well as time in accordance with learner’s requirements.Further, during the 1980s and 1990s, a number of schools came to existence, using widely computer-dominated teaching methods in the first place.

The next phase begins with ICT-based instruction involving the use of the Internet and the WorldWideWeb for knowledge access. For the development in the social, cultural, and political arenas revolutionary changes resulted, in the increased use of ICT-based instructions. In this regard,the Web, or Web1.0, has largely been a one-way platform with the sole purpose of searching for information for knowledge’s sake.The term Web1.0 was merely a manifestation of the manner through which information was passed on.When we moved closer to being an information society,it was realized that problems such as access and fairness needed to be discussed, and relevant knowledge required to be dealt with,for political and economic survival. That is why, handling of the information, its protection, and

management of web 1.0 went through a major transformation. In its transition from physical sharing to electronic to interactive, several options were dealt with.The availability of information via the Internet has now crossed a threshold to a considerable extent. It can be understood from a few examples, where it is in its second phase.

The use of the term "Web2.0" is bold, in contrast to its previous form, i.e. Web1.0.The latter form has been just a matter of looking for facts. The Platform 2.0 ambiance encourages people to contribute, change, and build knowledge.Web 2.0 is a new way for people to express themselves like a social phenomenon that brings people together. It also separates people from each other, but it is the one who creates and contributes the contents to the website. It also offers transparency in terms of not being locked. The n-generation is a group of people who grew up in the digital age therefore known as digital natives... The word Internet 2.0 groups describes a community of people who use social media for the purpose of socialization. The students and educationists also use Internet 2.0 groups in the field of higher education. The culture of participation, empowerment, and collaboration is on the rise in all spheres of technology-based platforms. Web 2.0 is a term that refers to new innovation. It's assumed as a higher degree of contact as well as a richer and has brought a more satisfying user experience. This is what Web 2.0 is all about.

Concept of eLearning

Understanding eLearning is simple. E-Learning is learning utilizing electronic technologies to access the educational curriculum outside of a traditional

classroom. In most cases, it refers to a course, program or degree delivered completely.

One of the approaches to e-Learning is offline learning which is sometimes-described as a proactive type of learning that can work forward on evaluating the static data sets that it has at its disposal.

Online learning is yet another approach of learning where the key element is the use of the internet. Online learning refers to the idea of using online tools for learning. Some examples of universities that provide exclusive online programs are:

- London School of Planning and Management
- London School of International Business
- The Open University, UK
- Nottingham Trent University Online

Apart from this, synchronous e-learning involves online studies through chat and videoconferencing. This kind of learning tool is real-time. It is like a virtual classroom that allows students to ask, and teachers to answer questions instantly, through instant messaging, which is why it is called synchronization.

Emerging Trends in e-Learning

Use of Web 2.0 Tools for Learning

e-learning 2.0 refers to learning in aninternet framework. For example, the content generated through Weblinks like Wikipedia, social networks, and

communities. It offers to learn through a genuinely portable and owned identity Network of interactions. It involves functions like aggregate, remix, repurpose, feed-forward and syndication. The personal learning center (Downes, (2007).

Social Networking Sites

Our kids depend too much on social media these days. One important way to make learning relevant to provide suitable content to them.They should be made familiar with social media sites that can facilitate their learning in the classroom. Social media serves the purpose of learning the subjects like language arts and social studies. The tech-savvy teachers can better utilize collaborative learningin any classroom through the use of social networking sites. Not all social media sites serve this purpose.Everyone is not making appropriate use of these sites. There is every possible chance that the students get distracted while using Facebook or Twitter.

Social Media Sites for Students and Teachers

Twiducate

It is described as a safe site for teachers and students to collaborate. It is easily available and allows teachers to create a class community online using a class code rather than an email address.

Tween Tribune

It is a site that helps the kids in finding material on current events.The students develop the news habit and get a chance to comment on the day’s events.

Blackboard

It is an industry leader in course management systems online. The decision to use Blackboard is usually made at the district level, though occasionally by individual schools. Blackboard is incredibly powerful, safe, and comprehensive.

EDU 2.0.

This e-Mode of teaching involves integrating course management systems like Blackboard, without the cost. EDU 2.0 works by offering all its premium features.

Wikispaces Classroom.

It is also a kind of tool for promoting teacher-taught collaboration.Wiki Classroom proves that it is not an exception. Wiki Classrooms are private social networks replete with news feeds and communication tools. It is safe because you decide who's invited – students, parents, oran administrator. It can assign, collaborate on, discuss and assess projects all within the site. It can even handle multimedia. The best part is thatWikispaces Classroom is free.

Edmodo.

Here's another excellent, free classroom management system. It includes news feeds, assessment tools, communication capabilities, and security features.

Skype

It is one of the virtual platforms which teachers can use effectively. It can function like Vidyamitra globally by bringing the outside world right into your

classroom. You can host authors, visit science labs or talk to pen pals from across the world.

MinecraftEdu

The secret of MinecraftEdu is its ability to harness the power of video games to engage learners. This game allows students to collaborate, explore and solve problemswhile learning about History, Economics, Science, and Maths. The teachers can incorporate it intotheir curriculum.

Sumdog

This gaming site is atype of flashcard on steroids. It can engage the kids at the level of Elementary school. The social aspect of gaming is the ability to add friends to their accounts. Kids will run from home to school to play online. It triggers their cognitive level with fun-filled activities through gaming.

Twitter

It is one of the most popular platforms, despite an aversion among teachers. However, its popularity can be judged by its ranking. It is widely used by the students making it to the top ten.

Social Media as a Tool to Develop Students' Voices

One of the major benefits of using social media with students is teaching them to communicate openly, honestly, and, above all, kindly with their peers. Therefore, it is imperative to use this teachable moment to promote compassionate communication.

Blogs

A blog is a truncated form of a weblog. It is a discussion or informational website published on the world wide web. It consists of discrete, often informal diary-style text entries popularly known as posts. These are typically displayed in reverse chronological order.The most recent post appears first, at the top of the web page. The blogs can be of two types i.e. single-authored or multi-authored. MABs from newspapers, other media outlets, universities, think tanks, advocacy groups, and similar institutions account for an increasing quantity of blog traffic. These blogging sites are integrated into the news media.In education, blogs can be used as instructional resources. These blogs are referred to as Edublogs. Microblogging is another type of blogging, featuring very short posts. According to the critics and other bloggers, it is the most popular interactive media used today.

Chat

Chatting gives a feeling similar to a spoken conversation is created. It is different from other text-based online communications. Online chat may address point-to-point communications as well as multicast communications from one sender to many receivers and voice and video chat or maybe a feature of a web conferencing service.

Video Conferencing

A video conference is live communication through visual connection. It often involves two or more people residing in separate locations. It provides transmission of static images and text between two locations. It also involves the

transmission of full-motion video images and high-quality audio between multiple locations.

Discussion Forum

A discussion board is known also by various, other names such as discussion group, discussion forum, message board, and online forum. Generally, it is a term used for any online bulletin board where interaction can take place through the exchange of messages. Even the board can just simply be read.

Open Education Resources

The open mode of education promotes collaboration.According to the Open Education Consortium, education thrives upon the virtue of sharing.Education is an exchange of knowledge, insights, and information with others.It builds up new knowledge, skills, ideas, and understanding. Open educational resources (OERs) are learning materials that can be modified and enhanced.Their creators permit others to do so. The individuals or organizations that create OERs include materials like presentation slides, podcasts, syllabi, images, lesson plans, lecture videos, maps, worksheets, and even entire textbooks. There is no issue related to the copyright associated with their work.Legal tools like Creative Commons licenses, allow others to freely access, reuse, translate and modify them.

MOOCs

Massive open online courses (MOOCs) are courses accessible to anyone with a computer and access to the Internet. People call these courses "massive" because their enrollment is open to more students than traditional educational

institutions might permit. Hundreds, even thousands of students might participate in a particular MOOC. Today, many colleges and universities have joined organizations committed to providing high-quality education through MOOCs.

One example is edX, a non-profit education partnership that in 2012.It grew from a collaboration between MIT and Harvard Stanford joined the effort in 2013.Now several dozen colleges and universities from around the world provide such kind of platform resembling MOOCs. In 2013, edX released the source code for its online learning platform.The programmers could download the source code and help in improving it. Others could even use it to build their educational platforms. Similar online educational ventures include Khan Academy and Coursera. Many MOOCs license their course materials for remixing and reusing.

Digitized communication and networking played a vital role in the development of digital platforms like the world wide web,e-mail, and various types of virtual modes. In addition to this, sustenance of learning communities and knowledge management tasks were carried out by digital tools especially in the field of education. These digital tools proved to help enhance student's learning and curriculum management. The teaching through distance mode became very effective by employing these latest learning technologies. Not only this, but the enrichment of the classroom environment also employed these technologies effectively.This inspired the quality teachers to use e-tutoring increasingly.The various digital Forums include instant messaging and video conferencing.This also reduced the dependence of teachers merely on paper, videos, and CBTor CBL materials. Another trend that showed hybrid designs that showed the mixing of distance mode activities by using different teaching styles. The appearance of mobile technologies

on the scene brought many unique means of communication along with this. This gave a new impulse to teaching-learning strategies. The concept of integrated learning describes the birth of hybrid blended learning which uses both classrooms as well as,class settings. Technology has transformed the learning experiences. Now, the students have quick access to an incredible amount of new opportunities. Hence a new way of using technology in the classroom is suggested that is a flipped classroom.

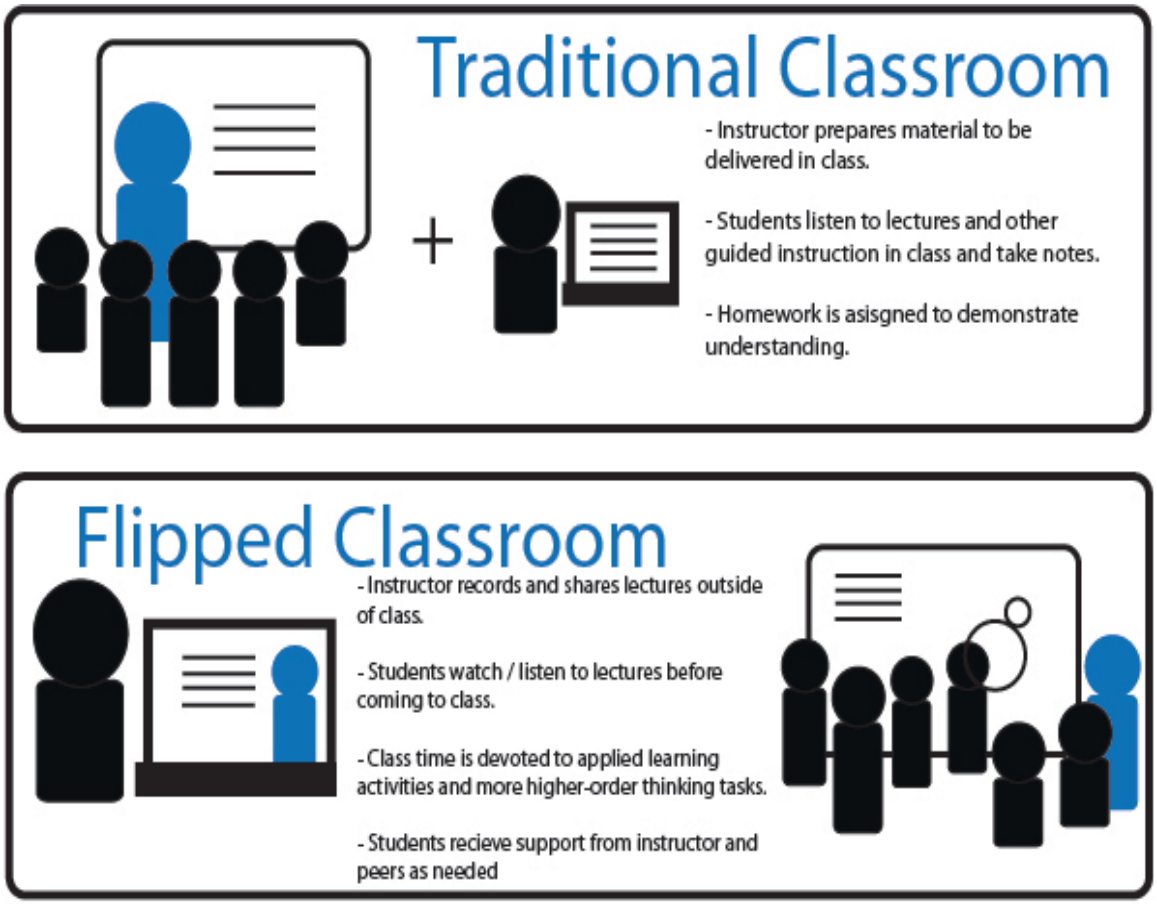


Figure: Concept of Flipped Classroom

Source:https://www.google.com/search?q=pictures+of+flipped+classroom+vs+traditional+class&rlz=1C1CHBF_enIN922IN922&sxsrf=ALeKk02ChlnSd

1.2. Conceptual Frame Work Of Flipped Classroom

Flip a coin and the success rate of the preferred outcome is 50:50 and flip the classroom, the success rate of learning is likely to be much higher. In 1984, Kolb stated that “Learning is not a single process, it involves active and passive”. He also elaborated that effective learning happens through the process of Experiential Learning, whereby knowledge is created through the transformation of experience. The teacher plays the role of a facilitator in the Flipped Classroom environment. Either a video lecture or reading material is provided by the teacher to the learners before active teaching takes place. The concept of Experiential Learning comes to the force by replacing teaching in the classroom environment. The benefit of using this method is that the class time is used for assimilating the knowledge and developing higher-order thinking like application, analysis, synthesis, and evaluation. It involves empowering the students and encouraging them to self-initiate their learning. To achieve success in the flipped classroom methodology, the teacher must engage the learners in meaningful learning. The homework is given in the form of Q and A assignments, projects, etc.It is being the part of part higher-order thinking that leads to better learning.The teacher-student relation is enhanced in a way that the teacher takes up the homework as a facilitator.

1.3. Historical Background

The History of flippedclassrooms dates back to the year 2012 with two Chemistry teachers namely Jonathan Bergmann and Aaron Sams, teaching in Woodland Park, Colorado. They wanted to help those students who had missed their classes due to one or another reason.Such students lagged in coping up with their

school work. Both the teachers thought of an effective solution to this problem. An idea struck them that if a series of videos of their lectures be created, the absent students could watch them at home.To their surprise,the regular students of Woodland Park started watching the videos for more clarification. It also helped them in doing their homework. Aaron Sams thought that these videos can be given to the students regularly. This exercise was done before teaching the course content in the routine classroom. It proved to be a very effective tool for increasing students' engagement in the whole class.This experiment was so successful that not only it ensured understanding,but the traditional model of teaching became altogether "flipped".As a result, teaching became very effective and less time-consuming. At the same time learning become long-lasting. Now, both these Chemistry teachers further implemented this innovative idea of flipping classroom teaching by producing video lectures for the next session. They aimed to provide this teaching material before going to the classroom,thereby utilizing the classroom time for knowledge enrichment.Besides this practice, they adopted the techniques of problem-solving, discussion, or debates for grasping the knowledge. The process of the effort of imparting in-depth knowledge is aimed at learner-centric methodology. Leading classroom time to explore the topic in greater depth and creating richer learning opportunities".

Here the fact is established that,from the experience of Bergmann And Sam,it is proved that a flipped classroom model is result-oriented.Let us take the example of Michael Treglia Maureen Lage and Glenn Platt who underwent the same kind of process and experienced the same kind of flipping during their economics class. At the time of using the flipped classroom, the capacity of an

individual learner should be kept in mind. Otherwise, too much information can interfere with the learning outcome. So teachers can use classroom time to keep in mind the memory for integration of new information. Students gain a better understanding of the subject through adopting various techniques.These techniques involve skill development, presentations, problem-solving can ensure an in-depth grasping of the subject matter. The teachers can pay individual attention to a student in general as well as at the level of a group in particular. Now the teachers are in a position to better understand how the students think.

The teachers and students both need to understand that to make the flipped classroom model successful, a huge amount of effort would be required. For centuries the lecture method has dominated the classroom in India. One of the biggest challenges is for the faculty to pick up this methodology as a part of their pedagogy. To conduct an experiential session in the classroom, the following steps could be used by the teacher

Step 1- Concept: The concept is taught through video lectures or reading material before the class.

Step 2- Objectives: The main objective of a teacher is to help in reinforcing the concept rather than just introducing the concept. Being the facilitator, objectives such as teamwork, communication skills, decision making, etc. could be introduced.

Step 3- Teaching Pedagogy: Based on the knowledge acquired through pre-class video lectures or reading, the teacher is required to use experiential learning strategies like case method, project, assignment, role play, etc. where the learners could apply the knowledge.

Step 4- Applying VAK Along with the pedagogy, the teacher must also plan to introduce VAK learning styles. VAK stands for

V- Visual, seen, or observed things including games, pictures, diagrams, demonstrations, displays, flip charts.

A- Aural, the information is received through a hearing wherein spoken world of self or others of sounds or noises is to be introduced in the class.

K- Kinesthetic- This means physical experience, i.e. touch, feel, hold, practical hands-on experiences.

The VAK learning styles enhance the classroom experience of the students, The teachers need to be creative while planning teaching material in the classroom. Here it is not always required to include all three, but learning dynamics are generally directly proportional to the various activities in the class. VAK allows the use of material resources such as flip charts, colored pens, videos, pictures, etc, which creates interest in the learners. The classroom work is done in pairs or teams requires Bi or multi-directional communication, thus encouraging the learners to absorb information as per their pace.

The concept of the flipped learning offers an engaging learning environment. This allows teachers to use this new technology for involving students more creatively in their learning process by utilizing the constructive approach of learning (Gerstein, 2012). Student-centric teaching is aimed at thus forming the base of effective learning. This method is appropriate for making the learning based on input by receiving the knowledge of the surroundings. The process of learning is made experiential by the creation of knowledge.The individuals tried to make sense

out of their experiential world. In this flipped classroom the faculty could select any of the innovative methods to aid experiential learning from the following list:

- Guided discussions
- Demonstrations
- Brainstorming
- Games
- Activities
- Fishbowl
- Case method
- Video analysis
- Simulations
- Projects
- Assignments
- Case study
- Roleplay

No denying the fact, that it was overwhelming support for the flipped model of the classroom was received at the end of the students and teachers. In flipped classes, nearly 80% of students shared their experiences with peers and teachers during class time, which was founded more positive as compared to their earlier learning outcome in their classes. Collaborative learning with other students played

a vital role in the flipped course.The students were also able to use classroom time to think critically and solve problems. It also facilitates them to learn in their own space.The students learned more actively.The positive interactions among the students took place.This further leads students to think critically and grasp the study material in an individualized manner.

The concept has been accepted and introduced by many countries, but its feasibility in the Indian scenario is debatable. Indeed, it can easily be implemented in metros and in private institutions where technology is available. But the masses will not benefit from the innovation. Hence, if policies like Digital India are emphasized, this kind of digitization can see the light of the day. This would also ensure that the “Education for all”Mission will be accomplished. The innovation would assist the new generation to become technology-friendly.

Therefore, students are encouraged to construct their understandings and test these new insights through technology-enabled social interactions.It becomes pertinent to procure information from different sources as the content is not pre-conceived for delivery. The real hands-on experience proves to be an effective strategy involving task-based activities. Therefore, the constructivists employ performance of multiple cognitive learning which aims at collaboration, sharing of different views, brainstorming, thinking out of the box, as well as socialization. This process includes debate, discussion, evidence giving, and the use of examples.The constructivist keep in view some of the basic assumptions that are directly relevant to the instructions. These are as follows:A focus on identifying the context in which skills will be learned and then implemented. It further emphasizes the learner's ability to utilize knowledge for achieving the learning outcome. There is a need for

material to be interpreted in a variety of formats.That is why, the content is revised at various times, in rearranged forms, from various conceptual perspectives.The learners are encouraged to use problem-solving skills that allow them to go beyond the knowledge provided.As a result, the pattern of recognition skills is developed and alternative ways of representing problems are effectively presented.As the student's trust and knowledge grew, he or she would progress to a collaborative learning process in which peer interaction appeared to be very important.Students better articulate their needs and evaluation process by interacting with others, including peers, advanced students, teachers, and instructional designers.

The ADDIE model involves five phases. namely, Analysis, Design, Development, Implementation, and Evaluation. The ADDIE Model being an effective instructional model supports especially the instructional part of flipped pedagogy.In the first phase, it is analyzed as to what type of instruction is to be prepared. It involves instructional targets and performance indicators as well aslearning goals. Consequently, in the second phase of the ADDIE Model,the key elements like instructional media assets are designed. In the fourth phase, the material and learning experiences outlined in the design phase are further developed by instructional designers.Thecontent is developed into graphics. Its audio form, as well as photography, is collected and produced from different sources.The content is uploaded to the LMS for delivery by the trainers, facilitators, and teachers who receive training from the instructional designer during the implementation phase.During this phase, it is the instructional designer to decide about the targeted performance to be achieved.

In the last phase, i.e. the evaluation, the performance plays a significant role during the assessment process of the ADDIE Model.The evaluation is divided into two parts: formative and summative.The formative assessment occurs in the design and developmental phases.This happens all the time during the ADDIE model...After the instructional materials have been delivered, summative assessment consists of overall assessments of the content.The outcomes of these evaluations assist the instructional designer and stakeholders in assessing whether or not the training met the objectives set out in the review process.

Another approach of instructional design referred here for the flipping classroom is known as a structured approach.Robert Gagne and his followers are popularly known as practitioners of behavioral outcomes based upon this training. Gagne studies the mental conditions for learning in his book titled *The Conditions of Learning*.He studies the conditions of learning through a nine-step mechanism, known as the events of teaching. It is now widely acknowledged that advances in information and communication technology (ICT) have significantly altered the teaching-learning process at both the secondary and postsecondary levels.ICT has affected not just the instructional structure, but also the assessment and evaluation system.Several groundbreaking projects in the area of examination and evaluation have been practiced in recent years.Online evaluation has become a common daily practice worldwide.The most common applications of ICT are widely in use at the individual as wellas at the level of organizations. For example, online, booking, admissions, examinations, and multifaceted technology-enabled services. ICT is concerned with storing, retrieving, manipulating, transmitting, or receiving

information electronically in a digital format.It's also important to consider how well these various uses will fit together in terms of their usage.

Students in a flipped classroom have the ability to study the material before coming to class.This allows students to learn at home at the lower levels of “Bloom's Taxonomy”, such as recalling and recognizing the material by reading lecture notes or watching videos. The students can participate in activities based on skills either alone or in collaboration.In this way, they can enhance their knowledge as well as skills. They can adopt new knowledge by implementing, assessing, testing, based on Bloom's Taxonomy, thereby achieving higher levels.Classroom teaching in the conventional approach focuses on lower cognitive levels, such as recalling, comprehension, and, to some degree, reasoning, application. If these cognitive levels involve very little student participation, the learning tends to get passive. The higher cognitive levels, such as analysis, evaluation, and creativity can lead to active learning and develop higher-order thinking.

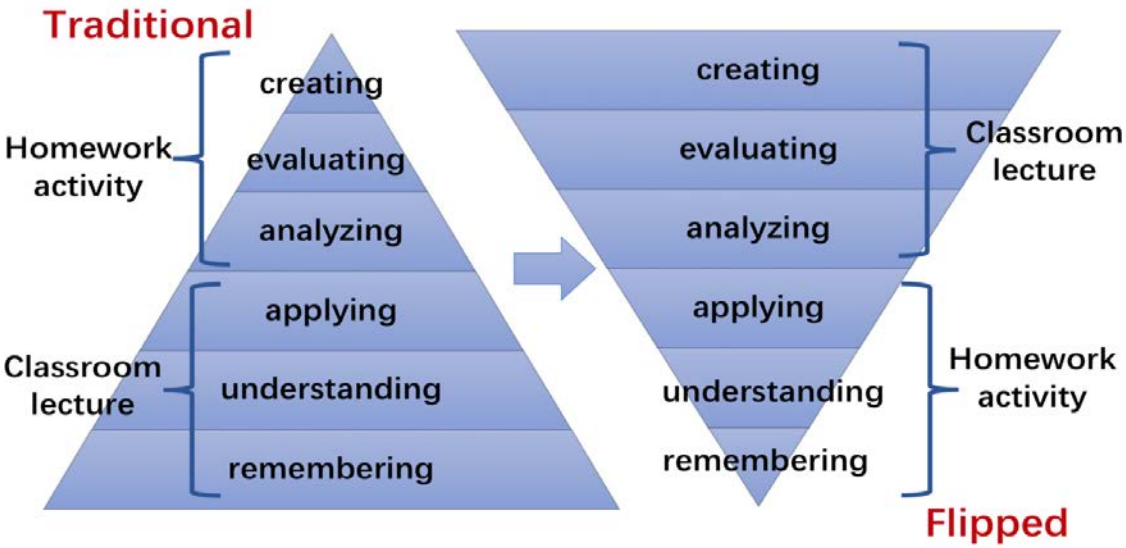


Figure: **Role of Flipped Classroom in Effective Learning Skills**
Source:http://discuss.cle.ust.hk/mediawiki/images/3/3f/New_explanation_of_flipped_taxonomy.png

The students acquire desired knowledge from a teacher, playing the role of a facilitator to make learning effective, in a flipped classroom.When the teacher substitutes his role as a guide, the students learn to individually experience the guidance given to them. Here a clear shift from the traditional classroom to flipped classroom takes place.This can be further emphasized illustrated by an example of the teacher working with his students on one to one basis thus giving personalized attention.

1.4. Legal and Ethical Ways to Deal with e-Learning:

There are many laws related to issues of e-Learning as far as the flipping classroom is concerned. They should be kept in mind while producing videos before passing them on to the learners. The course content material used for this purpose should be taken from authentic sources, in accordance with the rules and regulations as per law.Academic fraud has been promoted due to ignorance while applying the e-Learning resources to modify the achievements of traditional learning through the e-Learning process itself.It becomes imperative for our e-Learning institutions to frame guidelines to discuss e-learning ethics.Firstly,a consistent concept of academic fraud in the e-Learning environment should be created and published. Secondly, a policy outlining a basic academic, moral code for students should be followed. Thirdly, the ethical concerns related to technology and e-Learning into the curriculum should be integrated.

Academic fraud involves an intentional overlooking of cybersecurity. This leads to ignorance of cyber laws with serious ethical consequences.In order to prevent “soft-lifting”, duplication and copyright policies should be strongly

implemented to prevent misuse of electronic sources.The need to incorporate computer software ethics was also felt.It becomes the need of the hour to include software licensing and limited warranty agreements,including the terminology of software ethics.It becomes the duty of the e-teacherto aware the e-learners aware of ethics involved in the use of internet resources. If such ethical parameters are taken care of at its initial stages. A flipped classroom can be utilized forthe following benefits:

1. **Student-controlled learning**: Students learn at their own pace, maintaining the balance between their grasping and retention of new knowledge.

2. **Student centeredness**:It encourages teamwork and peer grouplearning by promoting student-centric teaching.

3. **Content Accessibility**:The technology has made it easier for self-learners to access the e-Content available on digital platforms.

4. **More efficient**: Flipped classrooms consume just ten minutes of online lecture. It establishes the fact that the classroom environment becomes an efficient mode of content transfer. This offers more availability of time to spend with friends, families, and recreational activities out of the classroom.

5. **Multiple ways of knowledge acquiring:** As the instructions are not restricted to classroom teaching, the teacher can use different types of content like animation, simulations, informative websites, blogs, etc.

6. **Effective Feedback:** As the students go through the instructional material and compile their queries in advance, the class time is optimally used to give effective feedback.

1.5. Despite tangible benefits, the flipped classroom may have the following challenges:

1. **A digital divide will promote societal differences**: One of the most challenging problems is that the students from low-income groups can't have access to a computer and the internet in order to attend lectures.This is especially an embarrassing situation for students from a low-income backgrounds.

2. **It requires planning and confidence**: Flipped classrooms rely on student engagement, so it is necessary to trust them for watching lectures at home.Unfortunately, there is no way to ensure that the successful engagement of students will take place in the flipped classroom.

3. **An extra effort and increased workload on teachers:** There is also a concern that implementing a flipped classroom increases the teachers' workload. There is a dire need for content check and the use of authentic resources. It will largely take on their time.Therecording and uploading of educational video lectures require a lot of time and skill. Various activities in the classroom improve the subject matter and inspire the students to participate. With the passage of time, the teachers can integrate their flipped classrooms with traditional classrooms, bearing the responsibilities of devoting extra time and effort on their part.

4. **Health hazards and poor concentration due to increased screen time spent:** The students will come across serious health problems due to watching the video lectures for over a long period of time. This is also observed that flipped classroom can interfere with the student's natural learning process. They are immature enough to get used to, make wise use of computer-based learning. Therefore, too much flipping the classroom has also far-reaching consequences related to concentration problems among students.

1.6. Opportunities for Flipped Classroom:

India is a diverse country with varied demographic locations and a huge divide in the economic scenario, some students still cannot access this technology; also power cuts are a major issue. Language is an obstruction and resources for smooth functioning are also a barrier. In this context, the specific objective of this study was to examine the potential impacts of the flipped classroom to engage the experiences and perspectives of teachers using the flip method of teaching. To hear from them what impacts they have observed in the students' learning, with the goal towards informing teachers' practice. It has been conceptualized that student learning in this study has a teacher's perception of student engagement, student self-regulation of learning, and student understanding of curriculum content is the most urgent part of learning. At the same time, some of the concerns underscored in the literature, including digital equity, the continued prevalence of didactic teaching, and concerns about the lack of differentiation identified by the participating teachers who practiced flipped the classroom enabled academic achievement.

Through this study, a fantastic way to ensure one-on-one teacher-student conversations was to allow students to control self-paced learning by watching video lectures. Overall, the impact of the teaching through to flip method suggested that students are more eager to give a response to this innovative learning. They can be self-regulated towards their academic achievements. They are more motivated to participate in classroom activities when they have a good grasp of the curriculum content. Fortunately, technology has the power to change teaching methods dramatically. Students would enjoy gaining confidence with the enhancement of learning outcomes.

1.2.1. The emergence of Metacognition in Education

According to Oxford Advanced Learners' Dictionary, the term 'meta' means 'beyond'.In the words of Aristotle, 'Metaphysics' is the book that comes after Physics. Accordingly, therefore, metacognition is simply a cognition that comes after, and so is presumably related to, a prior cognition. It is necessary to consider what cognition is, before moving on to the metacognition of B.ED. students. According to the Merriam-Webster dictionary, the term cognition is defined as "mental processes".It can be illustrated from the example, "If the common ancestor of the human and the chimpanzee used its big brain to develop a deep sense of death, then the human notion of life may exist at some level of our cognition that simply does not unlock with sciences' key." According to Zimmer, death can't be understood, "like Darwin's theory of evolution" but, "it has its origins in ancient intuitions". In this way, teachers can help students identify their current learning strategies using a variety of data collection methods such as surveys, group discussions, diaries, think-aloud procedures, and so forth.

1.2.2. Definition of Metacognition:

American psychologist, John H. Flavell invented the term ‘metacognition’ for the first time in the 1970s. Hence he was known as the father of Metacognition. It is based on the term ‘metamemory’ which was earlier considered by him only. (Flavell, 1979). It was viewed by Flavell that ‘metacognition’ is a learner’s awareness about his knowledge of his own cognition process (p. 906).In the literature, metacognition is sometimes referred to as "thinking about one's thinking" or "cognition about cognition."The knowledge and control of children affect their thinking and learning qualities” (Cross & Paris, 1988, p. 131)“Awareness and management of one’s thought” (Kuhn &Dean, 2004, p.270)“The monitoring and control of thought” (Martinez 2006, p. 696)“Awareness of one’s thinking,awareness of the content of one’s conception,an active monitoring of one’s cognitive process, an attempt to regulate one’s cognitive process in relationship to further learning and an application of a set of heuristic as an effective device for helping people organizing their methods of attack on problems in general.”(Hennessey,1999, p. 3)

1.2.3. Relationship of Metacognition and Cognition

Metacognition is generally associated with a learner's perception, power, and understanding of his learning process.The metacognition learner is thought to be distinguished by the ability to remember, analyses, and where appropriately he can recreate existing ideas. In the year1987, Flavell suggested a taxonomic categorization of the components of metacognition in an effort to explain some of the ambiguity about what metacognition means.He made a distinction about the portion of one's awareness that corresponds to cognitive matters, which is referred to

as "metacognitive knowledge" between a) metacognitive awareness and b) metacognitive experience when doing so.It consists of knowledge about person variables (knowledge of what humans are like as cognitive organisms), task variables knowledge of how specific information encountered effects and constraints.How one deals with planning, monitoring, awareness, task orientation, testing, evaluation, and reflection.The strategy variables include knowledge of how one deals with specific information encountered. It also includes knowledge about cognitive strategies or procedures for achieving various goals.On the other hand, ‘metacognition experiences' are conscious experiences. Such experiences may be cognitive or affective and are linked to a current cognitive condition or effort**.**

1.2.4. Metacognition in Historical Context

The termintrospection can be studied as the pre-metacognition phase. In the early 19th and 20th centuries, according to psychologists, it referred to a method for exploring the inner workings of the mind.The metacognition processes, in this phase of introspection, were of interest to them.Later on, it was found that the concept of introspection could not satisfy the purpose of the psychologists. It was due to the reason that introspection could not generate mirror images in mind.Watson outright disapproved of the idea of introspection as well as the study of the conscious mindrelated to the field of psychology So, he introduced the concept of behaviorism in place of memory and Mentalism.Metacognitive mechanisms are, used in even the earliest models of cognition. Later, in the 1960s and early 1970s, metacognition became the subject of systematic research.In the late 1970s, John Flavell formulated that the metacognition process played an important role in child development in particular and human behavior in general.

Flavell's Theory of Metacognition

John Flavell wrote a book titled, *Developmental Psychology of Jean Piaget* (Flavell, 1963).He mainly focused on the notion of Intentionality to support his theory of Metacognition. It got opposed by many researchers.According to Flavell "intentionality"is a goal-oriented activity. It includes planning and implementation of a number of tasks.In (1971)Flavellcoinedthe term metamemory. It refers to a person's capability to monitor his own memory. Flavell continued with research in the field of metamemory. It took more than 30 years to promote metacognitive research.He strongly believed that metacognition is an intentional and goal-oriented notion. His statements raised controversy in the field of educational research. It was opposed by Rider and Schunn (1996). They opinionated that Metacognition is not a part of an individual's consciousness.

Flavellused the term Metacognition in 1976 in the title of his research paper for the first time. He defined metacognition as follows:"In any kind of cognitive transaction to the human or non-human environment, a variety of information processing activities may go on. Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in service of some concrete goal or objective." (P.232).Inanother research paper, Flavell worked in the direction of exploring diverse areas of Metacognition. He framed a model of metacognitive monitoring, including four classes of various skills.These " four classes included (a) metacognitive knowledge, (b) metacognitive experiences, (c) tasks or goals, and (d) strategies or activities". Flavell believed that metacognition is an outcome of intentional activation. Sometimes processes of metacognition can fail

to achieve desired effects. It can also lead to the impact of behavior on metacognitive applications.

Based on the assumptions of his theory of learning with respect to metacognitive knowledge, he further explored different variables. From the study of intra and inter variables, he affirmed the basic achievement of generalized learning outcomes.As a conclusion, he established that cultural influence frames the beliefs about learning.Another factor discussed here by Flavell in 1987 is the explanation of task variables. The learner learns to imply the knowledge through the carry forward activities. The experience with the activities makes the thought of the learner, to decide which task is easy or tedious. Further strategy variables execute the goals of the process of learning.This part of metacognition helps the learner to know about his various cognitive processes to know,whether he has reached the correct answers of learning or not.When a student is put into a situation, his metacognitive experiences arise when they are counted by what he has achieved. In his circumstances, he is stimulated by metacognitive faculties, the outcome of which determines his achievements. His critical thinking also gets developed through these experiences.These experiences also cast their impact upon the affective domain of the learner.

Flavell was of the opinion that time nurtures the awareness part of the student with the consistent experience and with the time-bound effort.This ability to gain the awareness part of metacognition forms the metacognitive domain goals. Another change that occurs during childhood development is the sense of the self as an active agent in one's own experiences. When Flavell (1987) was popularizing the theory of metacognition. He could foresee numerous learning opportunities for the

development of learnersin the field of Educational Psychology based on metacognitive knowledge,experiences and tasks, and planning for activities.

1.2.5. Metacognition in the Conceptual Context

Most relevant to historical context, the short-term memory storage of content is cognition-based.The information stored in the long-term memory can be controlled by various processes.On analyzing the working of the mind, the story of memory-based information depends on three stages.The processing of any content in the memory also depends on the efficiencyof the way information is stored. During the first stage over a given period of time,a learners' quality isto memorize matters a lot. It also describes to what degree the capacity of the mind is employed to store any given information. The second and final stage of the mind's process of storing any given information involves structures and functions. This further leads to the understanding of the content through problem-solving. An individual learner is connected with the external world at one level and with self at another level.Therefore, it can be concluded from the research carried out bySchwartz& Perfect, 2002, that the concept of metacognition originated from the two important branches of psychology.

The concept of metacognition finds its place, according to developmental psychology from Jean Piaget's theory.Another more refined form of metacognitive research was initiated in the late 1917's.Havel and his colleagues observed how the understanding among the children developed on the basis of their cognitive psychology.The credit goes to Hart for studying feelings on the basis of learning experiences, way back in the year 1965. It was popularly known as feelings of

knowing experiences.Schwartz& Perfect, 2002, were of the opinion that mainstream cognitive psychology did not give due recognition to the researches related to metacognition. This research further studied three aspects including a.) knowledge of tactics b.) metacognitive strategies for effective implications c.)

To date, metacognition research has come to the following conclusions: a) knowing about knowing grows, b) both children and adults struggle to track cognitions, and c) certain techniques are difficult to master and easy to abandon (Garner& Alexander, 1989)

In the year 1997, familiar, asserted that learning through metacognition which includes cognitive monitoring to acknowledge one's knowledge considered an effective technique.

Put differently for a person to observe his or her thought processes, the mind need not simultaneously be both the observer and the observed, but instead the 'mind's eye' looks back at the products of the mind that have been stored in memory.

It means with activities especially visual all the areas of the brain are activated. This flipped classroom is also one in which through its activities the students stored the content in their memory and then they apply it through the monitoring.

1.2.6. Impact of Metacognition on Cognitive Behaviour

With the increase in age, older children display higher metacognition attitudes. This is confirmed by the fact that there is a higher correlation reflected between metacognition knowledge and cognitive behavior. (Schneider& Pressley, 1989).This can be further reinforced by explaining the attribution theory of Weiner,

1985. According to his theory, self- attributionsare the factors that determine good performance at an examination or a failure in solving a problem, etc. There are various key elements that play an important role in the achievement of success based on attributes like self-effort,luck, received help, ability, and so forth. The success can further be explained on the basis of a variety of cognitive tasks.Teachers should be trained in recognizing students, making learning strategies through surveys, interviews, or other methods.Keeping in mind, the metacognitive attitudes of the students, such strategies should be practiced which are most important to their learning styles, assignments, and objectives based on their cognitive behaviorrather than a dispersed approach.

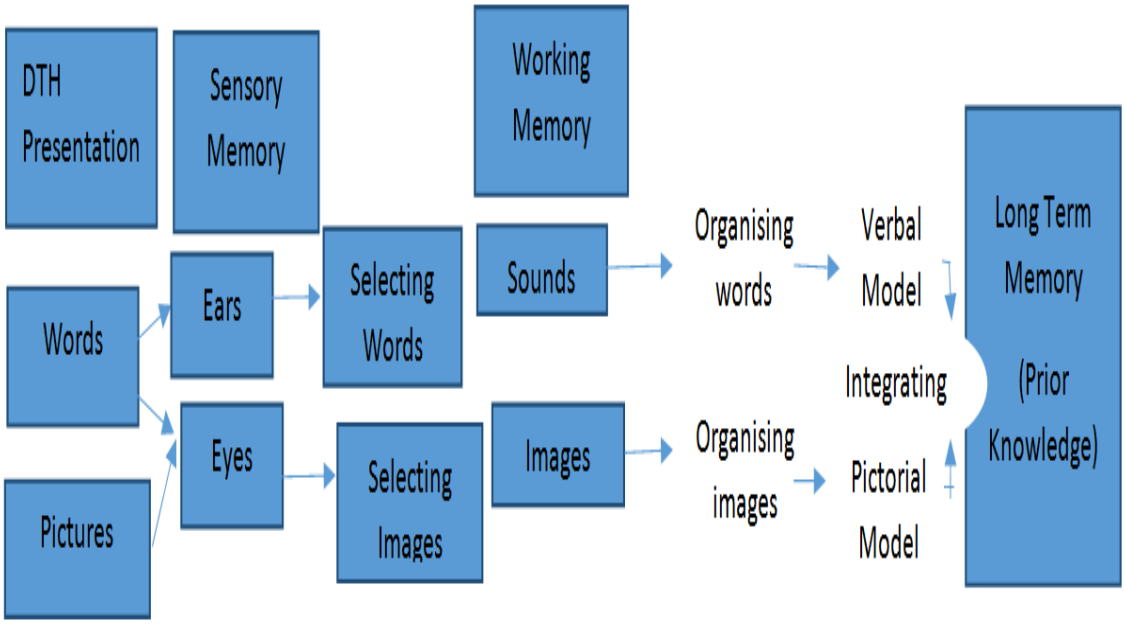


Figure: The Cognitive Theory of Multimedia learning, R.E. (Ed.)(2005).*The Cambridge Handbook of Multimedia Learning*

Source:http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2223-03862017000100002

The above model is equally applicable to the flipped classroom too, as the teacher adds content to prior knowledge of the students and that content is utilized in the classroom for making the class more interactive.

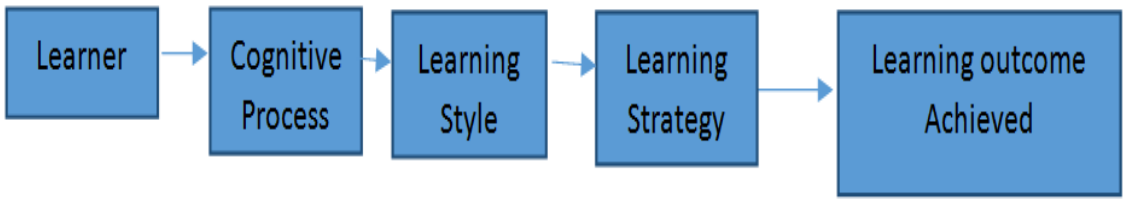


Figure: Schematic Representation of Student's Learning with ICT

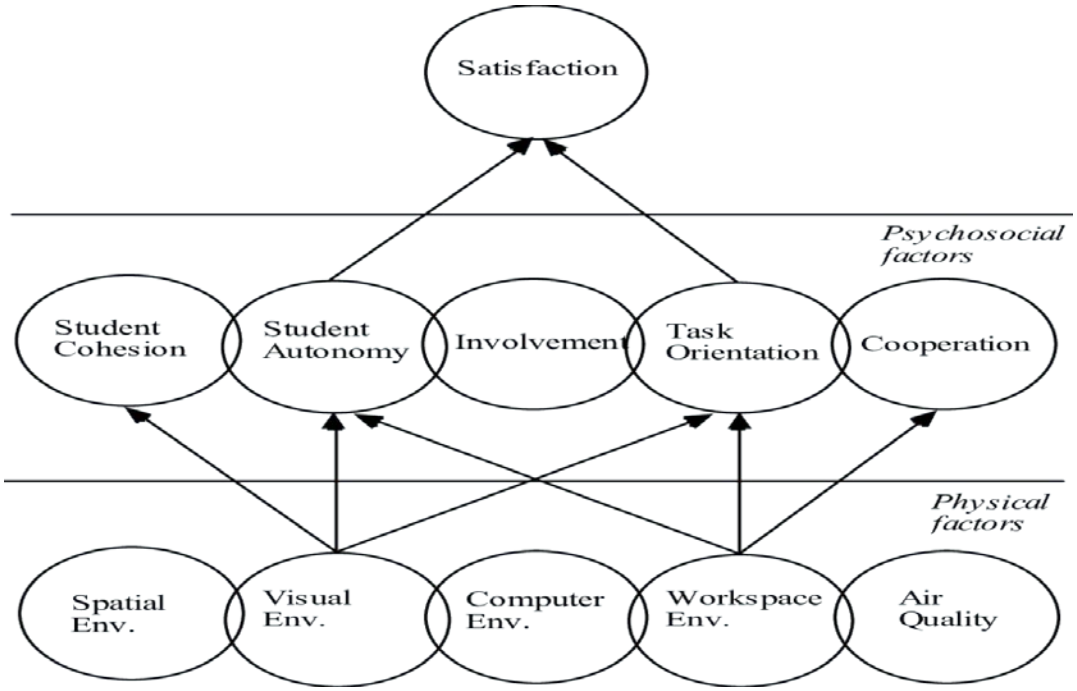


Figure: Schematic Representation of Student's productivity.
Source:https://www.researchgate.net/figure/Schematic-Representation-of-a-Emerging-Model-for-Educational-Productivity_fig4_11788333.

1.3.1. Classroom Environment:

The classroom environment is one of the most important factors for active teaching.It is here that the learner's basics of subject matter get cleared.It is also very important to have a conducive environment for using the Flipped model of

teaching. Therefore,it is essential to make it collaborative in approach. The teacher's role is all the more of a facilitator to boost and enrich his classroom environment involving the students for instructors as well as activity-based. It is a two-way approach basically.In order to draw 100%attention of the students,the teacher devises such activities which can enrich the subject knowledge.To keep the learners charged with enthusiasm, a ready-to-help support system proves to be very effective.When the student feels bounded with the teacher,his grasping also improves to a greater extent.

An intelligent teacher's student-connect is based on socialization and emotionality.It is a pivotal role to create such a classroom environment,where a student enjoys learning any new concept easily.It is the first step to arouse the interest of the student in the pleasing personality of the teacher. Then, the student gets extremely interested in the subject taught by the teacher. A smart learner himself proves to be a learning outcome as the teacher successfully transfers his subject knowledge. Such a student enjoys in a motivating classroom is eager to express himself as well as to show his good performance on the whole.

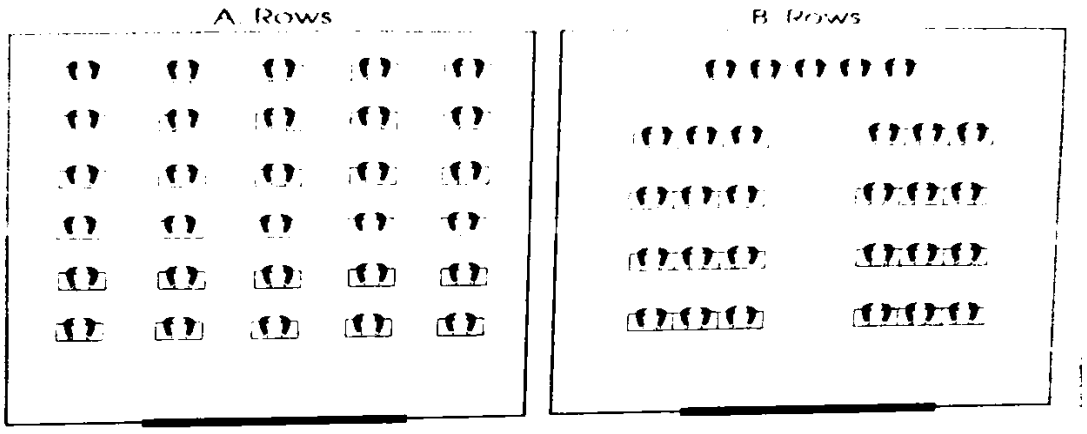
It is worth mentioning Steel's (1973) recommendations in relation to a classroom environment. He discusses six fundamental principles, namely (i.)security and shelter, (ii.)social interaction, (iii.)symbolic identity, (iv.)mission instrumentality, (v)enjoyment, and (vi) development for the holistic classroom environment.The symbolic identification is a very result-oriented strategy, maintaining the classroom environment. It includes displaying the soft –boards displayed in the classrooms with information about the students. For better

communication, designed objects displayed in the classroom make it lively and learner-friendly.

Now we come to the task orientation in the physical environment of a classroom.The teachers can assign project-based activities to the student by forming groups of students. This type of work culture within the classroom offers opportunities among the peer through brainstorming on various topics. The learners get a chance to exchange their ideas as well as think out of the box. It also motivates the students to learn to work in a team. If the controlled classroom environments are compared to the flipped classroom environment,one can find a considerable difference between the two. Both types of models of teachings employ different instructional techniques. They altogether give out different outcomes.

It can be concluded that any pedagogy that can help in avoiding suffocation or orthodox teaching,would certainly deliver good results. Therefore, the model of Flipped focuses on task-based activities open learning, and a student-centric approach.

During maintaining a classroom environment certain seating arrangements can be made for activity-based learning, they are as follows:



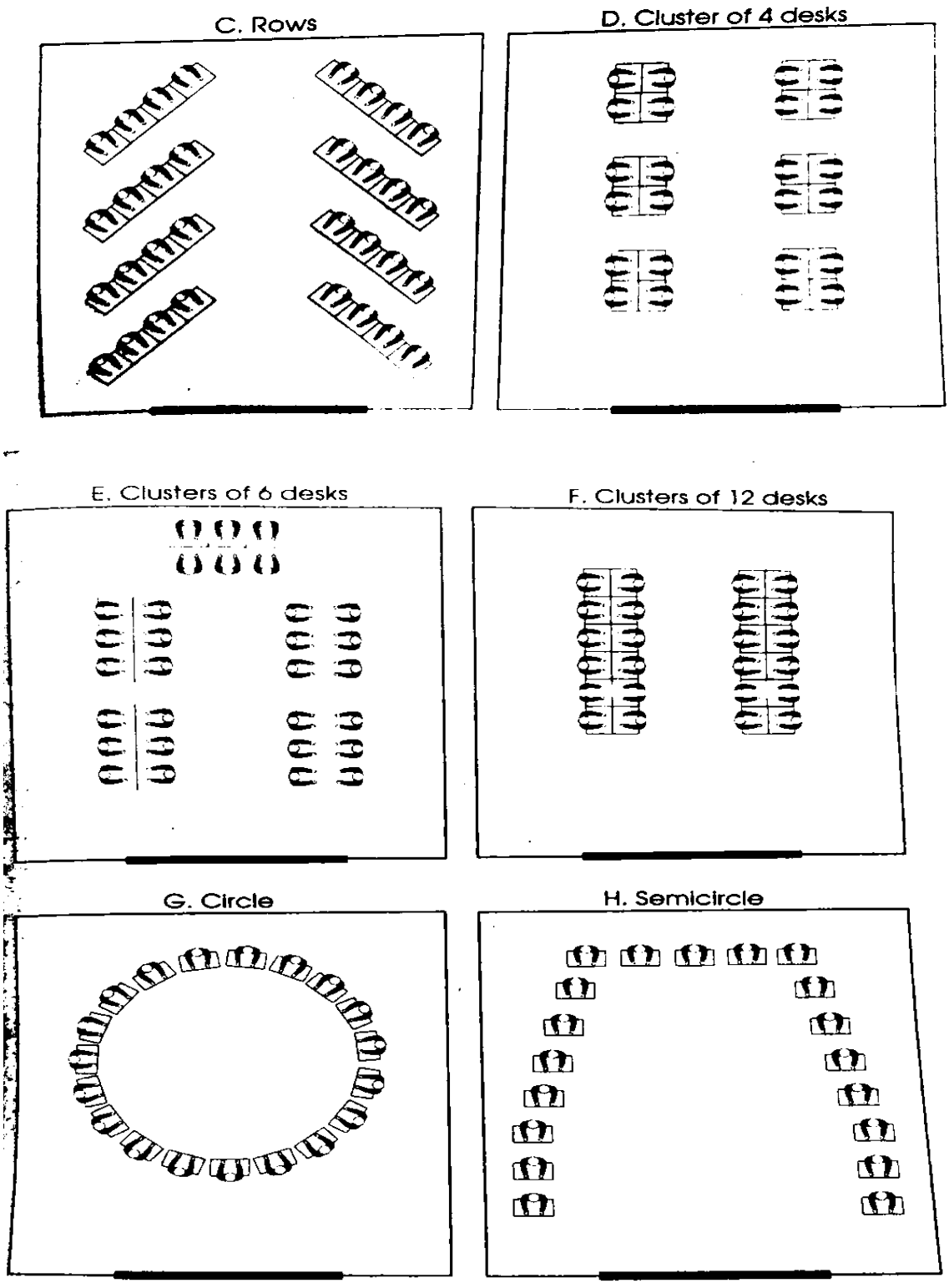


Figure:Possible sitting Arrangements

SOURCE- Getting Organized, Organizing Your Classroom And Materials (By-Paul R. Burden)year 1995

1.3.2. Structure in Lesson Planning for the Classroom

A teacher employs various instructional strategies to make his teaching effective. This includes lectures, demonstrations, recitations, questions, and practice. Teachers try to supervise all aspects of the lesson, objectives, activities, materials, assignments, interactions, and evaluation. Many more instructional strategies are interactive in nature. These involve group discussion methods. Those instructional strategies which emphasize inquiry and discovery are learner-centric in nature.

Practically the students should be given opportunities to learn through several strategies. Emmer,Everstion, and Anderson discovered in the year 1980 that the teachers who had flexible attitudes, were liked by the students. A variety of instructional strategies appeared to be more interesting to their respective students.Group learning proved to be another effective method to enhance the learning process in a given classroom environment. The students have a natural tendency to get into a group.The teachers can formulate these three types of grouping. It includes (i) Class-ability grouping (ii) cooperative learning groups and peer tutoring.

Academic Needs of the students:

When the teachers excel in utilizing their teaching methods, misbehavior on the part of the learners reduced considerably. To make the classroom environment,vibrant, it is pertinent to address the academic needs of the students. Consequently, this leads to the development of a sense of competence. Not only it enriches the environment, but also helps the students in maintaining their progress.

The students find themselves at ease in such a supportive environment. They also become more and more focused and goal-oriented.

Use of synchronous interaction in Virtual Classrooms:

This technique of synchronous interaction was first of all used by Cao, Griffin, and Bai in the year of 2009. According to them, this technique promotes blended learning in the classroom. The material used outside the classroom supports flipped classrooms as its archives can also be used later on. This can also prove helpful to the metacognition of a learner.

The researches show that the students learn better in the online environment. Their grades improved through synchronous classrooms. They outshone in almost every skill of learning. According to Clark(2005), online learners can be engaged at their own pace,respond actively by using small groups.It was proved byCarbonaro et al. In the year (2008), that shorter time duration of classes ensured better student understanding and concentration. The synchronous virtual meetings offer live sessions. This serves as a synchronization tool to promote teamwork among health professionals. It puts them across the boundaries of time and space for quick discussions and problem-solving at a fast pace.

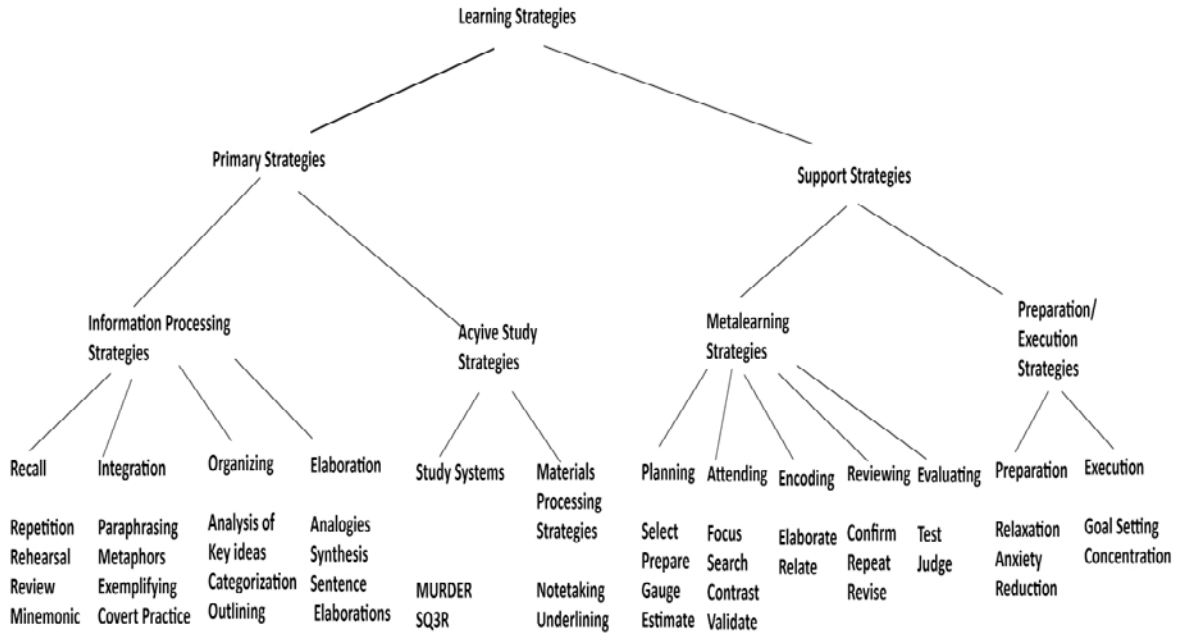


Figure:Taxonomy of Learning Strategies

Source:Learning Strategies,*World Yearbook of Education 1988, Education for New Technologies*

Any classroom, where lectures and group discussions form the core constituents of a traditional setup. The facts reveal that the lecture method does not give opportunities to the students for clearing their queries in a stipulated classroom time. Not even, any active discussion can take place keeping in view the syllabus to be covered within the time framework. So in a traditional classroom environment in a college,activities are adopted to produce desired results.Onanalyzing the structure of these activities, it is found that different levels of social interactions can take place.This type of organization of activities leads to multitasking or multipurpose forms of relationships in due course of time which generate value-based outcomes.

Further, analysis of these social interactions reveals the experience of students who take part in these activities held within the classroom environment. There are pertinent questions that come to mind at this stage. Firstly, what should be

the nature of the normative outcomes of classroom tasks. Secondly, how the classroom task experiences of students vary at their individual level.Thirdly, how much should be the duration of participation in a particular task.Lastly, how long it can generate enormous during the organization of a particular task.To understand the different stages of moral socialization, the research should be focused on the quality of the content. The timings of students' participation also play an important role differently in an institution.

1.4.1. Academic Achievement

In recent times, many innovative developments have taken place in every field of life to make it easy. It is important to mention that new vistas have opened up in the field of Education also. Many new constructs, strategies, methods, skills, and materials have been added to the field of education and its classrooms.It makes the teaching-learning process more effective and fruitful. The impactful learning outcomes of academic achievement can be judged as an important factor to understand the students. In the context of their learning style,the key factors that determine academic achievement depend upon the motivational pattern.That is why the teachers ensure delivery of their subject matter putting in their earnest efforts. Their result-oriented approach helps them to do their job in a better manner. Undoubtedly, teachers want to improve their instructional pedagogy. Sothe pattern of academic achievement plays a crucial role. Another reason for this purpose is to complete the prescribed syllabus,within a time framework. One more objective is, to keep a track record of the student'ssubject knowledge and grasping power.There are different levels of learning related to academic achievement on the basis of a learnerassessment.

1.4.2. Assessing Levels of Learning:

Through an achievement test, the teacher's objective is to assess the level which is represented by habits. A habit is a response, verbal or otherwise that follows immediately after the stimulus with which it has been associated. At the first level of learning, a habit is best described by the memory level of the students. The subject matter gets memorizedon the basis of the capacity of the student to reproducewithout much thought or reflection after a proper stimulus. The second level of learning is the next higher level of understanding. By higher level, we mean the increased capacity of retention power.It depends upon how much a student can memorize unlimited subject matter without understanding.The effect of the intervention of flipping classroom and academic achievement test can measure the learning outcomes.This facilitates the teacher to assess a group of students in a formative manner.They respond by giving the central idea of the subject matter.

At the third level of learning, the teachers assess their students from the level of understanding of the content of every subject studied by them. Now the learners develop in-depth learning to solve surprisingtests which they have never come across earlier. This can be best reflected through the summative assessment. Theeducationists opined that the ultimate purpose of formal education is to equip the student community with knowledge of the subject. It willprepare them to use this knowledge in every situation of life.The knowledge acquired through various educational platforms enables the learners to cope with the problems related to social,psychological, philosophical spheres, and personal life too. The present research also indicates whether the prospective teachers can use the information

gathered over a longer period.The principles and information learned and put to use for problem-solving lastlong.

Dimension	Learning goal-oriented learner	Performance Prove goal-oriented learner	Performance avoidance goal-oriented learner
The central point of Learning	How meaningful learning is going on	How well performance is taking place than others	How to Avoid demonstrating situation at any challenging learning task
Success of Learning	In the improvement of once competence and self-development	In proving competence at related norms.	In avoidance to be an example of a low performer
Value of Learning	The effort to learn and acquire new knowledge and skill	Desire to show a high level of performance and grade at related norm.	To keep away his/herself to perform at any risk.
Reason of Satisfaction	In hardwork to learn something new from challenging task or situation.	To do better than others and to notice as a good learner by the authority.	Not to be noticed by the authority as a slow or incapable learner.
View towards mistake or error	Less concerned with making mistakes and tendency to take a lesson from every mistake.	Highly aware of, not making any mistake due to prestigious issues.	Avoid such type of situation in which mistakes can occur due to a high level of anxiety.
Type of motivation	Intrinsically motivated	Externally motivated	Negatively externally motivated
Use of feedback	The tendency to use achieved feedbacks on past performance in the evaluation of current performance.	Looking just for positive reinforcement and feedback.	Just want not to be evaluated due to fear to fail.

Importance of process and result	The learning process and the result, both are equally important.	More emphasis on the result than the process	Apathetic behavior towards the learning process and results both.
Competition	Competition with self	Always in competition with classmates or others.	Don't desire any type of competition, neither with self nor with others.
Evaluation	The tendency to take the evaluation process as the means to improve oneself and know the merits of the learning process.	The evaluation process is the means to show abilities and desires favorable judgment about work competence.	Tend to avoid the situations in which they will receive an evaluation.
View towards challenging tasks	Willingness to take on challenging tasks to learn new things.	Desire to choose such type of challenging taskin which he/she feels competent than the other	Avoid taking any challenging task.
Need of Evaluation	The desire for correct evaluation	Desire to positively evaluated	Desire to avoid evaluation due to high levels of anxiety about failing.

Figure: Behavioural pattern of the learners motivated with different types ofthe learning situation

Source:Dr. Mahesh Narayan Dixit *Goal Orientation And Academic Achievement(2018)*

1.4.3. Importance of Academic Achievement

An Academic achievement plays an important role in this research concerning the learning outcomes:

1) A new dimension is provided to understand the student's learning behavior.

2) This is useful for the learners and teachers, both to have the insight to understand the learning patterns that are going on in the classroom.

3) Through this, it becomes easy to explain the reasons for particular behaviorshown by the students during the learning process.

4) The three approaches are associated with the adoption of delinquent behavior of the student. The teacher may apply these approaches to make their studentsgoal-oriented and effective learners.

5) This also inculcates adaptive behavior among students.

6) This is also important in creating a self-motivated learning environment,to achieve desired results.

7) Researchers have established that different types of activities are used as a reliable and good predictor of students'behavior and to enhance their achievement level.

8) It also leads to focused learning.

9) Many important factors play a key role in academic achievement. like self-efficacy, adaptive, maladaptive behaviors, goal setting, effort to achieve something, etc.

10) It is useful for motivating individuals to realize their self-learning, an enriched environment through activities, and different patterns of behavior.

In this study, the role of academic achievement is to develop cognitive, affective, and psychomotor traits which are assessed by conducting a test of B.Ed.

students.Through reliable information, the questions like how the other variables affect the academic achievement of prospective teachers. This research would also aim at motivating and developing the ability among students of B.Ed. to become lifelong learners.

The most viable, achievable task in the 21st-century isto become an effective and skilled teacher.

1.5. Significance of the Study

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 trainedto 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 withthe prospective teachers of teacher training colleges, to make this work more constructive.

1.6. Statement of the Problem

Effect of Flipped Classroom Teaching on Meta-Cognition, Classroom EnvironmentandAcademic Achievement of B.Ed. Students

1.7. 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.

1.8. Hypotheses 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 ClassroomEnvironment 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.

1.9. Operational definitions of key terms

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.

1.10. 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.

CHAPTER-II

REVIEW OF RELATED LITERATURE

This chapter reviews the literature based on the effect of the Flipped Classroom on Metacognition, Classroom Environment, and Academic Achievement of B.Ed. students. The major objective of this chapter is to analyze the significance of flipping the classrooms in the global education systems in general and the Indian education system in particular. There are problems with the current education systems; however, it is believed that new standards in worldwide educational systems will result in the better effect of audiovisual aids by opting it in high breed pedagogy. High-yielding institutes generally have excellent administration that brings a stable outcome for the learners. It is discussed by several educationists to assess the role technology plays in various educational fields. It is a part of their job to own the responsibility of creating a successful paradigm shift by producingefficient students and teachers.

2.1. Researches Conducted on ICT and Flipped Classroom in India

Bajpai, (2017)

This paper undertakes an objective assessment of the performance of the arts in the school scheme which was launched to include ICT as a part of the curriculum of Uttar Pradesh in the year 2009. The objective of the study forms the core of RAMSA, i.e. RashtriyaMadhyamicShikshaAbhiyaan. It further marks an assessment of the relevance of ICT in the school scheme project. The above-mentioned scope of

this involves the impact, the effectiveness of the target group, and institutional development in Utter Pardesh. It has become inevitable to have a conducive environment and appropriate skill-set for using ICT effectively.It was found in this study that MHRD's ICT scheme for capacity building through the use of IT couldnot achieve expected results in the state.This state of the art was a serious cause of concern for all the stakeholders and the policymakers including Central and State. The apparent cause of this failure was implementing the ICT school schemes in a traditional manner. Apart from other suggestions, the most important state policy required to be reoriented. As a result, strengthening the setting up of smart schools was strongly suggested especially in the KendriyaVidyalaya. Hence, these schools proved as model centers for learning through the mode of ICT. These models worked as pacesetters and leaders to disseminate ICT skills among students. The schools, especially, located in the catchment area produced sustainable results from the scheme for effectively implementing an ICT model of learning.

Gupta & Sharma, (2016)

According to this study, the digital library came to the limelight as an impactful information resource as the number of users is on the rise with each passing day. The users have become aware of information available on the world wide web.So, the use of digital information is directly related to the satisfaction reflected by the use of these resources. This study is based on the students of IIT Madras Central Library. It is found that 64.7% of the students use both types of information, including traditional as well as digital platforms. 79.7% of users go for digital information for the material needed, 83.8% of users explore the digital resources to explore the relevant material for their study. The study also found that

the Central Library is frequently visited by the students. The data reveal that 58.5% of users rely on digital information services. On the contrary, easy access to the desired information does not ensure a speedy process. Often,the learners face difficulties due to the non-familiarity of making an apt choice of digital resources.This hurdle can be overcome by organizing orientation and training programs.

Saxena & Hans,(2015)

Duringthis investigation, Information and Communication Technology is a powerful means which can boost the achievement of teaching and learning. Its amalgamation with teaching is a great help to the process of learning. It promotes accessibility, delivery, learning, and understanding. It too takes on a central part in making a knowledgeable society. It is 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.

According to Kozma and Anderson, the use of ICT can replace passive learning.It lays emphasis on the skills of problem-solving and interaction with the learners. The students find themselves in a better position to respond through interaction. The real-life situations can be handled by the use of ICT.It is It is therefore proved that traditional instructional design can be easily replaced by ICT-based instruction.

Arora & Lihitkar,(2015)

In this research, several studies show that blended learning can takeplace in a virtual environment.So a comparative study will show the functioning of open-

source Virtual learning software in the above-mentioned context. This study is unique in the way it is comparative. The major objectives of this study involvethe promotion of an environment that can facilitate e-learning.Therefore, five open educational resources, software weretaken into account. The assessment of these digital tools was based on some criteria adopted to meet predetermined standards. The broad outline of the criteria is centralized around the specified and preferred expectations of the students and their functionalities. A standardized parameter was devised for evaluation.The ranking was given based on the comparison done through a procedure. The following software was selected for comparison made: i) Chamilo found excellent, ILIAS found very good, formal LMS found good,Opingo as very good, and open SIS as below average.

Fatima, (2015)

This case study proved to be a benchmark in establishing the fact, of how the users in IIT Delhi Library respond towards multimedia resources. The vital factors under study were available and the consequent usage of various multimedia resources by the students at IIT Delhi. Several questions were framed asking the users about their habit of using multimedia resources and their frequent visits to access them. The availability of shelves, the reason for adoption, and various problems faced by the students were given due attention. Through the findings of the study, an overwhelming response was revealed. It was concluded that the maximum number of users liked to access these resources regularly. They came across various hurdles due to poor connectivity and slow bandwidth. The choices made by the IITians were to access the web-based multimedia resource more. The downloading at a slow pace frustrated them and resulted in showing down their learning process

as well. Quick and easy access to the information became just a click of the mouse away. This kind of research has never been conducted before. The creamy layer of the IIT Delhi proved that how relevant it has become to access information through the use of multimedia in the present area.

Baikady & Mudhol, (2013)

In this study, the level of skills of computer literacy was analyzed. The faculty and the students of Medical College formed the target ground. A questionnaire was devised to keep the interests and habits of these computer literate groups of learners.The use of information resources on the websites saved a lot of time for medical faculty and the students. Therefore, an unusual inclination to learn computer skills could be observed during the study. They seemed in a hurry as it met their needs ready at their doorstep with no loss of time.They seemed not only responsive and prompt but eager to acquire as many skills as possible that at the earliest. Therefore, it was also found that these institutions speedily organize programs. These medical students and faculty need to keep themselves updated with the recent developments in this field.

Hassan & Nikam, (2012)

The attitude of faculty members and research scholars plays a very important role in acquiring new knowledge and skills. This study was carried out taking into account information literacy atBanglore University. The information related to all the vital spheres was involved and the data were collected by survey method. The objectives of the study employed parameters of information literacy. The various forms of information, type of information, how much of it is needed, and from

where to access it. Other parameters included checking whether the information required and collected is right or wrong. Sufficient knowledge was required to apply the information related to economic, legal, and social areas. The questionnaire was prepared to cater to the requirements of the cluster sampling technique for data selection. A number of 150 workers from the Banglore University library filled the questionnaires. To maintain the accuracy of this method the statistical tests were also applied. In the statistical tests, mean and standard deviation give that the total mean score of a participant comes out to be 235.97 out of 336. The result also showed that the total mean score comes out to be 39.12 out of 56 as to how much and the type of information required. It is 61.76 out of 88 and showed from which source it was accessed. The determinant factor to show whether the information was right or wrong, comes out to be 70.52 out of 100. To establish the fact that the total mean score comes out to be 28.69 out of 40 concerning the overall use of information. As far as the social, economic, and legal information is concerned, the total mean score comes out to be 35.87 out of 52.

Archita & Ramesh, (2012)

It becomes vital to see the impact of ICT in terms of its usage, the researchers picked up the most sensitive field of society to reflect upon. This study was conducted upon a group of 335 participants employed in the different fields of disability. The main objective of this study was to focus on the assistive devices and skills required to use ICT. It was surprising to find that 87% of the students have a working knowledge of computer. They were comfortable in using the internet,writing, and sending e-mails. They could also work in MSoffice for practical use. So they were equipped with skills of computer and use them without

the hurdle of their disability. It empowered them and made them more competent and independent. One more thing was observed, that the students with various disabilities were better at using the computerskills as compared to their teachers. The analysis showed that only 28% of participants could handle software programs. It is also found that the teacher is less competent in the skill of ICTthan the students. It was also found that the teachers working in the villages could not compete with the ones employed in cities. A mixed response was observed regarding the use of technology as well as assistive devices for disabled students. So there was a decline in response as the preference to use the printed formof reference material was more practiced to seek any type of information. The teachers needed training and awareness programs to make their search speedy and less time-consuming. They are also required to enhance their knowledge in the application of different software and assistive devices.

Chaurasia & Chaurasia, (2012)

The research scholar and postgraduate students show different behavior as information seekers at the Indian Institute of Technology,Delhi.They use different e-resources ways of searching for information.This research was carried out by circulating a questionnaire. A basic percentile methodology was used to analyze the data. The result showed that over 100% of research scholars preferred to consult electronic journals. The databases were explored by only 60% of the research scholars. The electronic books were used as e-resources by 65% of students as compared to electronic journals used by 60% of the students in their information search. There was a great need to orient this target group through training programs. This was observed that training program could boost their capacity and accuracy to

find information for their purpose.Therefore, this study strongly recommends the organization of awareness programs for overcoming their barriers to relocate their required e-resources. The research scholars and postgraduate students themselves recommended the need for effective guidelines about e- resources. They needed to sharpen their retrieval skills.So this study included in its findings to include student support services. The setting-up of help desks at the library can be the one way to guide and help the students and train them for their benefit. In this way, this study attempts in its unique way to utilize the library as an effective tool to make the users' experts in using the facilities provided by the library to the fullest.

Kazi & Nishat, (2012)

In this conceptual study, previous studies are analyzed giving priorities to theusers.It is learner-centric. It aims at giving first-hand knowledge of e-resources based upon web 2.0.According to the researcher, a library is a hub for creating an environment of e-resources. The students are in a position to have easy access to finding the desired information. It was also observed that e- technologies like OPAC, WIKIS, BLOGS, library websites, social networking sites, podcasting, where user the user meets user's world. They were effectively used by the students of library and information science course. The reason behind this is, the students of library and information science are in a web 2.0 enriched environment. It is a decentralization of the library. According to the finding of the study, the students of library sciences are privileged and well trained to access the right information at the right time.

Goria, (2012)

The library is the backbone of an institution. Students of all streams gathered there for finding information. Therefore, it becomes very important to research this relevant stream. The study aimed at observing the various learning pattern of the students using library resources and e-resources. It is concluded from Goria's 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. It was also found that libraries can play a vital role by utilizing e-resources for the sake of advanced and focused research.

Singh, (2012)

This is always limited to, use something. It is rightly said that excess of everything is bad. So the relevance of this studylies insetting some limits to the use of electronic information. The effect of the use of these resources and facilitieswas measured. A standardized questionnaire was used to survey faculty members as well as students. Six management colleges of NCR were chosen for this study. It was found from the circulation of 200 questionnaires that the chosen group was well-versed with Electronic information resources. Their habit and purpose of using the electronicinformation resources were considered upto a satisfactory level. Of the chosen group under study, the business students were ahead of others. They formed the corepilot unit. They are inclined to make the best and fruitful useof the internet. As a result, these students have a fair chance of utilizing their knowledge for their future careers. The study focussed on the utilization of Electronic information resources by the faculty members. They should inculcate their teaching styles with

knowledge of management for their teaching and research work. The findings of this study reveal that the participants had fair knowledge and understanding of EIR. It was gradually rising due to increased use. It was also strongly felt that the present need is to analyze the students and faculty using these resources. It can further give a better academic output if suitable and easy-to-use electronic information resources are provided.

Madhusoodan & Baradol, (2011)

Information literacy is a skill for using information appropriately despite computer literacy, The students of the post-graduation course were chosen to test information literacy. The results of the above study showed that the majority of the students lacked the skill of information literacy. It was further observed to be an unusual phenomenon where students possess adequate knowledge of computers. They lacked in their research aptitude. This unawareness posed problems in their way of conducting research. The research, based activities required accurate information search. They didn't know about databases, the identification of citations, the importance of thebibliography.The inability to search for a catalog also posed a barrier that hindered their research work.The tendency of ignoring essential skills of information literacy is at the core of this research. A senior group of students enrolled in a post-graduate course is expected to the demands of the desired skill set to access information through electronic resources. Training – programs can be devised to cater to this emerging need.The students are motivated to stay updated in the age of information. It is found from this study that these information skills should be integrated with practical usage as a core part of the curriculum. They can advisejoiningsome courses outside the campus to have first-hand knowledge.They

should be in a position to use this knowledge practically for their welfare. An institution should be flexible enough to facilitate learning among students on a compulsory basis.Ignorance is no plea as it creates blocks in the path of learning. The students should know where to look for the right information out of a vast sea of information sources.Only then the students of postgraduate studies can overcome their illiteracy of information search. So the findings of this make the research unique for suggesting ways and means to overcome information illiteracy.The inclusion of such skills within the curriculum framework makes this study innovative.

2.2. Researches Conducted in Abroad on ICT and Flipped Classroom

Chun & Heo, (2018)

The flipping method of learning attracted the attention of the researchers to study the effect on the students enrolled in a Mathematics class. They observed how the students can overcome forgetfulness. So the purpose of this study is to survey how the flipping method of learning can help the learners in memorizing the concepts of technical, subjects like Mathematics. So, to this effect, empirical, evidence was collected. It was found that students become more proficient in learning Mathematics which further enhanced their grades. The research questions were framed to explore- (i) the difference between traditional modes of teaching and flipped mode of teaching (ii) how the academic grades improved with flipped teaching (iii) which factor contributed the most to effective learning. Self-reviewing forms the basis of this study. The ultimate goal is to design a flipped model of learning based on a Learning Management System. Here the students from choosing

the group are made to practice while the following learning through to flip model. A round of the four times review method was well supported by LMS. This type of instructional design follows the process of pre-class, in-class, post-class,and reviewing resulting in self – directed. All the components of Ebbinghaus's forgetting curve were carefully taken into account. These included CSC, Conceptsapplied, Computing, LMS, and e-learning. The most important aspect that this study involves is to establish a relation between Ebbinghaus's s forgetting curve and flipped model of learning. This use of the review method and LMS makes this study unique.

Didem & Selçuk,(2018)

It is an interesting study involving the approach to assess the learners' academic achievement in a flipped classroom to analyze those key components which play an instrumental role in enhancing the self–motivated preparedness for learning. A number of 66 participants formed a group. The Scientific Research Methods were employed to carry out this study. The Students of this study belonged to two classes of B.Ed. The course at Ahi Evran.University during the academic year 2014 – 15. The two groups were designed as an experiment and the other one as the control group. The flipped model of learning was applied to the experimental group while the blended model of learning was applied to the control group. The data collection tools included a motivation scale, an achievement test, and self–directed learning preparedness scale. The various statistical techniques were used, including t-test, MANOVA, and ANCOVA to analyze the data. The findings of this study revealed a remarkable difference showed a favorable response as for the achievement at the levels of academics and motivational fronts. They also showed a considerable degree of retaining the content over a long period. On the contrary, the

experimental and control group showed no improvement as far as self-motivation-based learning is concerned.

Chamani, (2017)

A study was conducted to analyze the views and opinions of faculty members of the University of Peradeniya in Sri Lanka about IR and open access publishing. A questionnaire technique was adopted in the survey method for getting their opinions. The findings of the study brought out in the notice that only 40% of them generated the result. They knew about the OAP and 15% of them were unaware. This result revealed that gave an idea that open access is not a part of their awareness. Further, one more important result was from the study that 50% of them learned IR through online browsers. Another 13% learned from the meetings organized for faculty at the campus itself and using them while their instructions. This exploration also exhibited that 44% of users know the University Repositories and 44% revealed that they have never have come across it. Through this motivating feedback, it was observed that 55% of the faculty members were ready to devote themselves to the access of digital IR in the coming days. The remaining 18% among them already supported supporting it. This vision was developed among them because they were ready to accept these innovations of open access to their teaching and learning, but the major challenge to contribute to the IR is the panic of the similar index.

Smallhorn, (2017)

This study takes up the issue of the tendency of aversion among the students from attending the classroom teaching. This challenging situation has attracted the attention of the educationist in national and international areas. Therefore, the topic of this above-mentioned study becomes quite relevant to the existing state of affairs concerning student engagement. It undertook a group of 200 students in their second year at the college of science and engineering to observe their classroom behavior. It was surprising to know that students of serious subjects like Genetics, Evolution,and Biodiversity showed an inclination of not attending their lectures. A transformational shift took place which involvedoneinteraction. This shift came with the active learning due to Flip classroom. It aroused the interest of the students within the classroom environment. The students geared up by watching video lectures through online mode. This further deepened their subject knowledge. With this kind of environment, students were able to apply their subject knowledge through active interaction among themselves. This active participation makes the flipped classroom more result-oriented. The analysis of the surveys from the lectures attended, phases of learning, and performance during examination revealed the successful implementation of the flipped learning. Therefore, it’s strongly emphasized an enhancement in the engagement of studentsin a flipped classroom environment. Not only this, but the students developed a positive attitude also. In contrast to this observation, it could not be measured what were the learning outcomes in the process of engaging the students.

Davis & Stauffe, (2015)

The focus of this research "Using Videos versus Traditional Written Texts in the Classroom to Enhance Student Learning" defines the use of direct instruction outside of classroom time through the use of short instructional videos. Past research has focused on the use of video technology in the classroom and the effects of video technology in the classroom. However, past research on video technology has not examined whether or not the text should be integrated with the lesson while the students watch the videos. Data was collected through a preliminary survey, pre-assessment, post-assessment, and a post-survey. This study 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 indicate 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 method of instruction.

Heather & Ramaglia, (2015)

Their study tried to analyze how the pedagogy of flipping instruction can improve Mathematics courses and can motivate the students towards the adoption of Maths course in their life. Here in explanatory context mixed method was utilized. Quantitative data were collected so that in-depth qualitative data and quantitative findings can be properly explained. The quantitative data were gathered about NEWA Maths and NPA assessment, by Middle and High archival learners from

theMid Western suburban district. Through this data, it was analyzed that how much a Maths student can achieve in flipped disarm as compared to the traditional classroom. A series of activity-based class data was also observed during classroom insides. The further qualitative method was used as a follow-up to analyze the quantitative findings. In this research, the student's and teachers' views towards the Mathematical achievement compare with traditionally used classroom along with the observation of the activities aspect, utilized in the school district.

Bishop & Jacob, (2014)

This study shows that innovation through technology and philosophy towards education has provided a new paradigm for educational increasing anxieties and cost of tuitions have taken into consideration, provide online causes and to change the instructional patterns in the classroom. Here, the flipped classroom is the core of the discourse. It is a new hybrid way of teaching which uses asynchronous video lectures, activities to practice assignment at home ask assignments. Flipped activities and classroom activities generate interest among the learners by making the environment interesting. Earlier, the unique combination was not considered valuable, but these activities brought their best effect upon the constructive schema of the conductor. Sincethen the instructions started following the behavior patterns of education while imparting the subject matter. This study of Sophomore spherical numerical was controlled research. This is because the use of media and modern elicitating activities were used as a treatment in one phase and lecture-based teaching in the other phase. This exploration further compared the etymological outcomes in two directions: Fundamental understanding and traditional ability of problem-solving. Although in this way of flipped teaching home tasks and formative

exams were opted to assess the traditional ability of problem-solving, on the other hand, quizzed and conceptual tests were utilized to evaluate concept-based understanding. But the result showed, there was no difference between these two strategies that were opted to get the test score. When homework scores were assessed they found significantly lower by percentage in 15.5 out of 100 which was equal to an effect size of 0.70. This difference came due to the MEA or video lecture session load which appeared to be higher and students could not find to do them justice with the homework and not the higher weightage of these was not given in the final course grade. Further, it was found that the perceptions of students about MEA and video lecture are significantly lower than it is referred. Its implementation must ensure tugged integration between MEAs and other used strategies. It is also recommended that teachers must use shorter MEAs in higher numbers and should have the proper knowledge or focused MEAs for using for students.

Ryan, Devon & Dunne(2013)

This study deals with the reversal of traditional lecture and homework in terms of the time and place with the help of the model of the flipped classroom.This emphasis is put on watching video lectures through online mode. Thus, traditional homework gets replaced, freeing up the classroom.Now, more classroom time can be devoted to interactions among peer-group. Though this research offered popularity as the students get engaged through group discussion,quiz method, and problem-solving tasks assigned to them. The effectiveness of this format was found uncertain. It has been A quasi-experimental study. For over five weeks, two groups of students studying physics were taken up. Each group was exposed to traditional teaching as well as flipped teaching. Their knowledge in physics was analyzed

through independent samples. On these samples,a t-test was applied on unit exams conducted by the teacher and the baseline test of Mechanics.This study proved that not much noticeable difference was found between both methods of teaching.The statistical analysis confirmed these results.So, this research offers a further scope of more exploration.

Toste & Jessica, (2008)

In this doctoral work, the teacher-student relationship was studied concerningthe performance of the students in the school environment.A group of students has 28 male students and 25 female students were taken up from an elementary school. The assessment of the academic performance of students was judged by using the Classroom Working Alliance Inventory (CWAI) to support the results. It was evident from the results that there was a close association between three key factors, i.e. task, bond,and a goal. Another analysis involved a group of 50 students at the stage of elementary level involving 33 male students and 17 female students. This study examined 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.

Albert, (2006)

This poses another interesting study to explore a form of knowledge through computer-based concept mapping. Concept mapping is a unique method to assessthe knowledge of the learners from the use of paper, pencil, and computer as tools, These resources served the purpose of computing every type of information recorded as a knowledge database.The new forms of digital tools helped in concept mapping to a larger extent. They also provided domains to share any type of knowledge by providing facilities. The study strongly recommended that inset maps should be used for elucidation of knowledge.

Coronal &Gasco-Hernamdez, (2005)

This research reflects upon improvement shown by virtual teams by using creativity. If a team utilizes its creative potential, its efficiency can increase multifold. It employs the techniques to show which factors play a keen role to make a team creative. It essentially involved three components as a central part of the research. The study aims to explore the reasons why a team in a traditional setup and a virtual environment performs differently. These differences were analyzed at length. First of all, creativity is defined.Its direct relationship with the team's performance was explored. All the parameters for the enhancement of creativity were judged. The study also strongly recommended effective techniques to boost creativity even for the virtual environment. So, these techniques were further subdivided into the various domains involving thought-provoking brainstorming, object simulation, wishful thinking, brainwriting, metaphors, and rich pictures.

Fortino, (2003)

This study is an overview of collaborative learning on demand.It offers a new perspective in the field of teaching and learning with an aid of supporting technology. In this technique, a learner studies at his or her own pace. He collaborates through interactive sessions. A feeling of cooperation runs among the members of a peergroup.The students form a group and promote experiential learning at their own pace as requested by a particular member of the group. The study suggested that CLOD is a unique program. If it is used appropriately, it can pay rich dividends in terms of learner motivated will of learning at a greater level.

Kanen & Rissanen, (2003)

This study offers important insights regarding curriculum development for promoting web-based education. It was strongly felt that the involvement of the student's interests is the priority while incorporating new technology and pedagogical strategies. It is commonly found the new emerging trends and course contents undergo a comprehensive change. In the later part of this research, an educational gap was observed. It becomes very important to involve ethical and quality issues that should be resolved in a web-based education system.

2.3. Researches Conducted In India Specifically On Flipped Classroom

Mohanty & Parida, (2016)

This research undertakes a study of making the comparison to see what effect can be caused by the flipped model of education. A pilot study on this topic involved 90 students at the primary level from a school in Odisha. These students

belonged to class VII. Their proficiency in the subjects of History and Science was measured by applying a t-test. The results showed that there was no noticeable difference displayed by the students at the initial stage. It was found to be $p<0.01$. The values of the t-test varied between 0.019 and 1.931. This test was repeated after a month. The post-test scores exhibited a significant difference this time i.e.p,0.01 levels.This t-test confirmed the difference between the two groups of students. The mean scores of both groups displayed positive development in grasping the subject knowledge of History and Science. The students of the flipped learning group showed an upper edge over the traditional mode of instruction, So the study strongly emphasized the use of a flipping model of learning to get positive outcomes from a larger number of groups.

2.4. Researches Conducted In Abroad On Flipped Classroom

Ölmefors, (2016)

Often, a flippedclassroom is meant for viewing videos of lectures related to subjects. In response to this common notion, while interpreting the real meaning of flipped classrooms, the actual scenario is exactly the opposite in terms of practical outcomes.Sothe study is very much related to removing fallacies about this innovative model of learning.The study involved a group was chosen to examine their attitude in a Swedish Upper Secondary School.The observations were based on their learning of Mathematicsin a flipped environment. In simple words, the flipped classroom is concerned with giving home-assignment before teaching the lesson.In a traditional environment, the teacher would teach the lesson, and then homework is assigned, A sea-change was observed between both the learning methods in terms of

their academic performance. So a change in the attitude of learners was brought through this method of teaching. They have appraised the subject matter in advance and the students immediately get an idea about how a particular topic is going to be taught. A group of eight students was selected as a focus group. They were further divided into a group of four students. A session of interviews was conducted within these two groups. Observation of direct participation was also performed along with the focus group interviews. During the last two weeks, written tasks were collected from the eight students and compared with tasks for a period of the non-flipped classroom. Besides seven lessons from flipped classrooms and non-flipped were recorded for later analysis. Further, it was also concluded that flipped classroom pedagogy didnot ensure an improved development in their educational standards and academic achievement.

Broderick, (2016)

The flipped classroom is set in an environment that gives experimental learning to the participants. This study offers the issues related to the adaptation of new instructional strategies. It deals with the problems that they come across and how they overcome them. A multiphase mixed-method design was used to observe perceptions of faculty to adapt and equal themselves to the desired conditions. During the first phase, data were collected by using the survey method. 118 faculty members were chosen from a private institution. In the second phase, 13 focused groups were involved. Six depth interviews were carried out according to the survey method as they consented to be part of this phase. In the third phase, 4 persons from the staff with advanced skills were involved through elite interviews conducted on the campus. The fourth phase included participants in reflective questionnaires. The

flipped teaching methods did not put much impact on the participants. The key factors that were taken into account included age, gender, and rank. Even the teaching experience and the inclination did not matter. Most of the faculty members used advanced educational tools for their progress of job-related upliftment. They readily adapted to this technology to satisfy their innovative tendencies. Those faculty members struck a balance between their personal and professional needs outside than others. The study strongly suggested that this readiness and adaptability could greatly contribute to the fields of higher education. The institutional enrichment lies in building a strong relationship between faculty and the use of flipped classrooms as part of best practice. The analysis of data reinforced early adoption, comfort zones, time consumed, tools employed, essential training, and recognition of such faculty members for successful implementation of a flipping model of teaching.

Alebrahim, (2016)

The flipped classroom can lead to the professional development of the faculty member. Through this qualitative study,the researcher examined the degree of student involvement in the field of Higher Education through an evaluative process. The faculty members who desired to practice the flipping model of teaching in their classrooms. A case-study method was used for analyzing data collected through online mode. The data wereanalyzed using deductive analysis and five components. The faculty members from three fields were chosen. 14 students formed the target group, chosen from the fields of the faculty members only. The findings of this study reported successful implementation of a flipped model of teaching. It emphasized the fact that full or practical implementation of flipped

learning led to the position outcomes in terms of students' involvement. The study suggested that it is imperative to enhance student engagement for exploring online platforms to enrich classroom knowledge

Piotrowski, (2016)

English language teachers need to engage their students with the help of technology. In this study, English teachers are motivated to become updated and used flipped learning in the 21st century. For this, a case study methodology was employed to analyze pre-service teachers' skill of using flipped classroom instructions and learn to design lessons in this direction. There was a great need felt to incorporate this training of developing skills in the course of teachers education curriculum. It was also analyzed for this study that quality content can be created by embedding the technological aspects. In this manner, the target group under study was trained for developing their need-based pedagogy and attended an English education course during summer in the year 2015. A group of nine researchers was chosen with different intellectual levels. The course outline included interviewtechnique, submission of course assignments, analysis, and submission of three written assignments giving self-reflections. The participants developed a thought process among themselves to re-orient the subject-knowledge, teaching style, and teaching tools. All these three elements helped in creating recorded video lectures and a well-planned lesson. It was interpreted from the data that a significant pattern was absent in the TPACK model. The teachers, chosen as subjects discovered potential within themselves for use in Secondary English Classes. It was also found that the participant teachers turn out to be keen learners. They were eager to use technology in their classrooms. At that same time, they wanted to give their

students, the first-hand experience of the traditional classroom also using the print resources.

Holik, (2016)

This study aimed to research upon the comparative study of the flipped model of teaching and learning as compared to a traditional setting. It is based upon the action-research method. It was aimed at collecting information about the type of course running in a technical institution. This kind of research becomes relevant as no such study was available in the comparative form including teaching methodologies as a key factor. Such instruments were gathered to gather information out of culinary flipped classroom format. The perceptions of teachers and learners were analyzed in relation to interpreting levels of learning. The levels of involvement of the students were recorded. An investigation of final grade scores did not show any noticeable difference between the two modes of teaching. It specified and was limited to technical programs only. It didn't prove to be significant for other types of teaching models. The study suggested more specific research in other educational programs having different requirements with more focused results. It also recommended the use of more traditional research.

Strohmyer, (2016)

This research is about assessing the students studying Maths in a flipped learning setting. The students express their experiences after attending video lectures as an important part of their learning Mathematics. It records the experiences related to, content, teaching, grasping response, and answers to their doubts. A conceptual framework was used to combine various theories. The students were chosen from

two Midwest Public High Schools. The data were collected and analyzed using Vivo coding of focus groups comprising of seven students. Their interviews were transcribed. The results showed increased engagement of students in a flipped classroom learning environment.They developed critical thinking and in-depth knowledge of Mathematics. Their motivation level was also increased. The uniqueness of the research contributes to making students self-reliant through a positive mindset. It can bring social change in making the students efficient in using social technology as an effective tool for better understanding of a technical subject such as Mathematics.

Quint & Lee, (2015)

The research can best demonstrate the importance of flipped classroom teaching as an upcoming practicein the advanced environment of technology. The need was felt to examine the factors that can boost learning of Mathematics in the University setup using advanced technology. It becomes imperative to give pre-class instructional material to meet the learning requirements and promote active learning during classroom time. It was found that researches related to the efficiency of the flipped classroom teaching were absent. Of these few studies available on this topic, the control groups were not used to see how effective implementation of flipping learning takes place. A comparative analytical study was aimed at measuring the gap between traditional and flipped modes of the teaching-learning process. The two semesters of University Mathematics were observed and results showed an increasing trend of popularity and adoption of flipped learning. In comparison to the traditional method, the flipped classroom was found to be implemented successfully. It was also observed that students perform better academically. So, this study

recommends the educators cultivate instructional design to suit the flipped learning environment.

Crawford & Raymond, (2015)

This research aims at studying a combination of flipped and blended modes of teaching by thefaculty of Health Sciences for their professional development to increase the use of technology. It examines the effect of a faculty development curriculum that prepares health-related faculty members forimplementing flipped and blended learning courses.To achieve this aim, a FAB (Flipped and Blended) Tech workshop was designed to enhance the use of flipped and blended learning tools to improvelearning in the classroom.The participants were tested based on a pre-or post-test.Their ability to use technology andmethods of knowledge transfer related to course content was recorded.In addition to this, a selected group of faculty members were assessed based on their level of engagementin the workshop.A considerable change was observed in theirscores of the pre-and post-test.The curriculum so designed was effective enough in increasing the number of faculty members making use of technical resources more to incorporate them in their classes.However, the heavy workload of faculty and the lack of institutional support created obstacles in their way to achieve success.The results of this study suggested solutions for overcoming some of these obstacles and developing more feasible faculty development initiatives for health science faculty to use flipped and blended learningfor better teaching.

Mallory, (2014)

In this study, thepractical aspect of the flipped classroom is investigated based on recent advancements in this latest form of pedagogy. This method employs digital technologies to change direct instruction away from the classroom, enriching classroom time with the maximum presence of individuals, face-to-face communications, and student collaboration. This methodology allows them to connect more intensely in understanding the course material. The research shows positive outputs from the flipped classroom model, boosting students' accessibility to the much-required technology. They are motivated to finish their homework in a modern way.Thisstimulates the teachers to perfectly implement this pedagogy. The objective of this research was to prove the successful implementation of the flipped classroom in the Columbus area.The students of high school were particularly examined based on their knowledge in Mathematics courses. Their knowledge is tested Orientation Learning Environment Scale Science (MOLES-S) is a scale that tests interventions that have increased students' Meta-cognition in science classes.The aim of this study is to investigate the Meta-cognitive orientation of 1,376 Grades 10-12 students' classrooms in Northeast Thailand, as well as their impressions of those environments.The Metacognitive Orientation Learning Environment Scale Science (MOLES-S) analysis of the data revealed that classroom learning environments were not sufficiently oriented to developing and enhancing-Participants from different schools, grades, genders, and ages did not significantly differ in their metacognitive orientation of the classrooms, and there was no interaction between school, grade, gender, and age.

Hassan, El-Aziz & El-Sabagh, (2011)

The study deals with the effect of a virtual lap to enhance students' understanding of skills of science. It examines the reasons for ignorance of technology-enabled usage in this area of school education. Therefore, this study aimed to focus on the effectiveness of a web-based virtual environment, in comparison with a traditional environment. A group of students from fourth grade was chosen for this study. An instructional model was designed by developing a web-based Virtual lab with animations to make it interactive. The experiments related to natural sciences were prepared to enhance the learning of this age group. 70 students were selected from the schools of Mansoura, a city of Dakahliya Governorate, Egypt. The experimental design was used for the experimental group whereas the control group was observed traditionally. In this way performance of both, the participants wereanalyzed. At the beginning stage of the pre-test, students developed the conceptual learning of the science subject at the same rate. The research relied upon the results for further confirmation of the findings of the post-test results. The post-test analysis involved five factors: i) Conceptual understanding of the students increased,ii) they showed better performance concerning experiment-based skill development of natural science,iii) Boys and girls performed equally on the scale of competence,iv) the post-test scores showed the effect of size was different for different types of skills required to learn a specific topic of natural science. The conclusion of the study showed that the students at the level of four showed a clear understanding of the topics learned with the aid of a web-based virtual classroom. There was no doubt that their learning outcomes were very encouraging. The focus on the learning abilities has not been reached previously.

Therefore, this research is empirically supported providing the relevance of this study for further reinforcement to include web-based virtual learning in the curriculum.

Strayer, (2007)

In this study, a comparative study was carried out to see the effects of the flipped model of teaching and traditional classroom teaching. For this, the learning activities wereanalyzed in two classrooms of statistics studied by college students. For this, the learning activities were analyzed in two classrooms where statistics was taught. An intelligent system for tutoring method was researched upon. The content of the lectures was delivered outside the classroom environment. Now, the students had enough time to complete their projects within the presence of teachers. The students utilized a spreadsheet, so they used a computer program for learningthe concepts of a particular course. The use of Poer Point Presentations was a key factor of this course. The students practiced the concepts learned by them outside the classroom environment. The study of the learning environment and the learning of activity showed interesting outputs. The college provided the students with an inventory to measure the learning experiences. The t-test and MANOVA were used to analyze quantitative data. The use of the grounded theory technique helped in realizing the qualitative data. The findings showed a lower level of satisfaction while learning in a flipped classroom environment. An uncomfortable feeling was expressed by them in comparison to the traditional setup where they felt more at ease. So, this study offered insights to further explore the learning environments enriched with student-friendly activities for better outcomes.

2.5. Researches on Metacognition

Sun, (2015)

In this research, the author investigated the Winne and Hadwin'stheory of self-regulated learning. It was analyzed by depicting the learner's progress in a flipping classroom with keeping numerous aims in view: (a)To develop a model based on self-regulation by the contribution of three large constructs of self-regulatory. Secondly, it found a correlation among these three constructs. It also observed that the academic achievement of the learners, both pre-class internet usage and in-class learning, contributed to the collaborative environment of the Maths flipped class.(b) In the 2015, spring session, Enlarge Midwest Public University enrolled undergraduate students in the calculus 1 and 2 flipped courses. The data of this study was taken from an online survey of that session through structural equation modeling. This study figured out the connection between self-regulated constructs and achievement at the time of flipping the Maths class. Through this analysis, it was found that all domains, especially self-efficacy in mathematics, affected the results of Mathematics. Besides, the study revealed that previous knowledge of Mathematics brought out an indirect positive impact on the results of Mathematics through the mediating effect of flipping the class. Further, it is also revealed by the study that the search for seeking help is positively connected to success in Mathematics. The findings of this study gave a view that the students who excel in flipped made of Maths class were those who were highly confident while learning Maths. They found themselves even more skilled through getting help from other peers. They learn through the barriers while learning any content. The study also reveals that they were well prepared to learn in a collaborative class.

Donald, (2014)

This study dealt with one of the ideas for developing student education through the flip classroom. It is considered a model of self-learning. Bergman and Sam used this pedagogy of flipping the class in 2007. The flipped classroom used recorded video lectures were sent to the students to be seen as homework. Further, the homework for the students was dealt with in the classroom through various activities. The main motive of this research was to know the effect of flipping classroom effect on the self-efficacy of the students. Here, the dissimilarities of gender self-efficacy were also analyzed. The participants were 22 high school students who were enrolled in a private school in the upper Midwest.

The sample of 21, 12^{th}-grade students and one 11th grade, enrolled student, was considered for this study. Students were trained to take part in two modes of teaching, one conventional, another flipped. A survey method was used to access the self-efficacy of the students. The findings revealed that the self-efficacy score was at an average level with the flipping class. On the other hand, the conventional class reduces the average score of the learners.

Dealing with the gender analysis in flipped classrooms, a decrease in self-efficacy was observed among males. On the other hand, women found leading towards the growth.

Maclellan, (2012)

In this study, pedagogical knowledge was assessed through the teacher's ability. The main idea of transformation in this study was best understood by the teachers and academicians in psychological terms. It was expected from the teachers to change. It

was expected from the teachers to change so that he can shape the disciplinary knowledge which can be further accessed by the students. It is further asserted that for transformation, teachers must have an understanding ofthe cognitive and metacognitivelevels of the learners. Thus the study was specially conducted to consider the social and academic supervision. the separation of the content and development of professional teachers of the United Kingdom. In the coming years, psychological knowledge has been contributed to the education of teachers through some aspects like classroom management, easy assessment of learning, building confidence in psychological construct can be build up. These psychological constructs are very essential for the teachers to remove the vulnerability of their professional life. This professional life includes many challenges and learning at every point of their experience. Now, society urges engagement of higher-level cognitive factors while teaching and learning. This Metacognitive and cognitive requirement can be best satisfied by the teachers if teachers are best endowed.

Chantharanuwong, Thatthong, Yuenyongc & Thomas, (2012)

In this study, it is exhibited the degree to which a learning environment facilitates the creation and maintenance of meta-cognitive skills is its meta-cognitive emphasis.The Meta-cognitive Orientation Learning Environment Scale Science (MOLES-S) is a scale that tests interventions that have increased students' Meta-cognition in science classes.The aim of this study is to investigate the Meta-cognitive orientation of 1,376 Grades 10-12 students' classrooms in Northeast Thailand, as well as their impressions of those environments.The Metacognitive Orientation Learning Environment Scale Science (MOLES-S) analysis of the data revealed that classroom learning environments were not sufficiently oriented to

developing and enhancing-Participants from different schools, grades, genders, and ages did not significantly differ in their metacognitive orientation of the classrooms, and there was no interaction between school, grade, gender, and age.

Foster, B.S. & M.S, (2009)

This study describes the connection of the students concerning cognition within the class sessions. The main motive of the research was, to investigate how classroom instructional strategies are useful in increasing the level of cognition. Principle of teaching and learning and classroom environment is related to one another. The undergraduate classroom of the college of Food Agriculture and Environmental science of Ohio state university was the area where the study was conducted. Here, the investigation attempted to analyzePiagian's concept of the development of cognition. To find out this, 21 video lectures were used in twelve instructional-based classes. The researcher also has investigated the effectiveness of lectures, frequent questions asked by teachers and students, and the objective of the course. It also assists the instructional technique and the environment of the class. Three instruments were used to determine the frequency of teaching and learning principles, cognitive stage of Piagetian theory. 11 independent variables were evaluated. The correlation between independent variables and the learning of students was also assessed. Further analysis of data showed that the principles of teaching and learning are being minimally utilized in the studied classroom of colleges. Bacon's, pencil-paper test measured the stage of Piagetian cognitive development of enrolled students of post-secondary students. The technique of partial correlations was opted to analyze the liner effect of the other independent variable which were partially out from both independent and dependent variables.

The findings indicated that lectures taught at higher cognition levels, learners ask queries within classroom sessions showed their higher side of cognition. When an instructor writes the objectives of his course he considers Bloom's cognitive level which helped him to prompt his student within the classroom.

In the classroom, the student's cognition most often manifested at the beginning where they were participating in the class content and ask the questions.

Xu & Hu, (2006)

In this study, the researchers try to explore classroom learning of science using distributed cognition. The study mainly focused on the public interactions that involve participants and instruments of that environment. In the experimental design of this study main focus was laid upon the 2 videotape science lectures, which were on the theme of gravity. To explain the theme of gravity designed parachutes and pendulums were used. After the content delivery, a video was shown to them. This video has generated an environment of conversations between the teachers and the taught. This helped the students to understand the practice involved in those lessons. After analyzing these two lessons, it brings out to the notice that the language material of the objects and the teachers' response has equal importance for students while constructing their knowledge regarding the subject. It depicts that language plays an important role to achieve mutual understanding. Even the nonverbal gestures, form an association between the concepts and real words. Teaching helps the learners to understand the subject better through instruments used. The analysis of the study exhibited that students learn best from activities, artifacts, the real objects which were used than the manipulations of the artificial ones. This study

observed the students' process of learning by looking over their interactions in the class for teachers, researchers. The finding revealed that along with these techniques of instructions, students can best attain a sound understanding of the science subject. Artifacts could also contribute to improving the environment for learning.

Louca, (2003)

This is a study in which metacognition is defined as thinking about thinking. It observes both aspects of the learners, including responsiveness and monitoring. It also includes the development of cognition with feelings and stimuli. Various belief systems have explained about teachers that they can embrace students' metacognitive growth and can be proved helpful in promoting their monitoring through cognitive-based initiative instructions. The advantage of metacognitive schema which enrolls self-awareness and self-monitoring can prove helpful to grow the learner independently. Being a learner, he can figure out how to learn forever.

Thomas, (2003)

In this investigation, the metacognitive orientation focused upon that environment of learning, which can contribute towards its development. For this metacognitive orientation, learning environment the scale of science has been used to find out that how the interventions have impacted the learners. This scale's contribution was important, to know the level of metacognition of the student. It was highly evident to explore the metacognitive orientation in the science classroom. A sample of 1376 students of grade 10-12 of North-East Thailand was selected. The selected samples were also contributed to tell about their perceptions towards such an environment. The analysis of this selected data reflected that the environment of classroom

learning hadn’t developed and enhanced the learner's metacognition. It was also found that grade, gender, and age significantly do not have different metacognitive orientations in the learning classroom. Further, no interactions of the grade, gender, and age variables were found in the school.

2.6. Researches Conducted On Classroom Environment

Reinig & Anthony, (2019)

This is empirical research thatfavored the group supportive and cooperative nature classroom environment. It uses the cooperative technique for productivity in the classroom. The use of co-operative learning hypotheses that a learner has previous knowledge which can be utilized during the adoption of cooperative learning in the classroom.

This way of learning is that platform, for the learner where he can expand, clarify and recreate his knowledge. Through this participation, his learning becomes more concrete and critical. Initially, a group support system in the classroom was initiated to contribute to the learners, teachers, and students to understand the system’s requirements where cooperative learning was urgently needed by the group support system (GSS). It has a unique characteristic to remove the barriers. These barriers are the fragmentation of time, production blocking, apprehensive ability, evolution’s dominance. The relationship between diffusion of responsibilities, usage of e-learning, and the impact of group support systems are some of the domains affected issues that are examined in the study.

In this work following research questions were framed. They were compared between the two sections of MIS scores. These were held in consecutive semesters,

where the longitude of the experiment was conducted. Lectures and classroom activities were conducted in two identical sections. But another class got the group support systems approach. The 8 groups from course dominance were cut by 50%, production efficiency, blocking of productions were reduced. The class became charged up in the first task then it calmed down. Learners' experiences of group support system class reported more positive outcomes and positive feelings among the students indeed. The students' group support system during their group task performed better in retaining the concepts.

Pare, (2017)

This study aimed to explore the prospects of teachers towards their pupils who were homogeneously grouped. This study tried to explore further the teachers who think whether students can be benefited sufficiently from a homogenous environment. This exploration reflects upon the meaning of homogenous grouping. Its meaning found in this research was the assembling of the student of similar abilities, whereas the heterogeneous group included a mixture of different abilities of the students. The supporters of both confirmed the advantages of both strategies. However, each has its limits. The supporters of homogenous grouping found that it creates an environment where teachers can teach their learners as like-minded students in a better way. Considerable success was found in it. Those who promoted heterogeneous clustering suggested that a mixed environment of students prompts the learner to perform to the best of their abilities. Further, these studies also showed that if homogenous growth can be broken into the smaller heterogeneous group it can favor the most.

Heather, (2016)

This research explored the correlation between the diverted mindset and skill of thinking. These research questions were aimed at finding where there is a connection between diversion thinking and the growth of creative mindsets. It was further explored that an impactful environment can put the creativity among the learners. Here second and VIth-grade students with a total of 184, from urban school districts were interviewed. The data were collected through the survey method. In this survey, the assessment was done about the diversion thinking, and the student and teachers' notes were observed directly. The findings from this research were mostly that the students came out with creative mindsets but without demonstrating creativity. Besides, the results of the survey revealed that the environment can help the students to identify the appropriate strategy and specific features of highly productive individuals.

Maclean, (2016)

This study is about the usage of technology within community college ESL classes. Here the researcher focused on three basic uses: How much technology has been used (b) In what manner it has been used. (c) What are the challenges faced during its usage? A modified electronic survey was adopted while conducting this survey. This survey was done in two series, firstly, by building the conscience of study areas, secondly, the experts contributed to conducting this survey. The technology being used in that community college included computers, essential tools, and e-technology. Here the technology was used in two forms. First, in the traditional model, second collaborative mode. Here, this had been used to contribute tothe

building learning environment. The challenges have been faced while adopting the technology. It was lack of training, funding, adjustment of timing, students' language problem, and lack of technical mindset. The results from this study suggested that community college ESL classrooms should use e-books to motivate the student, so that they may prove helpful to remove the barriers and go beyond the way of traditional mode for using it.

Shawn, (2016)

This purposeful study tried to explore how teacher needs a new change in the educational pattern after using 10 years of their face to face teaching. This study focused on how the adoption of laptops has supported teaching and learning at middle school. A qualitative method was used for taking interviews of educators and administrators. The TPAC framework was adopted to understand the change adopted by the participant. The finding indicated that the teachers have changed their teaching and learning patterns. This change has shown a growing up-gradation in the area of technology and pedagogy. It also asserted that the teaching and learning process has become more transparent to all the stakeholders. These changes occurred due to some factors like common software suite usage, strong social connectivity through social networks, leadership modeling, and development of professional skills.

Lindsey (2015).

The finding of this research suggested that the intervention used in a college followed a technologically enhanced approach. Here the teachers adopted the patterns of instruction which was outside the area of their expertise. But this

instructional pattern was admired by the students in the classroom. Here the discussions revolved around explaining the effectiveness of DC instructions upon students' capacities, further the usefulness of the TBP model was analyzed, and found that the efficacy and influence of the instruction on the learner seem helpful to promote the DC Model.

Dempsey (2015)

This research paper showed when the teacher engages the students, their apprenticeship increases. This paper examined the attitudes of the faculty of the Midwest towards the engagement of students in the class. The interview technique was adopted to support the qualitative method. This interview was conducted basically, to know the vision of teachers about adopting a classroom, engaging techniques. Certain questions were asked to collect the view of professors. Those questions were included to know what a teacher understood about the students' engagement technique, how much the teacher understood about his pupils when he experienced this technique and how this technique is used in the traditional classrooms. The directions through gestures demonstrative ways were used to develop the perspectives of the teachers regarding these classroom techniques.The Contribution of these techniques has given a new methodology to the teacher for making his learner's learning through a better instructional strategy.

Yemothy (2015)

This research is about, adopting the technology and skill of the 21st century by the educationists, teachers, and the entire world. In this study, the researcher investigated what challenges are being faced by the academician while using

innovative techniques. It also explored whether the teachers got the requisite training for using these skills. This is also investigated in the study that what supportive measures are needed by the educator.The teachers observed in this study belonged to the Inter-School of Central America. This school has the provision of pre-k & 3to 12. The theories dealt with in this study are social learning of Bandura's Piaget and Dewey's constructive theory and Papert's technology constructivism. Here the research questions were framed keeping in mind the assessment of the teacher's competencies and needs. A non-experimental cross-sectional design of the quantitative method was used. It was conducted specifically to investigate the integrating practices in education. Three instruments were composed of 62 regular teachers of university schools. The measure of descriptive statistics was adopted by the researcher to identify the technological integration level, factors of training, the needs of target teachers. Correlational techniques were used to analyze the relationship between the integration level of technology and the self-assumed challenges. The technological challenges were overcome by self-assumed confidence in using technology and on-site professional skills by participating in it. Based upon the findings of the survey a three version integration of the technology improvement plan was designed. Through the finding of the study social change can be brought out in the school chosen for the improvement of the integration of technology practices.

Peggy (2014)

This research is pursued by considering the guidance of Prensky's transformation and Simen's connectivity theories. In this study, the researcher has identified the need for technology immersion in the school. The design of this research was

qualitative and exploratory. In this study, the comparison has been made upon the learning registers of archival teachers. As the sample of the study, 15 teachers were adopted from 5 high schools. Two questionnaires were used to collect data from them. For reliable inference percentage techniques were adopted for collecting data from Likert's scale. Findings revealed that through the integration of technology professional growth of teachers increase moderately but the full integration of technology brought out the best results for the students. The main aim of this study is to motivate the stakeholders to become well versed in technological skills so that 21st-century student's needs can be met in the best manner. The ultimate mission of this study was to empower students to get familiar with the skills of the 21st century so that they can comfortably deal with personal, global, and local concerns.

Casey & Katherine,(2013)

In this study, the first-year program for college students is addressed. These learners through orientation were the first time offered the desired skills for academic excellence. It is observed in this study that first, students' effectiveness can be increased during the first-year program through mentor collaboration. Here awareness of the resources of the campus and peer mentorship effectiveness was measured. This study had adopted a Quasi-experimental design with a sample of 91 first-year students from 9 sections of FYP courses. Among that data of classes, 70 students had peer mentors. The other classes which were kept in a control made with 21 students didn't have any peer mentor for collection of the data. A questionnaire of 30 items was used. This questionnaire assessed how many resources of the campus were used in the first two weeks and last two weeks of the 2009 session. ANOVA technique was used to analyze the results of the study. They finished their

semester with the same knowledge. The findings also revealed that the assumptions about with the support of peer mentors, students of the first-year program learned more than the students without the support of peer mentors. In this study, the GPA score was observed. It was found that there was no difference among the groups of 1st semester.

Terra, Younger & Dylinda,(2012)

This research article discussed the positive effects of the classroom environment upon the pupil's behavior and their success. This study has used certain strategies to meet the expectations of enriching the student's achievement. It is also observed that parents' involvement is equally important in students' achievement. The advantage of a positive classroom environment was considered essential to minimize the behavior problems of the learners. This environment can be created by the teachers in many ways. The strategies of creating such an environment are the main focus of this study. The teachers must start the academic year to meet the high expectations through building up a positive climate. The parents are told that their participation is equally important to know what is going on in the classroom. Their involvement in a child's education plays an important role to have a successful school year.

Gebre, (2012)

This study was conducted in a technology-rich environment where the researcher examined the professor's thoughts on how teaching can be effective with the students' engagement. To achieve this mission, interviews were conducted with 10 professors who were dealing with active learning in the classrooms of the University in Eastern Canada in the 2001 winter session. The question of the interview was

framed to know the concept of effective teaching for the course being taught in the classroom. Instructional strategies, the role of computers, and their software were the major concerns of this study. A survey method was used for collecting the data. Over 300 students were taken as samples. The result indicated three types of effective teaching, first transforming knowledge, second engagement of students, third developing independence of learning. The engagement of students primarily was about the involvement of the student in discussion, presentations, collaboration, and the head the exercises. The principal component analysis was applied to the student survey data. Through that four students' engagement components were identified. Cognitive, applied social and reflective engagement. Learners in the classroom by the teachers who believed teaching should develop learning independence and self-reliance reported the highest engagement. Students, in a classroom of a professor, believed teaching should transmit knowledge, report the lowest engagement. Their difference was found statistically significant. The scores of the students showed that the effective teaching in engaging the students was found satisfactory higher than the students' consideration about the teaching just of transmitting knowledge. The analysis revealed that there was found no significant difference among the three groups of students. This study provides insight into how context-specific teaching can prove effective. It also reflects how a technologically enriched learning environment can be evaluated and how the initiatives of the faculties can be improved.

Heather, (2010)

This is a qualitative study that explored the experiences of teachers and students' engagement with picture books in the immersion of classrooms. This study has

consulted social constructivist theories as well as reader-response theories. In this study, the researcher examines the multiple ways that teachers adopt for engaging the students in aesthetics readings. Besides that, he adopts collaboration techniques for co-construction of the meaning of the context. This master study was executed in the biological ways for two French immersion schools in Quebec. This study involved two pairs of teachers working with the same group of pupils in each school. A project, based on Canadian picture boos has been developed so that teachers can follow those books in English as well as in French. Through readings and classroom interactions a scaffolding approach was utilized for the students by the teachers and they equally encouraged their students to interpret the visual activity. Students reported that they were engaged in the co-constructed meanings from the picture books in various manners. The study found that picture books stimulate the students for conversation to give them a meaningful experience and prompt them to collaborate in all languages.

Waal, (2002)

The aim of the study "Teachers' understanding of their learners' behavior in the classroom" is to see if teachers understand the need/function of their students' behavior in the classroom.A qualitative study was carried out.A self-built questionnaire will be used in the report, as well as group interviews to explain some of the questionnaire responses.It was given to teachers from two Bonteheuwel primary schools.The data were analyzed using content and thematic analysis.The study's primary goal is to assess teachers' comprehension of their students' actions to inform teachers' intervention methods and behavioral management programs.

Lepholletse, (2001)

The purpose of this study was to identify factors which in the framed secondary, science learner's participation in communicative class. This study was administered among all the secondary schools. For this purpose, a questionnaire was developed to investigate the level of participation of the learners in science communicative class. For the teacher's views, the interview guide was prepared. The sample of 235 B class students from 12 schools was randomly selected. The analysis revealed that to meet OBE requirements, whatever instructional procedures used by the teachers didn't meet the expectations of OBE. The reason behind that was the teaching instruction required for the learner didn't enrich their knowledge and couldn't prove helpful to develop skills in science classrooms. Why the learners could not attribute in the communicative classes was for several reasons. Those reasons were: apprehension of communication, poor development of language, heredity, and culture, and adopting different teaching styles. The findings indicated in the study that teachers were tolerant and warm, appeared inflexible, and had a lack of dynamism in the presentation of the lesson which influenced student's participation in the class.

Beaudin,(1998)

This study presented the idea that the focus of technology in education is the need of the hour for the teachers. So that they can use computer technology for better teaching. This doctoral work examined a relationship between computer self-efficacy and classroom factors based upon the designed questionnaire of the computer self-efficacy scale. It is observed that integration of technology has

relation with computer Self-efficacy and classroom factors. The school selected as the sample of the study was from Southern Alberta. Its result showed that a weak correlation (r = 0.405) was found between CSE and classroom practice; on the other hand, a moderate to strong correlation (r = 0.62) between CSE and instructional practice was found. The analysis further revealed that the teachers who know CSE were not using computers for teaching. This exploration has provided an understanding that the professional development guidelines need to be rethought. Computer practice should be involved in the curriculum.

2.7. Researches Conducted On Academic Achievement

Elian, Amman & Hamaidi, (2018)

The study aimed to investigate the effect of the flipped classroom on the fourth-grade students' academic achievement, in the subject of science. The study was conducted in Jordan. The population of the study consisted of grade four students from the Directorate of Private Education from the Amman Region. The population of 2134 students was selected from the academic year of the second semester 2015-16. The sample of the study was made up of a group of 44 male, female students who were deliberately selected from the population for this study. This sample was further divided into groups of two: the first group of 22 students who were taught through the intervention of flipped classroom and another group also consisted of 22 students, whostudied through a regular mode of teaching. With the mission to achieve the objective of the research, a Performance test was compiled with its verified reliability and validity. The statistical technique adopted for collected data were ANCOVA, Mean and Standard Deviation. The findings of the 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.

Renata & Pavanelli, (2018)

This research was about the reliance upon the use of video technology for creating lectures for teaching through online mode. This study emphasized that the classroom should involve in-class activities and exercises to make the learning interesting. The mixed-method was used along with the Quasi-experimental method design for the study. The sample of the study involved 22 participants from two advanced EAP writing courses. They were chosen to conduct this study at Southern State College. The aim of the study was whether students' academic writing performance has been improved through the flipped model. The perception towards instruction integrated with flipped mode was also analyzed. The findings of this study revealed that there were found statistically significant differences in the academic learning of the students of the control and intervention groups. The results were based on qualitative techniques. These results also revealed that flipped mode of teaching was positively perceived by the students. It was considered as a good source of learning that can help the learners in improving the writing skills by interactive mode.

Sağlam & Arslan,(2018)

The study aimed to find out the flipping effect on the students' learning. A new structure of grammar. The perceptions of the learners were also considered towards their English Course. The study was conducted for six weeks at the Black Sea

region’s Foreign language school in the session of 2015-16. For these six weeks, the study was administered upon 56 students studying in 5 different preparatory classes of the same school. A design of a non-equivalent control group of Qasi Experimental method was adopted for the study. An achievement test and an attitude scale were used to gather the data. Flipping the classroom mode of teaching was considered in the group of the experiment while an ordinary mode of instruction was used for the control group. The conclusion was that the students had a medium effect upon their achievements in academics and upon their attitudes when they were compared to the ordinary mode of instruction

Cabı, (2018)

“The Impact of the Flipped Classroom Paradigm on Academic Performance in Students.”It serves two purposes.The effect of the Flipped Classroom (FC) Model on students' academic achievement was first investigated.Second, it revealed students' opinions on the model.The students in the experimental community were taught in a blended learning environment using the FC Model for four weeks.The research included 28 students enrolled in a Mathematics Teaching Program at a Turkish state university, and the findings showed that the FC learning environment, which integrated Khan Academy and mathematics software, doubled the students' academic performance as compared to the control group's conventional blended learning lessons.Before and after the Flipped Classroom sessions, all classes were screened.To compare the means of test scores for each category, a two-way ANOVA for Mixed Measurements was used to analyze the results. There were no statistically significant differences between the two groups' ratings, according to the findings.Coming to class to study and complete homework in class, rather than

trying to do homework at home, was one of the FC Model's positive aspects.The issues that arise in this model are divided into three categories: motivation, content, and learning.According to the results of the report, the evaluation of a Life Skills Module should provide students with a range of opportunities to demonstrate their learning for them to develop a well-rounded collection of abilities as they enter the workforce.This underscored the value of remembering the first and foremost aim of evaluation, which is to aid student learning.

Sirakaya & Özdemir, (2018)

This was an interesting study that examined the systematic effect upon achievement of students in academics, their readiness to learn through the self- direction. 66 students, who adopted the scientific research method in their course, were the participants of the study. These participants were chosen from two different classes from the Faculty of Education at Ahievran University in the session of 2014-15. Following the experimental design, two groups were framed, one was experimental and the other controlled. The flipped intervention was applied to the experimental group and the control group adopted a blended mode of learning. For the collection of data, three tools were used, including the Achievement test, A Self-directed readiness Scale, and A motivation scale. The statistical technique was used to analyze the collected data included t-test, MANOVA, and ANCOVA. The findings of the study revealed that a statistically significant difference was found between those two groups in the effect of Academic achievement, motivation, and retention. On the other hand, no significant difference was found between those two groups i.e. were experimental and control groups, with the effect of self-directed learning readiness.

Memler & Collette, (2017-18)

Flipped mode of learning has become a well-known method of teaching among many high school teachers. The use of the flipped model of teaching makes the students learn outside the class with opportunities related to the content whereas classroom timings are used on the next day adopting learner-centered activities. Although nowadays flipping the classroom concept is globally known but still, to find out its effects such researchers are very less in number. The main focus of this research was to investigate how the learners can learn Physics content better through the flipping model of instruction. The reduced gender gap by flipping the classroom was another motive of this study. Thirdly the students' views about their learning in a flipping environment were also examined.The two honors Physics classes of High school in rural Georgia were selected for the research. Four Physics units were taken for this research where through traditional mode two units were taught and the other two units used flipped pedagogy.It was impossible to assigned randomized groups so the design of the Quasi-experiment was adopted. Both the groups played at different times during the study. The results showed that there was no significant difference between the two modes of teaching on the unit tests conducted and no significant difference in gains between genders for these different modes. It was revealed from the finding that teaching through the traditional model was preferred by the student over the flipping environment of the class.

Saunders, (2014)

The aim of this study had two purposes as an immediate goal. The purpose included finding out if there was any significant difference in the students' achievement in

academics in two maths classes of High school, due to the use of the flipping concept for the classroom. The student's ability to think critically was also investigated, after flipping the classroom. By making the comparison of the groups ofunderstudy, equivalent pre-test, post-test control group design was used to test the hypothesis.The study revealed that the program of flipping did not play an important role in increasing students' academic performance or improving students' critical thinking skills.

Renatamayergukovas, (2013)

This is a dissertation work in which 107 schools' social networks were described intensively. The study was conducted in SAO PAULO' Public system, Here some features depicted that if common sense is to go in the same direction while others go against it. This study consisted of extra mathematical classes. While its implementation, the interested schools were randomized in this evaluation. Schools that participated in this program were found to have less systematic networks with few connectivity andnetworks. The most affected among them were those who could not express their interest in attending the classes. Those who attended fewer classes were found less connected and less centralized in the networks. The findings indicated that those students showed poor performance, were not felt motivated and suffered from segregation.

Walker, Brenner & Dunne,(2013)

This study was conducted to adopt flipped classroom model for bringing out a good academic score in the introductory college course of Physics. In this study Quasi-Experimental design was adopted for the study. For over five weeks, two sections of

an introductory Algebra-Based College Physics course were observed. Each part of that Physics course was taught either with the ordinary or flipped mode. The knowledge achieved in the course of Physics was compared by the independent sample of t-test applied on the unit test conducted by the instructor. The results revealed that there was no statistical difference between both forms of teaching.

Marlowe, (2012)

In this investigation, flipping the classroom effect was used to measure, how the students can get better achievement along with their levels of stress. For this study, 19 students were selected. among them, 14 were females and five males from the Environmental system and Society course. During the first session in September and during the second year in December students were taught by a method of Traditional Lecture. During the second semester, teachers adopted the flipped model of teaching. It is reported in this study that the stress level of the students lowers down through this environment of the classroom rather than the other classes. It also comes out that the students' improvement declined in terms of grades. although exam grades showed no significant Improvement. On the whole, a positive feeling was expressed by the students about this innovative technique. Even the benefits to choose the task by them for exploring the concepts had made the learning task more intense and interesting**.**

Agamy, (2012)

In this study, it was found that the use of specific wiki software has been replaced by new applications during these recent years. The benefits gained by institutions by adopting these methodologies can’t be forgotten. This new study signifies the

importance of web-based learning and its interactions. The findings of this study showed the results were consistent. This type of teacher-student interaction through online mode was quite a new one. And it does have significance in supporting one-to-one learning by adopting this. The teacher faced challenges that required increased concern attention of the higher. Knowledge-based society policies have been promoted lifelong learning in which teachers are encouraged to enhance their competence. Here the learners are equally encouraged to learn from the teachers. The findings supported that learner-centered interactions must be encouraged so that every student shows their best performance according to the skills acquired by this type of new learning.

2.8. 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 KenderiyaVidayalas 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 thatgrade, 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 positives outcomes and positives feelings among the students indeedconcerning 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 rethinkingprofessional 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 hisfindings 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 reviewedabove, 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.

CHAPTER- III

RESEARCH METHODOLOGY

After a review of the related literature in ChapterII, an appropriate research methodology has been chosen to present in this chapter. An important element that is required before data collection is the formulation of a plan for sample selection, choosing tools, and statistical techniques required to accomplish this study. Since "countable" evidence is the most essential aspect of any research, findings form the core of any study. Evidence describes how the method of judgment (measurement) is useful. The sound objectives, inferences, and conclusions arebased on the procedures to be employed. A researcher makes a design so that whatever task, he does should accomplish the goal, smoothly. In response to research vision, it requires the compilation of its inferences. Too many scores and varied data don't make sense for educational research unless quantitative inferences are not available. That is why, knowledge of the research design is quite essential as it gives you some sense of the overall procedures, as well as the kinds of relationships between variables that are investigated. It is well established that well-designed studies provide the basis for scientific knowledge of education and bring the greatest benefits for educational practice. Here, the design comprises the population from where the sample has been drawn, size of the sample, type of sample, tools used, statistical techniques used. The most important thing is the type of researchthat is based on the experiment design. It is highly known for its superiority in revealing specific cause-effect relationships.

3.1. Research Study Framework

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

3.2. Variables used :

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

3.3. 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 groupN=30**
Total N=60	**Male-14, Female-16**	**Male-14, Female-16**

3.4 Tools used :

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

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

ii. Classroom environment inventory constructed and validated by the researcher himself.

iii. Academic achievement test constructed by the researcher himself.

3.4.1. Procedure of Metacognition scale for teacher trainees construction

To assess the level of Metacognition of B.Ed. students (Teacher Trainees),this tool contains 5 dimensions. This scale was constructed and validated by the investigator himself. The procedure and steps of scale construction and validation are given below:

1) **Planning**- In the first step investigator took care and decided about the appropriate language, structure, and method of construction for the scale. Afterward, the right content in this concern was decided and then the tool was constructed on Meta-cognition Scale for teacher trainees with five dimensions(Awareness,Planning, monitoring, testing, evaluation, and refection) in the English language based on the Likert scale Method.Then It

was decided to include (4,7,7,7,6,7) items in each of its dimensions. Five points (5=Always, 4=Very Often, 3=Often, 2= Sometimes, 1 =Never) were decided to a lot to the Likert responses on the scale.

2) **Item writing**- Items were written based on the review of the literature and the characteristics associated with different types of Metacognition levels. Some arealso derived from the pioneer research work of Dr.PunitaGovil (Meta Cognition Inventory (2008)

   Theoretical Framework was taken out from Winne and Hadwin's self-regulated learning theory (2015), Psychological dimensions of transformation in teacher learning (2015). Zohar,A; David A (2008), Met cognition orientation inventory (2016) Shaw and Anderson's Met- cognition Awareness Inventory (1999)

3) **Content Validity of the Constructed items**:The first draft of the Meta-cognition scale contained 89 items and was given to eight experts to know the usability, clarity, and content validity of the items, and to get their consent to say that items are clear and appropriate enough to measure for which it is written. They were also required to give their suggestions to make corrections in the written items.

   Based on expert opinion, corrections were done, 41 items were deleted. According to expert 48 items of the scale fond fit to measure the different levels of Meta-cognition of B.Ed. students.

   In this way, the first draft of the Meta-Cognition Scale for Teacher Trainees was prepared for pre-tryout.

4) **Pre-try out and Pilot study of the first draft of Meta-cognition Scale for Teacher Trainees:** For doing the pilot study 150 B.Ed. Students of the college of education in Haryana were selected Randomly. There were 75 (37 Males & 38 females) and 75 (37 Males & 38 females) were selected as a sample. When the pilot study of the scale was done, the data of responses given by randomly selected 150 B.Ed. students were collected. It was collected from the academic year of 2019-2020.

   - Then collected response sheet was prepared in MS-excel. There were 41 items in the first draft of the Meta-cognition scale.For the statements, there was the possibility to achieve a maximum 5 and minimum 1 score on the scale for each item by each respondent.

5) **Validity:** Then construct validity of the scale was checked through SPSS's factor analysis. It made 15 factors but they were then kept in the same direction as each question showed value 4 and the commonalities of these dimensions were 1.00 which showed it significant too. Only one item was removed, which was the first item of the awareness dimension.

6) **Reliability:** The final draft of the Meta-cognition Scale of Teacher Trainees containing 40 items was taken for the reliability of the scale,Cornback alpha was calculated with the help of SPSS. The value of Cronbach Alpha reliability came to 826. The reliability values showed Meta-cognition scale for teacher trainees is highly reliable.

3.4.2. Procedure of Classroom Environment Inventory construction

To assess, what kind of environment for B.Ed. the class should be there so that learning outcomes can achieve. For these Certain dimensions,Were considered to prepare, the Inventory and this inventory was constructed and validated by the researcher himself. The procedure and steps for the construction of the tool is given below ;

1) **Planning-** In the same manner as the first scale was planned, likewise,the researcher decided about the language, methods of construction, and structure of the scale. While planning for the construction of the inventory, the researcher adapted foreign author Edison J. Trickett Rudolf H. Mooc Classroom Environment Scale (2012) and made 9 dimensions comprised 90 times in a scale, each dimension with 10 items respectively. These dimensions were involvement, affiliation, teacher support, task orientation, competition, order and organization, rule clarity, teacher control, innovations. Mode of writing was kept English and used True, false inventory type for the representation of its mode of answering.
2) **Content validity** – First draft was contained 90 items and was given to the same eight experts to know the clarity and usability of the content. Based on their suggestion 90 items became reduced from 90 to 57, those 57 found fit to measure the classroom environment of B.Ed.
3) **A pilot study of the first draft of classroom inventory-** For doing the pilot study same 150 B.Ed students from the College of Education in Haryana were selected randomly. They were 75 (37 male, 38 female) and 75 (37 male and 38 female) when the pilot study was done, the data of the responses

given by the random selected B.Ed. students were entered in the Ms. Excel sheet and the coding of 1 to true and 2 to false was given. Data was collected from the students who were enrolled during the session2019-2020.

4) **Item Analysis -** Because it was like an achievement test that is why its item analysis was done. In this way, each respondent had the opportunity to achieve minimum (57 X 1)=57 and maximum (57 X 2) =114 on this inventory. Based on the responses of the respondent the total score was calculated. After the calculation of the total scores for each respondent, inventory sheets were arranged in ascending order.

- In the second step 27 % highest scoring and 27 %, lowest-scoring of the inventory were drawn from total responded sheets and classified as high achiever group and low achiever group respectively.

- The mean and SD value for each item of inventory was calculated for both high achiever and low achiever groups. The calculation of the significance of the difference between both groups' means score was done to know the discrimination power of Each item. For it ‘t’ value was calculated. The examination of the significance of difference was calculated at 0.01 level. Two criteria were determined to accept the items for the final draft of classroom environment inventory. The first criteria were that only those items would be selected in the final draft of the scale which has a significant level. If there is more than one item for the characteristics then an item that has a greater value of discrimination power would be selected for the final draft.

- **Selection of item**: After item analysis same 57 constructed items were found adequate.

5) **Reliability of the Inventory**:CronbackAlpha was calculated with the help of SPSS and its value came to .717. This Reliability value showed that **Classroom Environment Inventory** was reliable to measure B.Ed. Classroom Environment through its various dimensions.

3.4.3. Administration of the tools used

This Metacognition scale for Teacher Trainees and Classroom Environment Inventory and Achievement Test was administered on individual students. These were completed under certain instructions. First respondents were asked to fill the personal data printed on the front page. The researcher read the instructions loudly and clearly. Respondent followed her carefully. The administrator explained the mode of responding to the test items of Scale, Inventory,And Achievement Test. When the researcher became sure that the students have understood the mode of recording their responses, he permitted them to turn over the front page of their details and start filling in their responses.

3.4.4. Scoring of Metacognition scale for teacher trainees

On the scale 41 items are ready to have the answers and this is in the form of the Likert Scale with the value 5- Always, 4- very often, 3- often, 2- sometimes, 1- never

Norms-

Based on the statistical results presented in the table. Z – Score norms have been developed and presented.

Norms for interpretation of the level of Meta-cognition have been presented in table 3.4.1.

	Z Score	Level of Meta-cognition
170-Above	-.355 to 1.51	Extremely High
140-169	-1.82 to -0.48	High
110-139	none- to -2.55	Average
80-109	None	Below Average
50-below	None	Below

3.4.5. Scoring for Classroom Environment Inventory

A scoring key that makes scoring a simple task.To determine an individual's raw score, the number of responses is counted to give the direction and the total is entered in the raw score box. To determine the classroom's mean raw score for each subscale, average the subscale raw score for all students in the class.

Scores	Level of Classroom Environment
47-Above	Extremely High
37-46	High
27-36	Average
17-26	Below Average
7-below	Below

To convert an individual's subscale raw score or classes mean raw score to a standard score uses the table.

3.4.6. Scoring of Academic Achievement

- Scores were given to the achievement of the students.
- The test was having 25 items
- with multiple-choice question 25x2=50

	Level of Academic Achievement
40-Above	Extremely High
30-39	High
20-29	Average
10-19	Below Average
0-9	Below

3.4.7. Flipped Classroom

Child and Development content was considered to be used for the flipped classroom from B.Ed. curriculum.

Theories of Child Development :

1) Theory of cognitive development by Piaget, concept, stages, and implications with special reference to the Indian context.
2) Theory of social and emotional development by Ericson, concept, stages, and implications with special reference to the Indian context.
3) Kohlberg's theory of moral development.

Learning and teaching :

Learning paradigm

1) Theories of learning (Trail and error (Thorndike), classical conditioning (Pavlov), operant conditioning(Skinner)

2) **Activities**

- Offline content from the different e-resource for home.

- **Classroom Activities involved**:- Discussion and orientation, Focused demonstration, Faux flipped classroom, group-based activity, virtual-based activity, blackboard race, conjugation pyramid, tic-tok, shooting hoops, statement chain,quizzes,h5p,test mod.

3.5. Procedure of Experiment Research

The research design provides an overall structure for the research process. It helps with topic selection, data collection devices, and data analysis techniques that are relevant to the research objectives.

Experimental research offers a systematic and logical response to the research questions. Experimental methods can be applied effectively in the classroom, where significant factors or variables can be monitored to a certain extent. This is the way to where the cause and effect relationship between the variables is established. This is considered the best way because it provides some control over extraneous variables and the manipulation of variables.

Among the research methods, the experimental method is considered to be a scientific research method. It provides a well-patterened way to respond to research questions. It is the way to establishing a causal relationship between variables. Researchers, since they decide on the nature of the treatment, need to apply it and to what extent.

The ultimate aim is to generalize the relationships between variables so that they can be applied outside the classroom to a wider population of interest. Based on the above benefits of experimental research, the researcher has followed an experimental design for this study.

3.5.1. Meaning

In a simple traditional experiment, an experimental group and a control group are used to compare the results of one treatment to that of different treatment or no treatment.

The experimental group is thus exposed to the treatment envisaged and the control group is not exposed.

3.5.2. Experimental stages

At this stage Flipped classroom was applied to the experimental group and was implemented 60 days. In which Students were given offline materials through e-resources, like DTH channel, you-tube, and various activities were utilized to make them retain the content in the classroom itself, and the control group was taught with the formal traditional classes only.

The same subjects have been taught to the control group of B.Ed.class too.

The teaching medium was bilingual. The Experimental group was taught for 45 min. daily. Appropriate e-resources were shared with participants as part of their learning.

Post-test phase

After teaching three months both control groups and experimental groups were evaluated again individually to have the scores of their progress on Meta-cognition, Classroom Environment, and Academic Achievement with the help of self -prepared tools i.e. Meta-cognition scale for Teacher Trainees, Classroom Environment Inventory and Academic Achievement test.

3.5.3. Benefits from this design

This type of design enables a teacher to experiment in their classroom. Since the same teacher is involved, he allowed a fair attempt to operate the factors of capacity and background of the subjects and general features of the experimental situation.

3.5.4 Experimental threats

1) **Internal validity**

   Internal validity applies to the assumption that the changes in the dependent variables are attributable to the independent variable's influence rather than any unintentional variables... The researcher can have the threat of gaining the scores well if the first experimental group would have dealt before dealing with the control group.

   To avoid this threat the researcher first dealt with the control group then dealt with the experimental group.

2) **Selection**

Differences in the subjects in the groups may lead to different outcomes.According to the law of probability, random assignment of subjects to experimental and control groups guarantees that the groups being compared are not substantially different in composition.In all subjects, the subjects should be equal.

3) **Statistical Regression**

It's possible that the respondents' identification based on extremely high and low scores had an impact.The topic should have chosen equally from all of the scoring options**.**

4) **Testing**

The hazard of testing refers to the effect of one test on the outcome of a subsequent test. In laboratory experiments, it is normal to test subjects at the beginning and end of the research.If there is a significant change in the post-test score, the researcher may conclude that this is due to the use of a particular intervention method of experimentation. An alternative explanation is that it is due to the use of a pre-test, but time was taken to avoid meeting this threat.This study included a pre-and post-test, and as a result, this hazard was removed.

5) **Selection of Instruments:**

Internal validity can be jeopardized by differences in findings due to changes in measuring instruments between the pre-test and post-test.The danger was removed by using the same methods to evaluate Meta-cognition, classroom Environment, and academic achievement in the study.

6) **Mortality**

The loss of subjects that may occur sometimes during the study is called a mortality threat. During this study, such a subject loss did not occur.

7) **Maturation**

There may be conflicts in subject scores due to a variety of variables related to the time that was not included in the investigation.

The total duration of the study was weeks. So this threat was eliminated.

8) **Selection Maturation Interaction**

The effect of maturation not being consistent across the groups maybe because of the same selection factor consulting this threat.

The subjects selected were similar in all respects(eg: age), hence this threat was eliminated. Much care has been taken by the investigator to minimize this threat as the samples were within the same stream.

9) **External Validity**

External validity refers to the difficulty of extrapolating experimental research results to other environments, people, factors, and measuring instruments.The degree to which the results of a study in one situation can be generalized or extended to another situation is known as external validity.

Threats to external validity:

1) **Interaction effects of selection of biases and the experimental treatment**:This relates to the interaction of some intact group selection factor with the experimental treatment; this would not be the case if the

groups were created randomly.In this study, one class of B.Ed. students were selected so this threat was eliminated.

3.6. Difficulties faced by the Researcher:

When the researcher has completed her study,the final difficulty is knowing how to make sense of the data, the researcher has collected. After dealing with the experimental group researcher faced the top six challengeswhile compiling a list of challenges.After the issues were established, they felt that the most important problems for distance education and the rest are described below.

1) The first difficulty I faced from the start of my journey was that the subject content was not available in the nearby areas.
2) The second was CEC content was very slow and very large in delivery of action. So students started feeling bored.
3) At the time of data collection, college authorities were not willing to give the classes.They were only ready after the unit test exam.
4) when this intervention was used to deal then the students were not found serious about reading the content at home but once the classroom activities dealt then they started completing their online learning at home.
5) One more difficulty the researcher faced was due to activities dealt in the classroom there was huge noise so to deal with such situation the groups can be shortened to perform these activities.
6) A special class is required where sufficient movement space should be there to perform these flipped activities.

3.7. Handling Ethical issues

Ethical considerations emphasize that ethical considerations are important throughout the research process, not just at the end.When it comes to respecting and honoring participants, ethical issues are important.The ethical considerations were focused on Wallen's(2008:63-65) and Henning et al(2004:73).'s recommendations:

1) Participants were assured that they fully understood the study's intent and were reminded in writing that their participation was completely voluntary.
2) Anonymity is a virtue.Participants were told that their details would be kept private and that they would not be known at any point during their research.
3) Participants' right to privacy has been respected, and all activities have been performed in a trustworthy and open manner.
4) Participants were told that they had the right to withdraw at any time during the research and that they would not be penalized in any way if they did so.
5) Ethical approval: Since there was no official ethical committee in the Faculty of Education at the time, ethical approval was sought from the head of the research institution.

3.8. Statistical techniques used:

Scores don’t have any weight and meaning of explanation of themselves unless any requisite statistical techniques are not employed to test the level of significance of the scores. To fulfill the objectives of the study. For them, the following statistical techniques were employed for data analysis.

Mean:- SD, t-test.

As the hypothesis of the study was null, two-tailed tests were employed for testing the significant difference between the mean scores of the Control and Experiment at the level of Meta-cognition, Classroom Environment, and Academic Achievement.

Mean:

This is called an arithmetic average as well and is determined by adding all of the scores and dividing this sum by the number of scores of pupils.

Formula: $\overline{X} = \frac{\Sigma X}{N}$ Arithmetic Mean

$\overline{X}$= Arithmetic mean

ΣX = Sum of all the values of variables

N= dividing by the total number of items

Standard Deviation:

This measure of variability is used with the mean. Sometimes, this is needed for deriving other statistical indexes. This measure of variability involves a rather long and involved process of computation. The mean of the distribution is first determined. The difference between each score and the mean is obtained and squared. These squares are added and averages and the equal root is computed of the average.

$$\sigma = \sqrt{\frac{\Sigma (X - \overline{X})^2}{n - 1}}$$

Where SD= Standard deviation

X= the derivations of the item from the mean

1. Some assumptions must be fulfilled for the use of the t-test. According to Vchat (2009, p. 338, p. 359), there are four most important assumptions are variables must be measured on either interval or ratio level. The characteristics of the related variables must be approximately normally distributed, the sample must be randomly selected from the population and the sample has an equal or nearly equal variance.

In this study sample was selected randomly, all three tests were measured at the interval level. t-value can be calculated by using the following formula:

$$S_p^2 = \frac{(n_x - 1) \cdot S_x^2 + (n_y - 1) \cdot S_y^2}{n_x + n_y - 2}$$

$$t - statistic = \frac{\bar{X} - \bar{Y}}{S_p \cdot \sqrt{\frac{1}{n_x} + \frac{1}{n_y}}}$$

$$df = n_x + n_y - 2$$

where,

$\bar{X} = sample\ mean$

$\bar{Y} = sample\ mean$

$S_p^2 = pooled\ sample\ variance$

$S_p = pooled\ sample\ standard\ deviation$

$S_x^2 = unbiased\ sample\ variance\ for\ X$

$S_y^2 = unbiased\ sample\ variance\ for\ Y$

$n_x = sample\ size\ of\ X$

$n_y = sample\ size\ of\ Y$

If the p>cal t, t tabulated at df (n -2) and If the disparity between the two groups is substantial at the "α"percent level of significance, it is considered to be significant.At the "α" percent mark, the data is said to be consistent with the hypotheses.The findings were analyzed in the following chapter using these instruments, processes, methods, and statistical calculations.

CHAPTER-IV

ANALYSIS AND INTERPRETATION

The current section deals with the examination and consequences of the information. The assessment and understanding of the data.It outlines the research questions under study. It shapes the purpose behind any data to be drawn and enlightens us with the real factors that check the inquiries in the system of analysis. The current study highlights the impact of Flipped classrooms on Meta-cognition, Classroom Environment, and Academic Achievement of B.Ed. Students. In this study, Flipped Classrooms involved the autonomous factor. However, Meta-cognition, Classroom Environment, and Academic Achievement set up the dependent variables. Hence, two groups were formed specifically to perform on the pre-test. Further,the intervention group was presented to be examined through Flipped Classroom mediation.Consequently, the results and discussions are presented under the following criteria:

Section – I - Comparison of the scores of Experimental and Control Group on Meta-cognition of B.Ed. Students to see the effect of the flipped intervention and their assessment through a self-prepared questionnaire.

Section – II - Comparison of the scores of both groups on Classroom Environment of B.Ed. students to see the effect of the flipped intervention and their assessment through the self-prepared questionnaire.

Section – III - Comparison of the scores of the Experimental Group and control group on Academic achievement groups of B.Ed. students to see the effect of the flipped intervention and their assessment through the self-prepared questionnaire.

So the Analysis and Interpretation are stated underneath:

Section – I - Comparison of the scores between Experimental and Control Group on Meta-cognition of B.Ed. students to see the effect of the flipped intervention and their assessment through the self-prepared questionnaire.

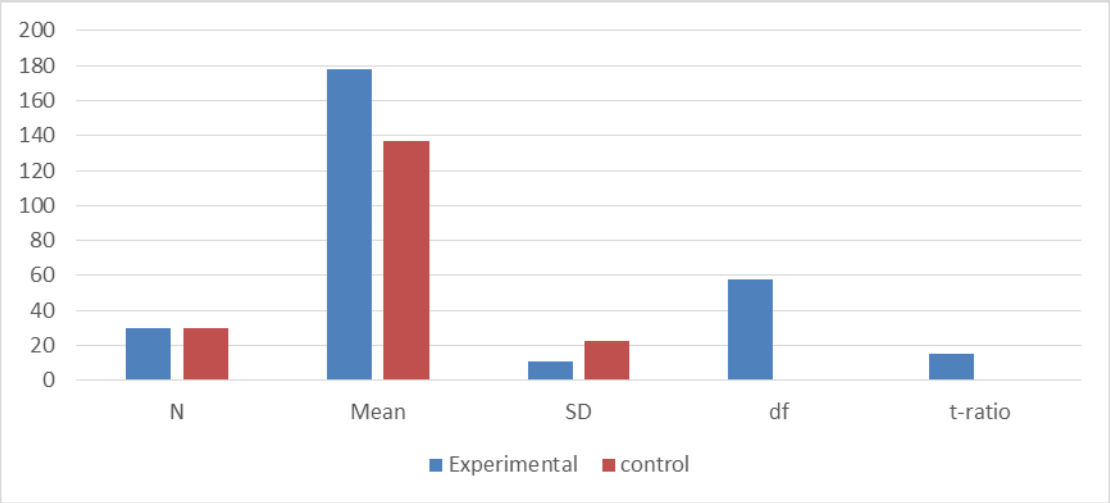
4.1. For this purpose, the researcher administered the Flipped Class intervention to the students of the Experimental group and taughttraditionally to the Control group and the result of the same has been interpreted as below:

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

Hypothesis No. 1: There will be no significant difference in the scores of Meta-cognition between Experimental and Control groups of B.Ed. students.

Table No.4.1. Showing t-ratio between Experimental And Control Group

Metacognition	N	Mean	SD	df	t-ratio	SignificantLevel
Experimental	30	178.18	11.19	58	15.32	Significant
control	30	137.17	22.78			($p < .01$)



Graph No.4.1.2. Showing t-ratio between Experimental And Control Group

Interpretation of analysis: The Null hypothesis is rejected. Therefore, there is a significant difference in the scores on Meta-cognition between Experimental and Control groups**.**

It is exhibited from table 4.1 that mean scores among B.Ed. students in Experimental and Control groups on Metacognition is 178.18 and 137.17 which means that both the two groups are different. Whereas the calculated value of 't' is 15.32 which is more than the table value for the degree of freedom 58 at .01 level of significance which shows that the value is significant. Therefore, it indicates that the experimental group differs significantly so far as the level of Meta-cognition of the B.Ed. students are concerned.

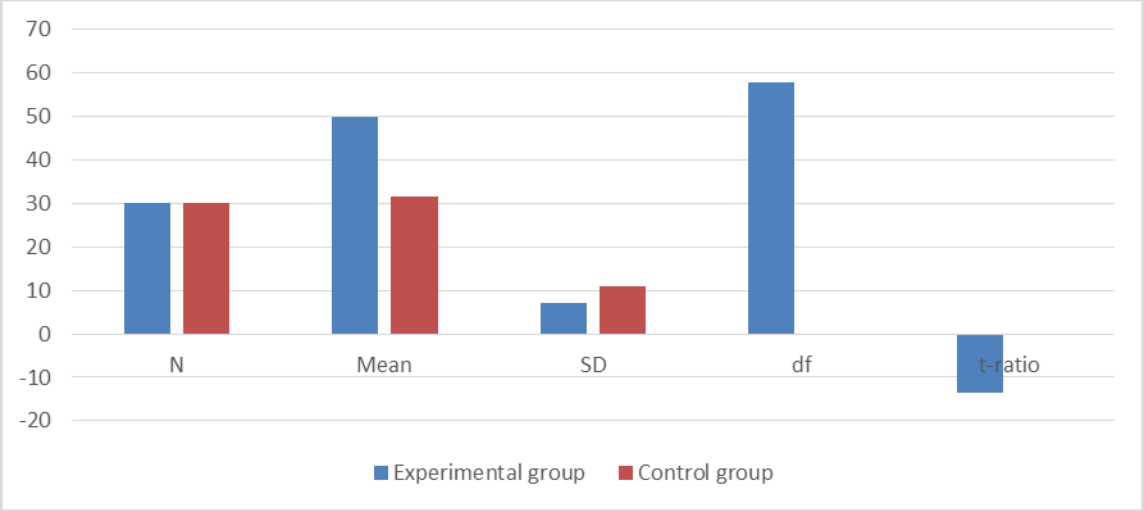
Section – II. Comparison of the scores of Experimental and Control Group on Classroom Environment of B.Ed. students to see the effect of the flipped intervention and their assessment through the self-prepared questionnaire.

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

Hypothesis No. 2: There will be no significant difference in the scores of ClassroomEnvironment Experimental and Control groups of B.Ed. students.

Table No.4.2. Showing t-ratio between Experimental And Control Group

Classroom Environment	N	Mean	SD	df	t-ratio	Significantlevel
Experimental group	30	50.05	7.14	58	(13.45)	Significant
Control group	30	31.65	10.82			P < .01



Graph No.4.2.2. Showing t-ratio between Experimental And Control Group

Interpretation of the Analysis: The Null hypothesis is rejected. Therefore, there is a significant difference in the scores on Classroom Environment between Experimental and Control groups of B.Ed.Students.

It is exhibited from table 4.2. that mean scores among B.Ed. students in Experimental and Control groups on Classroom Environment is 50.05 and31.65 which means that both the two groups are different. Whereas the calculated value of 't' is 13.45 which is more than the table value for the degree of freedom 58 at .01 level of significance which shows that the value is significant. Therefore, it

indicates that the experimental group differs significantly so far as the level of the classroom of the B.Ed. students are concerned.

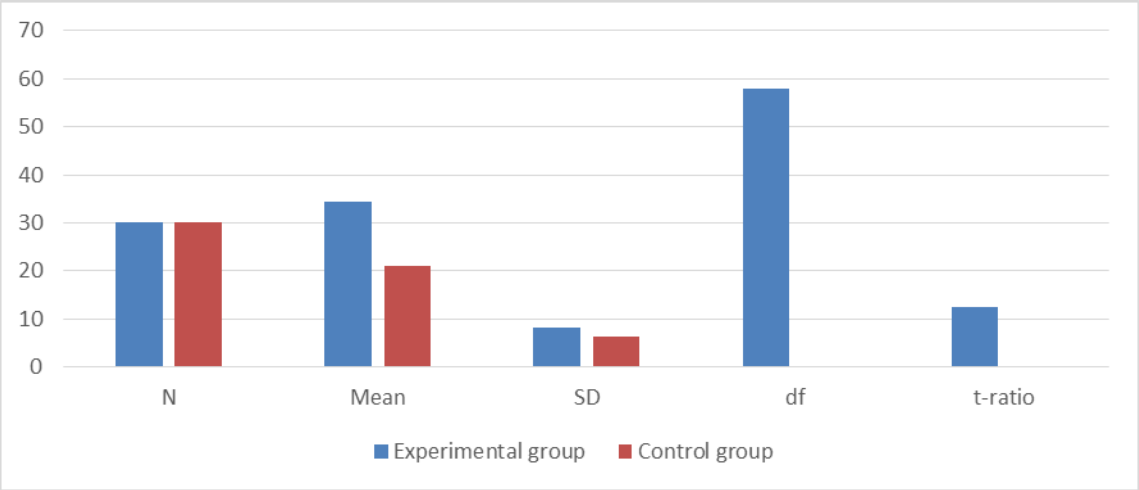
Section – III. Comparison of the scores of Experimental and Control Group on Academic Achievement of B.Ed. students to see the effect of the flipped intervention and their assessment through the self-prepared questionnaire.

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

Hypothesis No. 3: There will be no significant difference in the scores of Academic Achievement between Experimental and Control groups of B.Ed.students.

Table No.4.3. Showing t-ratio between Experimental And Control Group

Academic Achievement	N	Mean	SD	df	t-ratio	Significantlevel
Experimental group	30	34.4	8.08	58	12.328	Significant
Control group	30	21.04	6.34			(p < .01)



Graph No.4.3.1. Showing t-ratio between Experimental And Control Group

Interpretation of the Analysis: The Null hypothesis is rejected. Therefore, there is a significant difference in the scores on Academic Achievement between Experimental and Control groups of B.Ed. Students.

It is exhibited from table 4.3. that mean scores among B.Ed. students in Experimental and Control groups on Academic Achievement is 34.4 and 21.04 which means that both the two groups are different. Whereas the calculated value of 't' is .12.32 which is more than the table value for the degree of freedom 58 at .01 level of significance which shows that the value is significant. Therefore, it indicates that the experimental group differs significantly so far as the level of academic achievement of the B.Ed. students are concerned.

4.4. MAJOR FINDINGS

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.

4.5. DISCUSSION

Based on the results obtained emerged from the analyses and interpretations of the data, it can be concluded that there exists a significant difference between the scores

of the experimental and control group on the Meta-cognition level, Classroom Environment Level And Academic Level among B.Ed. students with the effect of the Flipped classroom. It leads to infer that the B.Ed. students who are exposed to intervention have better improvement in their level of Meta-Cognition, Classroom Environment,And Academic Achievement.

The findings of the result of the present study are supported by the studies conducted earlierSingh (2012),Saxena& Hans (2015), Masha & Smallhorn (2017). Didem Alsancak Sirakaya & Selçuk (2018), Michael Holik (2016). Louca (2003), 52. Gregory. Thomas (2003), Conceptualisation, Development and Validation of an Instrument for Investigating the Metacognitive Orientation of Science Classroom Learning Environments: The Metacognitive Orientation Learning Environment Scale – Science, 53.Xu, Li Hu, The Optimisation of Learning in Science Classrooms from the Perspective of Distributed Cognition. (2006). 54. Donald Christian Kenna (2014), 55. Zhiru Sun(2015), .Daniel D. Foster, B.S., M.S(2009). For classroom environment. 59. Casey, Katherine (2013), 68. LeeAnn Lindsey (2015), Diane Pare (2017), 74. Heather Phipps (2010), Cara A. Marlowe (2012, 80.Ibrahim Agamy (2012),Renata,Pavanelli. (2018). Sylvie Fontaine Jacobs (2013).

Flipped Classroom:

Singh, K.K. (2012)

This is always limit to, use something. It is rightly said that excess of everything is bad. So the relevance of this study lies in setting some limits to the use of electronic information. The effect of the use of these resources and facilities was measured. A standardized questionnaire was used to survey faculty members as well as students. Six management colleges of NCR were chosen for this study. It was

found from the circulation of 200 questionnaires that the chosen group was well-versed with Electronic information resources. Their habit and purpose of using the electronic information resources were considered upto a satisfactory level. From the chosen group under study, the business students were ahead of others. They formed the core pilot unit. They are inclined to make the best and fruitful use of the internet. As a result, these students have a fair chance of utilizing their knowledge for their future careers. The study focussed on the utilization of Electronic information resources by the faculty members. They should inculcate their teaching styles with knowledge of management for their teaching and research work. The findings of this study reveal that the participants had fair knowledge and understanding about EIR. It was gradually rising due to increased use. It was also strongly felt that the present need is to analyze the students and faculty using these resources. It can further give a better academic output if suitable and easy-to-use electronic information resources are provided.

Saxena, M. K. Hans, D (2015).

During this investigation, Information and Communication Technology is a powerful means which can boost the achievement of teaching and learning. Its amalgamation with teaching is a great help to the process of learning. It promotes accessibility, delivery, learning, and understanding. It too takes on a central part in making a knowledgeable society. It is revealed through the findings that students of B.Ed. outshine in the remarkable performance by employing the use of ICT and scored better in their tests.

According to Kozma and Anderson, the use of ICT can replace passive learning. It emphasizes the skills of problem-solving and interaction with the learners. The

students find themselves in a better position to respond through interaction. The real-life situations can be handled by the use of ICT. It is It is therefore proved that traditional instructional design can be easily replaced

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Masha, Smallhorn (2017).

This study takes up the issue of the tendency of aversion among the students from attending the classroom teaching. This challenging situation has attracted the attention of the educationist in national and international areas. Therefore, the topic of this above-mentioned study becomes quite relevant to the existing state of affairs concerning student engagement. It undertook a group of 200 students in their second year at the college of science and engineering to observe their classroom behavior. It was surprising to know that students of serious subjects like Genetics, Evolution,and Biodiversity showed an inclination of not attending their lectures. A transformational shift took place which involved– to-one interaction. This shift came with the active learning due to Flip classroom. It aroused the interest of the students within the classroom environment. The students geared up by watching video lectures through online mode. This further deepened their subject knowledge. With this kind of environment, students were able to apply their subject knowledge through active interaction among themselves. This active participation makes the flipped classroom more result-oriented. The analysis of the surveys from the lectures

attended, phases of learning, and performance during examination revealed the successful implementation of the flipped learning. Therefore, it's strongly emphasized an enhancement in the engagement of students in a flipped classroom environment. Not only this, but the students developed a positive attitude also. In contrast to this observation, it could not be measured what were the learning outcomes in the process of engaging the students.

Didem, Selçuk (2018).

It is an interesting study involving the approach to assess the learners' academic achievement in a flipped classroom to analyze those key components which play an instrumental role in enhanced self–motivated preparedness for learning. A number of 66 participants formed a group. The Scientific Research Methods were employed to carry out this study. The Students of this study belonged to two classes of B.Ed. The course at Ahi Evran. University during the academic year 2014 – 15. The two groups were designed as an experiment and the other one as the control group. The flipped model of learning was applied to the experimental group while the blended model of learning was applied to the control group. The data collection tools included a motivation scale, an achievement test, and a self–directed learning preparedness scale. The various statistical techniques were used, including t-test, MANOVA, and ANCOVA to analyze the data. The findings of this study revealed a remarkable difference showed a favorable response as for the achievement at the levels of academics and motivational fronts. They also showed a considerable degree of retaining the content over a long period. On the contrary, the experimental and control groups showed no improvement as far as self-motivation-based learning is concerned.

Michael T. Holik. (2016).

This study aimed to research upon the comparative study of the flipped model of teaching and learning as compared to the traditional setting. It is based upon the action-research method. It was aimed at collecting information about the type of course running in a technical institution. This kind of research becomes relevant as no such study was available in the comparative form including teaching methodologies as the key factor. Such instruments were gathered to gather information out of culinary flipped classroom format. The perceptions of teachers and learners were analyzedconcerning interpret levels of learning. The levels of involvement of the students were recorded. An investigation of final grades scores did not show any noticeable difference between the two modes of teaching. It specified and was limited to technical programs only. It didn't prove to be significant for other types of the teaching model. The study suggested more specific research in other educational programs having different requirements with more focused results. It also recommended the use of more traditional research.

Metacognition

ElenoraPapleontiou-Louca (2003),

This is a study in which metacognition is defined as thinking about thinking. It observes both aspects of the learners, including responsiveness and monitoring. It also includes the development of cognition with feelings and stimuli. Various belief systems have explained about teachers that they can embrace students' metacognitive growth and can be proved helpful in promoting their monitoring through cognitive-based initiative instructions. The advantage of metacognitive

schema which enrolls self-awareness and self-monitoring, can prove helpful to grow the learner independently. Being a learner, he can figure out how to learn forever.

Gregory P. Thomas (2003),

In this investigation, the metacognitive orientation focused upon that environment of learning, which can contribute towards its development. For this metacognitive orientation, learning environment the scale of science has been used to find out that how the interventions have impacted the learners. This scale's contribution was important, to know the level of metacognition of the student. It was highly evident to explore the metacognitive orientation in the science classroom. A sample of 1376 students of grade 10-12 of North-East Thailand was selected. The selected samples were also contributed to tell about their perceptions towards such an environment. The analysis of this selected data reflected that the environment of classroom learning hadn't developed and enhanced the learners' metacognition. It was also found that grade, gender, and age significantly do not have different metacognitive orientations in the learning classroom. Further, no interactions of the grade, gender, and age variables were found in the school.

Xu, Li Hu, ((2006).

In this study, the researchers try to explore classroom learning of science using distributed cognition. The study mainly focused on the public interactions that involve participants and instruments of that environment. In the experimental design of this study main focus was laid upon the 2 videotape science lectures, which were on the theme of gravity. To explain the theme of gravity designed parachutes and pendulums were used. After the content delivery, a video was shown to them. This video has generated an environment of conversations between the teachers and the

taught. This helped the students to understand the practice involved in those lessons. After analyzing these two lessons, it brings out to the notice that the language material of the objects and the teachers' response has equal importance for students while constructing their knowledge regarding the subject. It depicts that language plays an important role to achieve mutual understanding. Even the nonverbal gestures, form an association between the concepts and real words. Teaching helps the learners to understand the subject better through instruments used. The analysis of the study exhibited that students learn best from activities, artifacts, the real objects which were used than the manipulations of the artificial ones. This study observed the students' process of learning by looking over their interactions in the class for teachers, researchers. The finding revealed that along with these techniques of instructions, students can best attain a sound understanding of the science subject. Artifacts could also contribute to improving the environment for learning.

Donald Christian Kenna (2014),

This study dealt with one of the ideas for developing student education through to the flip classroom. It is considered a model of self-learning. Bergman and Sam used this pedagogy of flipping the class in 2007. The flipped classroom used recorded video lectures were sent to the students to be seen as homework. Further, the homework for the students was dealt with in the classroom through various activities. The main motive of this research was to know the effect of flipping classroom effect on the self-efficacy of the students. Here, the dissimilarities of gender self-efficacy were also analyzed. The participants were 22 high school students who were enrolled in a private school in the upper Midwest.

The sample of 21, 12th-grade students and one 11th grade, enrolled student, was considered for this study. Students were trained to take part in two modes of teaching, one conventional, another flipped. A survey method was used to access the self-efficacy of the students. The findings revealed that the self-efficacy score was at an average level with the flipping class. On the other hand, the conventional class reduces the average score of the learners.

Dealing with the gender analysis in flipped classrooms, a decrease in self-efficacy was observed among males. On the other hand, women found leading towards the growth.

Maclellan, (2012)

In this study, pedagogical knowledge was assessed through the teachers' ability. The main idea of transformation in this study was best understood by the teachers and academicians in psychological terms. It was expected from the teachers to change. It was expected from the teachers to change so that he can shape the disciplinary knowledge which can be further accessed by the students. It is further asserted that for transformation, teachers must have an understanding ofthe cognitive and meta-cognitive levels of the learners. Thus the study was specially conducted to consider the social and academic supervision. the separation of the content and development of professional teachers of the United Kingdom. In the coming years, psychological knowledge has been contributed to the education of teachers through some aspects like classroom management, easy assessment of learning, building confidence in psychological construct can be build up. These psychological constructs are very essential for the teachers to remove the vulnerability of their professional life. This professional life includes many challenges and learning at every point of their

experience. Now, society urges engagement of higher-level cognitive factors while teaching and learning. This Metacognitive and cognitive requirement can be best satisfied by the teachers if teachers are best endowed.

Sun (2015)

In this research, the author investigated the Winne and Hadwin'stheory of self-regulated learning. It was analyzed by depicting the learner's progress in a flipping classroom with keeping numerous aims in view: (a)To develop a model based on self-regulation by the contribution of three large constructs of self-regulatory. Secondly, it found a correlation among these three constructs. It also observed that the academic achievement of the learners, both pre-class internet usage and in-class learning, contributed to the collaborative environment of the Maths flipped class.(b) In the 2015, spring session, Enlarge Midwest Public University enrolled undergraduate students in the calculus 1 and 2 flipped courses. The data of this study was taken from an online survey of that session through structural equation modeling. This study figured out the connection between self-regulated constructs and achievement at the time of flipping the Maths class. Through this analysis, it was found that all domains, especially self-efficacy in mathematics, affected the results of Mathematics. Besides, the study revealed that previous knowledge of Mathematics brought out an indirect positive impact on the results of Mathematics through the mediating effect of flipping the class. Further, it is also revealed by the study that the search for seeking help is positively connected to success in Mathematics. The findings of this study gave a view that the students who excel in flipped made of Maths class were those who were highly confident while learning Maths. They found themselves even more skilled through getting help from other

peers. They learn through the barriers while learning any content. The study also reveals that they were well prepared to learn in a collaborative class.

Daniel D. Foster, B.S., M.S (2009).

This study describes the connection of the students concerning cognition within the class sessions. The main motive of the research was, to investigate how classroom instructional strategies are useful in increasing the level of cognition. Principle of teaching and learning and classroom environment is related to one another. The undergraduate classroom of the college of Food Agriculture and Environmental science of Ohio state university was the area where the study was conducted. Here, the investigation attempted to analyzePiagian's concept of the development of cognition. To find out this, 21 video lectures were used in twelve instructional-based classes. The researcher also has investigated the effectiveness of lectures, frequent questions asked by teachers and students, and the objective of the course. It also assists the instructional technique and the environment of the class. Three instruments were used to determine the frequency of teaching and learning principles, cognitive stage of Piagetian theory. 11 independent variables were evaluated. The correlation between independent variables and the learning of students was also assessed. Further analysis of data showed that the principles of teaching and learning are being minimally utilized in the studied classroom of colleges. Bacon's, pencil-paper test measured the stage of Piagetian cognitive development of enrolled students of post-secondary students. The technique of partial correlations was opted to analyze the liner effect of the other independent variable which were partially out from both independent and dependent variables. The findings indicated that lectures taught at higher cognition levels, learners ask

queries within classroom sessions showed their higher side of cognition. When an instructor writes the objectives of his course he considers Bloom’s cognitive level which helped him to prompt his student within the classroom.

In the classroom, the students' cognition most often manifested at the beginning where they were participating in the class content and ask the questions.

Classroom environment.

Casey, Katherine (2013)

In this study, the first-year program for college students is addressed. These learners through orientation were the first time offered the desired skills for academic excellence. It is observed in this study that first, students' effectiveness can be increased during the first year program through mentor collaboration. Here awareness of the resources of the campus and peer mentorship effectiveness was measured. This study had adopted a Quasi-experimental design with a sample of 91 first-year students from 9 sections of FYP courses. Among that data of classes, 70 students had peer mentors. The other classes which were kept in a control made with 21 students didn’t have any peer mentor for collection of the data. A questionnaire of 30 items was used. This questionnaire assessed how many resources of the campus were used in the first two weeks and last two weeks of the 2009 session. ANOVA technique was used to analyze the results of the study. They finished their semester with the same knowledge. The findings also revealed that the assumptions about with the support of peer mentors, students of the first-year program learned more than the students without the support of peer mentors. In this study, the GPA

score was observed. It was found that there was no difference among the groups of 1st semester.

Lee Ann Lindsey (2015).

The finding of this research suggested that the intervention used in a college followed a technologically enhanced approach. Here the teachers adopted the patterns of instruction which was outside the area of their expertise. But this instructional pattern was admired by the students in the classroom. Here the discussions revolved around explaining the effectiveness of DC instructions upon students' capacities, further the usefulness of the TBP model was analyzed, and found that the efficacy and influence of the instruction on the learner seem helpful to promote the DC Model.

Diane Pare (2017)

This study aimed to explore the prospects of teachers towards their pupils who were homogeneously grouped. This study tried to explore further the teachers who think whether students can be benefited sufficiently from a homogenous environment. This exploration reflects upon the meaning of homogenous grouping. Its meaning found in this research was the assembling of the student of similar abilities, whereas the heterogeneous group included a mixture of different abilities of the students. The supporters of both confirmed the advantages of both strategies. However, each has its limits. The supporters of homogenous grouping found that it creates an environment where teachers can teach their learners as like-minded students in a better way. Considerable success was found in it. Those who promoted heterogeneous clustering suggested that a mixed environment of students prompts the learner to perform to the best of their abilities. Further, these studies also showed

that if homogenous growth can be broken into the smaller heterogeneous group it can favor the most.

Heather Phipps (2010)

This is a qualitative study that explored the experiences of teachers and students' engagement with picture books in the immersion of classrooms. This study has consulted social constructivist theories as well as reader-response theories. In this study, the researcher examines the multiple ways that teachers adopt for engaging the students in aesthetics readings. Besides that, he adopts collaboration techniques for co-construction of the meaning of the context. This master study was executed in the biological ways for two French immersion schools in Quebec. This study involved two pairs of teachers working with the same group of pupils in each school. A project, based on Canadian picture boos has been developed so that teachers can follow those books in English as well as in French. Through readings and classroom interactions a scaffolding approach was utilized for the students by the teachers and they equally encouraged their students to interpret the visual activity. Students reported that they were engaged in the co-constructed meanings from the picture books in various manners. The study found that picture books stimulate the students for conversation to give them a meaningful experience and prompt them to collaborate in all languages.

Academic Achievement

Cara A. Marlowe (2012)

In this investigation, flipping the classroom effect was used to measure, how the students can get better achievement along with their levels of stress. For this study,

19 students were selected. among them, 14 were females and five males from the Environmental system and Society course. During the first session in September and during the second year in December students were taught by a method of Traditional Lecture. During the second semester, teachers adopted the flipped model of teaching. It is reported in this study that the stress level of the students lowers down through this environment of the classroom rather than the other classes. It also comes out that the students' improvement declined in terms of grades. although exam grades showed no significant Improvement. On the whole, a positive feeling was expressed by the students about this innovative technique. Even the benefits to choose the task by them for exploring the concepts had made the learning task more intense and interesting**.**

Ibrahim Agamy (2012)

In this study, it was found that the use of specific wiki software has been replaced by new applications during these recent years. The benefits gained by institutions by adopting these methodologies can’t be forgotten. This new study signifies the importance of web-based learning and its interactions. The findings of this study showed the results were consistent. This type of teacher-student interaction through online mode was quite a new one. And it does have significance in supporting one-to-one learning by adopting this. The teacher faced challenges that required increased concern attention of the higher. Knowledge-based society policies have been promoted lifelong learning in which teachers are encouraged to enhance their competence. Here the learners are equally encouraged to learn from the teachers. The findings supported that learner-centered interactions must be encouraged so that

every student shows their best performance according to the skills acquired by this type of new learning.

Renata, Pavanelli. (2018)

This research was about the reliance upon the use of video technology for creating lectures for teaching through online mode. This study emphasized that the classroom should involve in-class activities and exercises to make the learning interesting. The mixed-method was used along with the Quasi-experimental method design for the study. The sample of the study involved 22 participants from two advanced EAP writing courses. They were chosen to conduct this study at Southern State College. The aim of the study was whether students' academic writing performance has been improved through the flipped model. The perception towards instruction integrated with flipped mode was also analyzed. The findings of this study revealed that there were found statistically significant differences in the academic learning of the students of the control and intervention groups. The results were based on qualitative techniques. These results also revealed that flipped mode of teaching was positively perceived by the students. It was considered as a good source of learning that can help the learners in improving the writing skills by interactive mode.

4.6. Conclusion

The conclusion can be drawn from the present study from school to graduate level. These findings show that there is a significant difference between the post-test of the experimental and control group. It was somewhere that difference also lies between male and somewhere at male-female on the metacognition,classroom environment, and academic achievement level. It reveals that Analysis of intervention and Interpretation of inferences through the use of h5p,quizzes,discussion forum, use of

cc video programs.At this stage, the experimental group proved to be effective. After the research,it was observed that the students of the experimental group have shown improvement in their level of meta-cognition.They are to self-learning in a better way. This self-motivated group findsthe classroom more engaging and learner-centered. They achieved a good academic level after learning through the flipped classroom. It might be due to the training program in a better way by considering the levels, potentiality, and circumstances of the students. Another reason for the positive effect of the program might be the interest and attention shown by the students during the experiment. The supports extended by the teachers to students for participating in the program may also be the important factors to find the positive effect of the research.

CHAPTER-V

FINDINGS, DISCUSSION, AND SUGGESTIONS

This study underwent experimental research. To analyzethe 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 ofB.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 theecological 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 visionariesare 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 isbeing 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 Achievementare to reflect positivelyupon 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, byhandling 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 institutionsespecially running for educational purposes. The exploration of this study will sensitize school teachers, teacher training institutions, and parents. This study helps usesuch 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 thatthey 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 WIFIFacility.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 forthe 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, aneffective source of motivation and reinforcement towards teaching and learning. It also motivates even those students whose missionis 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 meansto 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; itcan 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 adaptedthe 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 toframe 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. gurukulsand 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, educationsystem 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 throughthe implementation of National Educational Policy-2020. It is the first and foremost

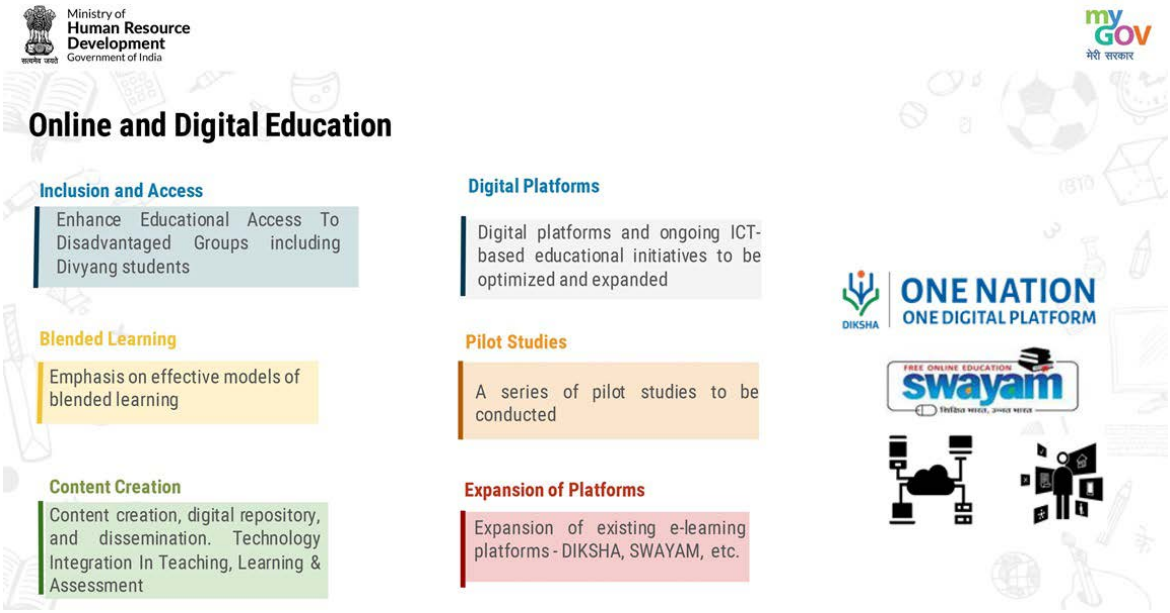
need of the country to prepare the teaching fraternity in a manner to use technology in the classrooms. It can be foreseen that the coming generation will practice within the classroom and learn the lessons outside the classroom. The present research offers fresh perspectives by focusing on the metacognition 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 acampaign.The government of India's Department of Information Technology demonstrated that e-learning is a promising area.It is thefirst 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 platformslikeDIKSHA 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.



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 Hutchson 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 extemely benificial 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 trainedto 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 withthe 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 KenderiyaVidayalas 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 thatgrade, 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 positives outcomes and positives feelings among the students indeedconcerning 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 rethinkingprofessional 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 hisfindings 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 reviewedabove, 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 2007but 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 ClassroomEnvironment 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 groupN=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 theecological 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 visionariesare 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 isbeing 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 Achievementare to reflect positivelyupon 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, byhandling 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; itcan 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.

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 toframe 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. gurukulsand 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, educationsystem 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 throughthe 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 acampaign.The government of India's Department of Information Technology demonstrated that e-learning is a promising area.It is thefirst 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 likeDIKSHA 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.

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Classroom Environment Inventory

This study is a part of a thesis work performed by the researcher Ekta Mehta, School of Education, Central University of Haryana, Mahendragarh District, which is developed by the researcher herself. The outcome of the questionnaire will be used for the partial fulfilment of thesis work of the researcher. Here the intent to use the information for making general inferences for the study. Your cooperation will be highly appreciated.

Thank you in Anticipation.

Ekta Mehta

Kindly fill in the following entries: Date:

Name _____ Father's Name _____

Date of Birth: _____ Gender: Male ☐ Female ☐

Class _____

Elective Subjects : 1. _____2. _____ 3. _____

Faculty: Arts ☐ Science ☐ Commerce ☐ Technical ☐

Institution_____

Place _____

Area : Urban ☐ Rural☐

1. I put my efforts to best of my capacities into what i do here

TRUE ☐ FALSE ☐

2. Most of the time in this class i really give my best performance by paying attention to what the teacher is displaying.

TRUE ☐ FALSE ☐

3. Number of students take part in class discussions or activities.

TRUE ☐ FALSE ☐

4. Fun games and visuals engage the students in class.

TRUE ☐ FALSE ☐

5. I participate when i am asked to perform in the class.

TRUE ☐ FALSE ☐

6. I feel happy and motivated in the classroom.

TRUE ☐ FALSE ☐

7. I feel well acquainted to one other and enjoy the coordination amongst themselves.

TRUE ☐ FALSE ☐

8. In this class i show interest to know each other.

TRUE ☐ FALSE ☐

9. A group project assignments make me cordial.

TRUE ☐ FALSE ☐

10. I take keen interest and seek happiness while working on projects.

TRUE ☐ FALSE ☐

11. I extend warm gesture of helping one another with homework .

TRUE ☐ FALSE ☐

12. The teacher would go down to their ground levels to help students.

TRUE ☐ FALSE ☐

13. The teacher understands personal problems of the students by taking interest in them.

TRUE ☐ FALSE ☐

14. The teacher is very friendly without showing authority.

TRUE ☐ FALSE ☐

15. This teacher interacts with the students .

TRUE ☐ FALSE ☐

16. This teacher wants to know the students in order to keep them well informed

TRUE ☐ FALSE ☐

17. If students want to talk this teacher is ever ready.

TRUE ☐ FALSE ☐

18. We are guided to do the entire classwork and home- work in the class itself.

TRUE ☐ FALSE ☐

19. We usually spend time in discussing the content knowledge through activities.

TRUE ☐ FALSE ☐

20. More attention towards work to be done is given utmost importance in this class.

TRUE ☐ FALSE ☐

21. We often do as much as we are asked to do.

TRUE ☐ FALSE ☐

22. If student doesn't attend class for a couple of days, it helps them to repair the class.

TRUE ☐ FALSE ☐

23. Teacher often spares his time from the routine to conduct activities time for students.

TRUE ☐ FALSE ☐

24. This teacher is more a social catalyst than merely reducing a class to a place to learn something.

TRUE ☐ FALSE ☐

25. The teacher proprieties classwork by not getting side tracked.

TRUE ☐ FALSE ☐

26. We are not under pressure to compete here.

TRUE ☐ FALSE ☐

27. I attain good grades in this class and get the capacity to beat the academic pressures

TRUE ☐ FALSE ☐

28. We are very keen to see who can answer question first.

TRUE ☐ FALSE ☐

29. We get the chance of healthy competition during the class.

TRUE ☐ FALSE ☐

30. Sometimes the students are so task oriented that they break up into groups to compete with each other.

TRUE ☐ FALSE ☐

31. Students manage to pass easily even if they do't do much.

TRUE ☐ FALSE ☐

32. The special attraction of this class is it’s organisation.

TRUE ☐ FALSE ☐

33. We in this class remain silent for most of the time.

TRUE ☐ FALSE ☐

34. We get indulge in this well planned activity class.

TRUE ☐ FALSE ☐

35. Assignments are very lucid so everyone is able to do .

TRUE ☐ FALSE ☐

36. We remain careful while performing the activities in the class.

TRUE ☐ FALSE ☐

37. We listen to the teacher carefully.

TRUE ☐ FALSE ☐

38. Teacher is like a stage setter here.

TRUE ☐ FALSE ☐

39. I clear about set of rules to follow.

TRUE ☐ FALSE ☐

40. Rules in this class are flexible to be changed according the subject requirement.

TRUE ☐ FALSE ☐

41. The teacher makes students clear about the consequences of breaking the rules.

TRUE ☐ FALSE ☐

42. The ways are explained effectively and set for working on things.

TRUE ☐ FALSE ☐

43. The teacher is strict in dealing with students who break the rules.

TRUE ☐ FALSE ☐

44. Rules are followed in the class are very few.

TRUE ☐ FALSE ☐

45. The teacher is cordial and moderately strict.

TRUE ☐ FALSE ☐

46. We are not forced to stick to the rules in the class.

TRUE ☐ FALSE ☐

47. The teacher adjusts with a good deal.

TRUE ☐ FALSE ☐

48. The teacher handles the situation cordially for the disturbance they create.

TRUE ☐ FALSE ☐

49. When teacher frames a rule ,he or she follows it by all means.

TRUE ☐ FALSE ☐

50. New ideas are always floated.

TRUE ☐ FALSE ☐

51. What students do in class is entirely different every day.

TRUE ☐ FALSE ☐

52. Unique and special ways of teaching devised very often in this class.

TRUE ☐ FALSE ☐

53. The teacher appreciates students to try strange projects.

TRUE ☐ FALSE ☐

54. The teacher thinks up peculiar projects for students to work upon.

TRUE ☐ FALSE ☐

55. We can opt the any place as per our convenience.

TRUE ☐ FALSE ☐

56. I enjoy freedom to chose any innovation to perform our own projects in the class.

TRUE ☐ FALSE ☐

57. Students are expected to do some kind of homework almost everyday.

TRUE ☐ FALSE ☐

META-COGNITION SCALE FOR TEACHER TRAINEES

This study is a part of a thesis work performed by the researcher Ekta Mehta, School of Education, Central University of Haryana, Mahendragarh District, which is developed by the researcher herself. The outcome of the questionnaire will be used for the partial fulfilment of thesis work of the researcher. Here the intent to use the information for making general inferences for the study. Your cooperation will be highly appreciated.

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Kindly fill in the following entries: Date:

Name _____ Father's Name _____

Date of Birth: _____ Gender: Male ☐ Female ☐

Class _____

Elective Subjects : 1. _____2. _____ 3. _____

Faculty: Arts ☐ Science ☐ Commerce ☐ Technical ☐

Institution_____

Place _____

Area : Urban ☐ Rural☐

AWARENESS: Metacognitive awareness means being aware of how one thinks. In classroom it means being aware of how you learn. If learners are conscious of how

they learn, then they can identify the most effective way of doing so. These further questions are related to awareness. The above statement is written just to tell u what is the meaning of awareness in meta-cognitive context.

1. I know my intellectual strengths and weakness.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

2. I slowed down when I encounter difficulty in grasping the content

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

3. I know what is expected from me.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

4. I learn more accurately when I am deeply interested in the topic.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

5. I pay attention towards what I need to prioritize.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

6. I stop if I don't learn properly over the new alternatives.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

7. I try to break my learning content into sub parts.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

PLANNING: Here learners think about the learning goals which the teacher has set and consider how they will approach the task and which strategies will be used .At this stage ,it is helpful for learners to ask themselves : "What I am being asked to do"? "Which strategies will I use"? "Are there any strategies that I have used before that might be useful ?" The. above statement is written just to tell u what is the meaning of Planning, in meta-cognitive context.

8. I can adjust the pace of introducing the lesson.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

9. I can maintain a logical continuity in learning a lesson.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

10. I can clearly set up mind to create mental readiness

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

11. I get enough time to understand the questions.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

12. I ask certain questions to myself before I indulge in classroom activities.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

13. I can organise my time to complete the lesson.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

14. I make use my intellectual efficacy to compensate for my weakness in learning

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

Monitoring: During this phases learners implement their plans and monitor the progress which they are making towards their learning goals. Students might decide to make changes to the strategies, they are using if these are not working. The above statement is written just to tell u what is the meaning of monitoring, in meta-cognitive context.

15. My prior knowledge helps me to test the previous knowledge which is relevant for learning the new topic.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

16. I am capable to demonstrate the content as per my available learning material.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

17. I can be differ from others in giving statements regarding explanation

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

18. I can match my thinking to others when see the video lessons.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

19. I can grasp the content of the video lessons.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

20. I become able to draw the effect when learning strategies are used.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

21. Learning strategies are helpful in generating the meta cognition capacities.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

22. Examples given by the teachers helpful in integrating the old knowledge with the new knowledge.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

23. The created material possess an element of interest .

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

24. Classroom activities motivates the learner through thought provoking questions.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

25. Well framed questions generate the further questions .

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

26. I can correlate the video lessons with the topic .

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

27. I have attain the effect of learning strategies used .

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

28. Meta cognitive classroom strategies incorporated in the classroom are appropriate and effective.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

Evaluation: In this phase, students determine ,how successful the strategy they used was in helping them to achieve their learning goal .To promote evaluation ,students could consider : “How well did I do?” “What didn’t go well ,What could I do differently next time?” “ can I use this strategy for other types of problems?” The above statement is written just to tell u what is the meaning of evaluation, in meta-cognitive context.

29. I can accomplish my goals once I finish my learning

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

30. I am aware of what strategies are useful while learning.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

31. I focus on overall understanding of the topic instead of the peripheral meaning.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

32. I ask myself how well I am doing when I learn through learning activities

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

33. I asked myself how well I am undertaking while learning something new.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

34. I can identify and consolidate main teaching points.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

Reflections : This is fundamental part of plan ,monitor-evaluate process. Encouraging learners to self question throughout the process will support this reflection. The above statement is written just to tell u what is the meaning of reflection, in meta-cognitive context.

35. I can summarize the ideas clearly.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

36. I can frame appropriate concluding statements

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

37. I can correlate the content statements

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

38. I have attained the capacity of explaining, illustrations, demonstration, after using these audio -visual aids

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

39. I am capable to frame higher order questions which needs the higher intellectual thinking or (order thinking skills.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

40. I can re-evaluate my planning when I face confusions in my lessons .

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

41. I can reflect upon my leanings.

Always ☐ Very often ☐ Often ☐ Sometimes ☐ Never ☐

Achievement Test For B.Ed. Course

This study is a part of a thesis work performed by the researcher Ekta Mehta, School of Education, Central University of Haryana, Mahendragarh District, which is developed by the researcher herself. The outcome of the questionnaire will be used for the partial fulfilment of thesis work of the researcher. Here the intent to use the information for making general inferences for the study. Your cooperation will be highly appreciated.

Thank you in Anticipation.

Ekta Mehta

Kindly fill in the following entries: Date:

Name _____ Father's Name _____

Date of Birth: _____ Gender: Male ☐ Female ☐

Class _____

Elective Subjects : 1. _____2. _____ 3. _____

Faculty: Arts ☐ Science ☐ Commerce ☐ Technical ☐

Institution_____

Place _____

Area : Urban ☐ Rural☐

INSTRUCTIONS

On the following pages statements have been given. Read each statement carefully and decide your response on the given MCQ'S in appropriate box⌋ of alternative which describes your thinking the best.

Please do answer to all the statements.

Rest assured, your answer will be kept confidential.

1. Which one is one of the Piaget's four stages?
    a) Growing
    b) Parenting
    c) Concrete operational
    d) None of the above
2. Communicating or relating to others is considered what type of development?
    a) Emotional
    b) Intellectual
    c) Moral
    d) Social
3. This psychologist ran a study with children and modeled behavior using a bobo-doll.
    a) Albert Schlansky
    b) Edward Toleman
    c) John Watson
    d) Albert Bandura
4. Developing a conscience is considered what type of development?
    a) Moral
    b) Social
    c) Emotional
    d) Physical

5. Which theorist thought that each stage of development includes a unique psychological crisis. If the crisis is met in a positive way, the individual develops normally?
    a) Vygotsky
    b) Erickson
    c) Bronfenbrenner
    d) Bandura
6. Who is considered as the most influential psychologist of 20th century?
    a) Thorandike
    b) Pavlov
    c) Skinner
    d) kohlar
7. A child reasons -'You do this tell me' and' i'll do that for you' in which stage of kohlberg 's moral reasoning would this child fall?
    a) The good boy-good girl 'orientation
    b) The social -contact orientation
    c) The instrumental purpose orientation
    d) The Punishment and obedience orientation
8. A toddler is given a cookie after saying “please"
    a) Positive Reinforcement
    b) Positive Punishment
    c) Negative Reinforcement
    d) Negative Punishment
9. Reciprocal determinism in the learning process perceived by Bandura means that individual and society:
    a) Affect each other
    b) Play a role together in learning
    c) Sometimes affect each other
    d) none of the above

10. "A young child responds to a new situation on the basis of the response made by him /her in a similar situation as in the past". This is related to
    a) 'Law of Analogy 'of learning
    b) 'Law of Effect'
    c) 'Law of Attitude'of learning process
    d) 'Law of readiness 'of learning
11. Which of the following being described below experiencing indirectly, through others?
    a) observational learning
    b) mirroring
    c) modeling
    d) vicarious conditioning
12. Frequent flyer program: getting a free flight after accumulating 1000 flight miles.
    a) Fixed Interval
    b) Fixed Ratio
    c) Variable Interval
    d) Variable Ratio
13. Vygotsky believed that problem solving skills takes place through...
    a) exploration
    b) social interaction
    c) self discovery
    d) working with peers of the same abilities
14. To Piaget cognitive development was a progressive reorganization of mental process as a result of?
    a) Radioactive waste
    b) Biological maturation and environmental maturation.
    c) Nurture as the child development
    d) none of the above

15. Which theory is part of Behaviorism
    a) kohlar
    b) skinner
    c) Pavlov and Thorandike
    d) All B,C,
16. What is the goal of Piaget's Theory?
    a) To explain the mechanisms and processes by which infants and then children develop into individuals
    b) To track child development as children age.
    c) To finally understand why these hip young kids won't get off his lawn.
    d) To create a road map for cognitive development.
17. Zone of Proximal development in Vygotsky theory is :
    a) Tasks too difficult for children but can be achieved through adult support
    b) Teacher"s interference hamperlearning
    c) development is a proximal zone of growth
    d) Learning takes place in formal setting only
18. Enactive representations
    a) Image based
    b) Action based
    c) Language based
    d) Personality Based
19. Promoted scaffolding in the early childhood classroom. Teachers must provide support for a child in the zone of proximal development.
    a) BF Skinner
    b) Jean Paiget
    c) Arnold Gessell
    d) Lev Vygotsky

20. Jane, a preschooler, insists on dressing herself each morning for school, even though she generally selects mismatching outfits, misses buttons, and wears her shoes on the wrong feet. When her mother tries to dress Jane or fix her outfit, Jane brushes her mother off and insists on doing it herself. What stage of psychosocial development best describes Jane's behavior?
    a) Trust vs. Mistrust
    b) Autonomy vs. Shame and Doubt
    c) Intiative vs. GUilt
    d) Industry vs. Inferiority
21. Which theorist said that children learn by imitating others.
    a) Bronfenbrenner
    b) Bandura
    c) Erickson
    d) Skinner
22. A_____is anything that increases behavior
    a) Punishment
    b) Response
    c) Reinforcer
    d) Negative Punishment
23. Children develop in 4 cognitive stages. Believed in self exploration without interference from teachers.
    a) Arnold Gessell
    b) Friedrich Frobel
    c) Jean Piaget
    d) John Locke
24. People want to change the law to make it better for everyone, but will work within the law
    a) Preconventional
    b) Conventional
    c) Post Conventional
    d) none of the above

25. Kohlberg was concerned with what type of development?
    a) Cognitive
    b) Social
    c) Moral
    d) Physical

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Innovation The Research Concept

Metacognitive Strategies: A Way to Enhance Self- Learning

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Abstract

Education is the process of comprehensive improvement of the learner.To accomplish this objective, the interest of society at worldwide level has put before students today, which has considerably extended the educational organizations. Students are under stress to learn tremendous amount of content in normally limited time. Today, in continually changing technologically world, it is impossible for people to secure all current information however it is additionally hard to predict what information will be essential for future. In spite of the fact that training offers unimaginable rewards to harvest them, because of this, students, their instructor and guardians need to effectively address numerous difficulties, which start in early grades of school, and proceed through school to college and sometimes beyond .To address these difficulties, educational research, look into to, see how students learn , reason just as how to improve their learning and thinking , such exploration has prompted revelation of the number of techniques which can improve understudy's learning and reasoning abilities. keeping this in mind, the idea of Metacognition has recently become well known zone to investigate in the field of teaching and learning. It is additionally called as higher order thinking cycle to guarantee learning in a superior manner.

It additionally makes a person to understand their characteristic possibilities to learn and work better. These can be achieved far better, if a student is self-directed. Here with this Metacognitive and self-learning measure, a student turns out to be more cognizant about his arranging and association of assignments. With this, student even gets competent to perceive which learning measure is needed to control his intellectual abilities, to keep up a concentration and fixation for his learning. Through this, he similarly attempts to stay away from every one of his interruptions whether outer and interior. Specialists and teachers are profoundly worried about the sort and level of information, students are securing in schools. Studies plainly show that Metacognitive aptitudes assume a significant function in powerful discovering that prompts scholarly achievement. To comprehend Metacognition measure better, with singular contrasts, metacognitive exercises are analysed here for that reason. For this, it is important to investigate which procedures can create level of student's Metacognition better. That is the explanation, why the specialist has chosen this point for writing this paper. The present paper is a partial reflection of the research entitled, “Effect of Flipped classroom Teaching on Meta cognition Classroom Environment and Academic Achievement of B.Ed. Students”.

Keywords: Cognition, Metacognition, Metacognitive strategies.

Introduction

To comprehend the nature and significance of Metacognition during the time spent in gaining something is a former thought that followed from Socrates' to questioning techniques to Dewey's 20th century revolution that we gain bestfrom considering our ways than from the real experiences themselves (Dewey, 1933). Further when study is executed Metacognition found grounded in constructivist theory and gained far and wide conspicuousness in the 1970's. Constructivist learning is depicted as "a dynamic, active, critical thinking measure in which existing information is changed, added to, or remade" (Sheets, 1994, Stahl, 1992). Likewise Theories of Metacognition are found in Piagetian developmental theory, with the emphasis on cognitive mind knowledge, Metacognitive mindfulness, and conscious access to knowledge (Garner, 1994).This way the term Metacognition advanced from Flavell's (1985) term Metamemory. What is more current is, the adoption of the term Metacognition and the

occurrence in research field in the last four decades.Honouring to formative therapist John Flavell in a distribution from the 1970s. , Metacognition is utilized in various disciplines in various ways, and a typical, clear definition which has given it an impression of being elusive in the works.

The following is an eye grabbing words from Flavell's unique composition, just as a few additional definitions and assertion of context from various sources:

Flavell (1976) defines metacognition as “one's knowledge concerning one's own cognitive processes and products… [and] the active monitoring and consequent regulation and orchestration of these processes” or on the other hand anything identified with them, e.g., the learning-applicable properties of data or information. For instance, I am drawing in metacognition in the event that I notice that I am experiencing more difficulty learning A than B; in the event that it strikes me that I should twofold check C prior to getting it as truth". (Flavell, 1976) Metacognition: mindfulness or investigation of one's own learning or thinking measures. (Merriam-Webster, 2012) Metacognition additionally incorporates self-guideline—the capacity to arrange one's learning: to design, screen achievement, and right mistakes when fitting—all fundamental for viable deliberate learning... Metacognition additionally alludes to the capacity to think about one's own presentation. (National Research Council, 2000). As researcher’s eye begin to examine students' reasoning cycles and critical thinking aptitudes, they started to see metacognition as a significant presentation based on mental actions that master students to complete their tasks, as they "plan, screen, and assess their reasoning cycles more regularly and more proficiently than poor or fledgling students" (Goldberg, 2003).Most early, Metacognition has arisen into the standard of cognitive psychology.These different points of view on what Metacognition may include an extension on Flavell's unique definition to put an accentuation on arranging, checking, and assessing one's own learning measures— which are likely identified with the overall young people of the Metacognition research field and the related developing agonies of this arising discipline (Flavell, 1979; Schraw, 1998).

Aim of the Study

To make a person metacognitively mindful is to accountable that the individual can figure out in which ways to upgrade self-learning. Metacognition techniques are such instrumental methodology which accentuation the improvement of reasoning aptitude and a way to upgrade self – learning. This goal is to empower all students to turn out to be more vital,confident, adaptable and beneficial in their learning endeavours.Effective scholarly learning requires high and continued scholarly productivity which requires high discernment which will empower towards effective scholastic accomplishment among the students.Besides these ,this study can bring the awareness among the understudy students to design their work appropriately , realize how to deal with the information accessible , screen their own progress and assess them periodically and correct their errors as expected and are consistently mindful of their insight and can prompt important learning in all the disciplines, where students can definitively get a handle on the material to be considered and improve their scholastic performance and accomplishments.

Understanding about Metacognition

Outline of distinct parts of Metacognition are Metacognitive Knowledge and Self – Regulation.

These two segments are comprehensively best clarified by Schraw and Sperling Dennison (1994) who assumed Metacognition as the capacity to think about arrangement and controlling one's learning. Development of tools for estimating these angles, and techniques for encouraging the understudies are generally dynamic arenas of inquiry among researchers across Social Sciences areas. (Zohar, 2009; Schraw et al., 2006). What's more, there are perplexing covers between Metacognition explorations and investigations of fields concentrated on self-regulatedlearning (a person's capacity for assuming responsibility for their outcomes; Schraw et al., 2006) and self-efficacy (a person's way of assuming competency; Bandura, 1977). The objective of this element is to interpret thoughts from different arenas that may have prompt, has pertinence for training. These explorations and regions of active inquiry can persuade the interested readers for further investigations.

While managing the Metacognitive systems to improve self-learning, it is essential to think about what Metacognition information a student must have. For this different methodology of Metacognition has been shared before hand, these are as per the following:

How might you create Metacognition as per the Metacognitive Approach? Requires a few basic strides to follow:

Before the learning	During the learning	After the learning
• Have done something before • Think about the existing strengths and strategies • Set goals what do I achieve.	• Trial and Error • Reflection is the strategies working for me. • Can I change anything • Am I meeting the goals?	• What worked well. • Is there anything that can improve or alts. • Apply to different tasks.

Along these lines, this depiction of potential methodologies can be speedwell to build oneself learning in undergraduate instruction classrooms, through Metacognitive systems which are shared beneath:

Showing understudies explicitly, building a study hall environment grounded in Metacognitive procedures by altering how they are now doing.

Taking the conversation of Metacognitive information be the part of the ordinary talk of the study Environment encourages a language for students to discuss their insight and learning. (Pintrich, 2002) creating Metacognitive addressing, a significant

leader capacity of the mind that assists understudies with turning out to be gainful students, as they are more liable to answerable for their own learning. Teachers as an instructors can improve Metacognitive information by imbibing Metacognitive systems inside the typical substance followed exercise over the educational plan; Giving knowledge unequivocally to students by displaying and giving models; and, Assessing casually (Ediger, 1999).

Educators can demonstrate both general and substance explicit metacognitive techniques by the manner in which they articulate data information from their substance territory, by use and work of systems, conversations Lead, sharing of thoughts; arranging the study hall, and structure the learning experience can enhance the self –learning. (Dup

Applied methods of Metacognitive Strategies Which can improve self-learning?

Different techniques give a push towards the Metacognition incorporation and the utilization of Case studies and Comprehension monitoring. Case studies give learners a path for actual life expeditions as they use critical thinking methodologies to participate in addressing and observing their methodologies and achievements, while at the same time building up an answer for the situation taken into consideration. Comprehension monitoring likewise also advances Metacognition, as perusers of sentences assess their comprehension of the context is being perused. The concept must bode well when persisted again to check whether they may have misread words or the writer's proposed message. Understanding monitoring can happen by utilizing such Metacognitive methodologies as think loud protocol. In think loud protocol conventions, educators give a model of how peruser's screen, question and review what they have quite recently perused. As educators model think loud process, they bring up issues or issues, at that point "think" for all to hear to the class as they show how questioning skill and the graphic organisers promotes perception of materials happen (Duplass, 2006). Other valuable Metacognitive strategies incorporate self-questioning age as an approach to create addressing aptitudes and the utilization of realistic coordinators to elevate concrete on noticeable models to upgrade learning. Metacognitive journal likewise screens student consciousness of understudies' learning and thinking processes.

Considering Students Confusions Point

Giving understudies practice in recognizing doubts in one long-standing, dynamic learning methodology that has been utilized across numerous disciplines dealing in classrooms of any amount is the Muddiest Point (Angelo and Cross, 1993). Normally occurs as an in-class, brisk compose in a record card, understudies are approached to compose for a concise time frame—1, 3, or 5 min, as a rule toward the finish of a class meeting—to address oneself inquiry "What was generally confounding to me about the material being addressed in class today?" Similar to preassessments, the Muddiest Point is unfathomably helpful to educators in checking what they were trying for or indistinct to understudies.

Retrospective Post Assessments

Engaging Students to understand contextual Change, Cognitive psychologists and science education scientists conceptualize learning as an under study focused movement where understudies reflect their thoughts regarding a subject (Posner et al., 1982). This assumption infers that understudies won't generally learn new data on the off chance that they don't experience a Metacognitive acknowledgment that expects them to analyze how they considered the subject previously and in which manner they are contemplating that point now; this is like Dewey's declaration that contemplating on an experience is the critical advance is a product. (Dewey, 1933). A basic apparatus for unequivocally charging understudies to consider how their thoughts are (or are not) changing is a retrospective post assessment.

Reflective Journals

Giving a group a stance in Which understudies Monitor Their Own intellectual logics is one of the Metacognitive techniques. Teachers can relegate something as basic as a low-stakes, depressed spots composing task after a first test, requesting that understudies reflect and compose a concise post to their future selves visions: "Shouldn't something be said about my test planning functioned admirably that I ought to make sure to do next time? What didn't function admirably that I ought not to do next time or that I should change?" If a teacher uses such composition, either related to a test or as a component of a particular intelligent composing task, the individual is unequivocally giving understudies a procedure for creating Metacognitive methodologies, just as work on utilizing that approach with regards to their disciplinary course.

Conclusion

Metacognition implies beyond, next to or with the cognition. Along these lines, Metacognition systems are activities which go absolutely beyond cognitive devices and which demonstrated a route for student to facilitate their own learning cycle. At long last Metacognition systems are partitioned into three methodology sets "centring your Learning, orchestrating and arranging your learning and assessing your learning" and these strategies prove helpful to achieve the desirable outcomes towards learners.

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Innovation The Research Concept

Flipped Classroom a New Paradigm in Higher Education Pedagogies

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Abstract

The calls for improving conventional advanced education instruction, and for changing the sage on the stage into the guide is after thought to clear route for understudy, focused dynamic learning techniques cut the most that has likely not been as uproarious as in this era. In this specific circumstance, flipped study hall is being proposed to respond these calls. A few examinations have shown that flipped study hall as an instructing technique which can advance understudy commitment and can bring a higher dynamic way to deal with gaining in advance stage of education. The discoveries from this examination has affirmed that the consequences of these investigations features has bring an extra focal points related with the flipped study classroom model.

Here the understudies in the examination has set an example which was found that flipped study hall plays the most like part. The most esteemed purposes behind this was that the understudies recognised achievement through taking glance at video material, the span to concentrate in their own individual level of learning, assimilation and portability gained by flexible video addresses, and found that gaining is very easy and more successful inside the concept of the flipped study hall**.** That is why this effort has been made to exhibit the value of this invention.

Keywords: Flipped classroom, Higher education, New invented Pedagogy

Introduction

Training understudies at higher education evaluation has been acted in a reasonably equivalent strategy, since quite a while ago as a recorded range of time and across conventions. As a primary section, we found that the traditional talk in front of the instructor, or "sage on the stage" as considered by King (1993) is the notion After essentially, where sharing data for making understudies involvement included. Throughout 30 years, regardless of whether it is guidance to graduates, essentially, have been insistently denounced. The essential examination has enlightened the on going process with the understudies who appeared to be uninvolved in traditional talks in light of the nonattendance of frameworks that ensure, insightful responsibility with the material, as understudy's thoughts blur quickly, the development of the discussions isn't acclimated to all understudies which consequently requires enhancements and it is seen during investigations that just friend talks are not suitable for indicating higher request aptitudes accordingly, for instance, in implication and examination. (Cashin, 1985; Bonwell, 1996; Huxham, 2005; Young, Robinson, and Alberts, 2009). In this way, many investigations and instructors have maintained various kinds of tending components which is subjected to a working of learning hypothesis, some are incorporating novel advancement intervened in correspondences (Beekes, 2006; Rosie, 2000), others without an express through the focus on development, talked about, the redesigned discussions Bonwell (1996). In this way said, paying little heed to the comprehensive assessment, the friend talk generally keeps on, as the staggering punctilious philosophy in high level training (Roehl, Reddy, and Shannon, 2013). It is besides such an establishment, that at genuine note, in a perspective on types of progress in enlightening development, growing weights on high level training which have been believed to create a push to a versatile coordinated strategy for understudy whose attention is on learning systems that moderate the imperatives of the correspondence way of tutoring (Betihavas, Bridgman, Kornhaber, and Cross, 2015). taking the consideration of transformation to give surge of trained professionals and expert teachers which we have seen towards in

gaining understudy centred approach , by supporting flipped study hall instructive projects in high level training. It is Found that the help of the flipped study hall pedagogy is sensible. As indicated by though shrouded theory which drove the specific examinations, there the flipped study classroom model appears to address a couple of troubles with respected strategies for tending to which portrays a way for dynamic achieving frameworks and for utilizing study hall schedule of time for participating in more critical degrees of Bloom's logical order (Krathwohl, 2002), for instance, applicability, assessment, and mix. The flipped study hall model relies upon the likelihood that ordinary teaching is adjusted as in what is consistently applied where class is flipped or tradeded that usually done by the understudies at the out of class. As such, despite of understudies simply checking out a discussion in class yet in addition thereafter getting back to place of environment where a lot of designated issues, they read tenure oriented course composing and adapt address content, through making of video at home and partake in instructor's instructing basic reasoning, assessment and discourse in class. Makers of flipped classroom, records different inclinations to change training and learning in high level training according to the flipped study corridor model: it licenses understudies to gain learning in their own particular manners, it urges understudies to successfully attract, with address content, with it, it opens up certified class time for additionally convincing, innovative and dynamic achieving works out, instructors likewise get stretched out some events to associate with to assess understudies' outcome, and understudies expect control and obligation for their achievement (Gilboy, Heinerichs, and Pazzaglia, 2015; Betihavas et al., 2015). Disregarding that flipped study hall is a genuinely unique wonder in high level training, number of test investigation has likewise been driven. For instance, McLaughlin et al. (2013) and McLaughlin et al. (2014) examination of medication store where the example of understudies' experiences flipped study classroom as a courses which revealed that understudies are slanted towards, the more learning content in going before class environment and utilizing class time for implementing learning, that understudies gained through a flipped classroom approach, are seen as the best attracted where understudies are going to traditional courses. Near revelations were likewise investigated by Davies, Dean, and Ball (2013) who dissected three distinctive guided procedures in an knowledge disseminating systems accounting course, which demonstrated those understudies are going to the flipped study hall course moreover were more content oriented with the learning where atmosphere differentiated to the next treatment social events. A couple of examinations report demonstrated that understudies value the alternative to learn in their own specific manner of study which slanted them toward flipped classroom over regular approaches. (Butt, 2014; Davies et al., 2013; Larson and Yamamoto, 2013; McLaughlin et al., 2014; Roach, 2014; Gilboy et al., 2015). In term of evaluations of adapting additionally came about, Love, Hodge, Grandgenett, and Swift (2014) and showed higher test grades for understudies subsequent to using a flipped study hall approach

when stood out from understudies' learning through creative procedures. Hung (2015) likewise have shown a identical results for English language understudies.Next, examination by Findlay Nouri International Journal of Educational Technology in Higher Education (2016) 13:33 Page 2 of 10 Thompson and Mombourquette (2014) has been taking a gander at regular empowering procedures and the flipped study corridor approach inside a comparable trading course, which exhibits no basic differences in insightful achievements. In some cases, the specific assessment on the flipped classroom model in high level training, further the more bare essential assessments of understudies' seen its use, in its beginning phases the necessity for extra investigation is highlighted by many (Bishop and Verleger, 2013; Uzunboylu and Karagozlu, 2015; Betihavas et al., 2015; Gilboy et al., 2015)

Flipped classroom and Instructional strategy

Instructional method is also comprehensively alluding to the hypothesis and practice of training, and state that how this motivates the development of students. Instructional method, as a scholastic order, also investigated how the way abilities and information are exchanged in an instructive setting, and it sees the communications that occur during learning. Varieties in teaching methods mirror the distinctions in social, political, social settings from which they have been exude (Li, 2012). As indicated by the Merriam Webster Dictionary, instructional method is the demonstration, science, or calling of educating. Instructional method hypotheses when explored logically distinguish the understudy as a specialist where the educator considered as a facilitator of educating and learning the learners. In the process of Educating and learning in an ordinary establishments ,normally happen in the classroom. In these days such adaptations can't be viable without imaginative innovations. Here Inventive innovation plays an extremely basic apparatus in instruction to serve each person and society on the loose. No nation can glad to be instructively cutting-edge without empowering innovation in her instructive exercises in the study hall. The conventional classroom has applied the "I Achieve", "You Achieve", "We Achieve" as a methodology for instructing and learning for a long time. Where as The flipped classroom pivots the table. The educator uses "You Achieve", "We Achieve", I Achieve" as a substitute.

Relationship between Flipped classroom and Advanced Education

When we glance at Advanced education it seems that its constrained to move towards is more flexible, successful, lively, and focused understudy instructing procedures that alleviates the constraints of traditional communication models of schooling. In further era, the flipped study pedagogy has been suggested to help to improve the progress. In any case, explorations on the operation of flipped study hall in progressive education which in its outset, has

been kept in thought for understudy's impression of learning through flipped classroom.

Flipped classroom also "improved" study hall where schoolwork, examination and further readings are utilized in the study hall. At home, understudies associate themselves with primer class exercises, as in example of watching exercise recordings, PowerPoint and rundown readings. After this, understudies come to class not as understudies but rather as "instructors" prepared to begin taking care of issues, testing arrangements and evaluating text. The flipped study hall is still exceptionally new in the showing calling as a methodology for educating.

Likewise with most systems, the flipped classroom has various methods to use in the study hall with the guide of proper innovation. The hypothetical establishments which legitimize the flipped study hall has been created from an assortment of writing where understudy focused on learning, from the hypothesis of Piaget, Elkind and Tenzer (1967) and Vygotsky (1978). The communitarian and constructivism learning part of the flipped study hall originated from Piaget's hypothesis of intellectual clash where agreeable participation in corporates from Vygotsky's zone of advancement vicinity. The association between these learning speculations and its chronicled improvement brought about a Venn-outline that shows the communication between these gatherings of learning hypotheses. Accordingly, it is basic to see that in spite of the fact that learning styles fill an affirmation for flipping study hall activities ,but basically they don't give structure to how the class exercises should be designed.

This explanation none stated behind appearance of learning styles in Students-focused learning speculations and strategies Venn graph has been Adopted from: Makinde, (2017) A writing which exhibits that there are equivalent concepts with flipped training which are being utilized in various investigations (Hung, 2015). The concept 'rearranged study hall' is utilized by Lage and Platt (2000), 'just-on time educating' is utilized by Novak (2011), 'flipped classsroom' has been utilized by Bergmann and Sams (2012) and 'upset learning' is utilized by Barker, Quennerstedt and Annerstedt (2013) to clarify a similar approach. Planning and obligation are two prerequisites of a fruitful flipped study hall.

Material spread can be easy and useful for understudy, as , training activities which may be maintained through the usage of a flipped classroom pedagogy. Similarly, the stages of Bloom's science of teaching can be developed. The outer examination corridor materials adjust in the lower hirarachical levels of Bloom's Taxonomy, for instance, learning how to conceptualize leaning through an undersatanding note and reviewing, and in the classroom material fits in the advanced solicitation stage, for instance, making, surveying, dismembering and applying (See and Conry, 2014).

Aim of the study

The reason for this investigation was to inspect how understudies see flipped study hall Environment in a college research techniques course. Three specific perspectives were thought of, in particular, (a) the understudy's overall encounters and mentalities of achieving through flipped homeroom, (b) the understudy's encounters of utilizing video addresses as a vehicle for gaining, and (c) the understudy's encounters of utilizing a Learning Management System (LMS) in the casing of the flipped study hall technique. Moving ahead, this examination has additionally thought about contrasts when encounters got the mentalities of low and successful understudies.

Why Flipping the Classroom

The term flip comes from trading or turnaround schoolwork for classwork and the other way around. At the point when understudies were given schoolwork in the aim for them to take a shot at it at home, guardians of some of them are taught and can help them with the work. Yet, then again, guardians of some may not be learned in the substance and can't help them with their schoolwork. Henceforth, as per Ash (2012), understudies can come to class with the substance and get vital direction from the educator during study hall cooperation's. The flipped classroom furnishes understudies with essential in-class backing to expand their insight and abilities and gives more opportunity for involved exercises. Makinde and Yusuf (2017) believe that the flipped study hall energizes "understudies to accept learning as their duty since they learn freely and with a great deal of inspirations from the classroom". Understudies likewise approach the substance at home through computerized video circle (DVD) player with TV/PC or with admittance to the web. In the event that one is missing from class because of co-curricular exercises or medical affliction, it is effectively make up for lost time through disconnected or online exercises gave in the flipped homeroom.

Paradigm in Higher education Pedagogies

Former advances in innovation and in philosophy have opened altogether new Paradigm for training research. Mounting pressure from expanding educational cost expenses and free, online course contributions is opening conversation and catalyzing change in the actual study hall. The flipped study classroom is at ths point is the emergence of this discussion. The flipped classroom is another scholastic methodology, which uses unconventional video talks and practice issues as homework, and dynamic, pack based on the basic deduction practices in the investigation part. It addresses an uncommon blend of learning hypotheses once thought to be conflicting but dynamic, such issues set up the learning practices set up regarding a constructivist reasoning and instructional talks which got immediate direction methods set up upon behaviourist guidelines. This paper gives an exhaustive overview of earlier and progressing examination of the flipped study hall. Studies are described on a few measurements. Among others, these incorporate the kind of in-class and out-of-class exercises, the techniques used to assess the investigation, and the fundamental qualities for each examination. Consequences of this study show that most investigations directed to investigate understudy

observations and utilize single-bunch study plans. Reports of understudy view of the flipped study hall are to some degree blended, yet are commonly sure by and large. Understudies will in general favour face to face talks to video addresses, yet incline toward intuitive classroom exercises over talks. Narrative proof recommends that understudy learning is improved for the flipped contrasted with conventional classroom. Be that, as it may, but there is almost no work researching understudy learning results

Flipped classroom and Achievements of Learner's showcase

The flipped study classrom: for dynamic, incredible and extended learning – is exceptionally for slow achievers Jalal Nouri-This examination reviewed understudies' perspective on flipped classroom guidance in a previous year school tenure in investigation of techniques. A survey was controlled in assessing understudies' (n = 240) perspective on flipped classroom study overall, video as a gaining instrument, and Moodle (Learning Management System) as a backing gadget inside the packaging of a flipped classroom pedagogy.. The outcome showed that a tremendously , lot of understudies gained a moving aura before flipped classroom, the usage of video and Moodle, seemed as an elevating attitude towards flipped study hall was immovably compared to impression of extended motivation, responsibility, extended learning, and practical learning. Low achievers basically nitty gritty even more unequivocally when stood out from fruitful individuals concerning mindsets before the use of video as a achieving mechanical assembly, seen extended learning, and saw all the more remarkable learning.

Classroom flipping can't absolutely uproot address strategy on the grounds that not all study halls are constantly flipped. The educator or instructor is as yet needed in the flipped homeroom. The arranging and all other groundwork for each class actually require to be finished by the instructor. The flipped classroom doesn't need modern innovation before it very well may be applied. In view of the above mentioned, Ash (2012) proposes 5 clues for flipping the classroom:

1. Try not to get snared on making your own recordings;
2. Plan your class to understand what parts to "Flip" and when;
3. In the event that conceivable, be in coordinated effort to make recordings;
4. Address the issue of early availability; and
5. Make a procedure to draw in understudies with recordings.

The typical practice among the instructors utilizing the flipped classroom is to draw in the understudies with the recorded recordings of their talks. They utilize different strategies in drawing in the students with the recordings. Instructors notice that the utilization of 5-15 minutes recordings is exceptionally ideal in the flipped study hall. Numerous assets can be found on the web for content data in different regions of the topic. A few sites give instructional exercises, interfaces and premade recordings on the planned themes. Explores show that best flipped study halls use recordings got from an assortment of connections. By getting recordings from various sources the understudies validate that it is all the more intriguing, drew in and found the data refreshing. Recordings from a solitary instructor look sublunary and bore-some. Recording bore-some addresses for understudies to watch all alone nullify the fundamental goal of a flipped homeroom. Voice-over Power Points are likewise sublunary on occasion and tedious. Understudies will lose interest and are likely not going to watch them with complete consideration (Makinde, 2017). As indicated by Brunsell and Horejsi (2013), one procedure of making the recordings is the utilization of basic "one take" recordings. "To create these recordings, a modest advanced camera, camera stand (mount), white board, whiteboard markers and whiteboard eraser or cleaner are required. Instructors adumbrate introductions on a progression of little whiteboards. At that point, ecord themselves talking through the arrangement of whiteboards. The significance of this strategy is that recordings can be immediately made; and having the instructor on camera, understudies may associate with both the substance and the educator." Alternatively, educators can draw their introduction as far as contents composing and voice over by having just the content on camera. This forestalls pointless spotlight on instructors' stance and dressing which could divert understudies' consideration since they associate with just the substance and voice of the educator, not virtual appearance.

Suggestions

The flipped classroom actually needs a great deal of mindfulness in the field of schooling, particularly among the agricultural countries. To find the most recent in the training and to have the option to give the students the best, the flipped study hall should be supported among teachers and schools from the grade schools to tertiary organizations. With this, educating and learning would be all the more fascinating, urging and to improve both scholastic execution and maintenance of the students.

Travis (2014) suggested that move towards examination is fundamental about the affirmation of flipped learning as a run of the mill scholastic practice. Disregarding the way that the examination of Travis (2014) has depicted that understudies' reply about one semester in a specified field, is more assessment oriented which should be directed to test the feasibility of flipped learning, for instance, estimating has been taken up in for understudies, from flipped learning.

Baepler et al. (2014) lessened very close direction from 150 minutes to 50 minutes out of every week and resulted that learning outcomes didn't decay. As a next report, it is recommended that the unique proportion of eye to eye direction that found that the best learning favourable position to understudies be inspected.

Simpson and Richards (2015) indicated that sufficiency of flipped adjusting pedagogy plans can be valuable towards the various assets of arranging scheduled course even more enough about understudies' niche.

Conclusion

Despite the way that ,it is vicissitude to get at the extent of every particular learning style of understudies in the classroom, the flipped study hall instructive philosophy outfits educating those that tends understudies with distinctive styles of adhering. New preparing progresses effortlessly in-class achieving activities to happen outside of the classroom and out-of-class practices happen in the investigation corridor being driven through the teacher. The flipped classroom permits displacing of direct direction by accounts that can be gotten at whatever point and whatever place by understudies and moreover by setting up an concept based learning atmosphere during opposite demonstrating time (Bergmann and Sams, 2012; Hamdan et al., 2013). The reflection of the composing shows that some extended obligation to the informative atmosphere though the usage of flipped study hall. At first, understudy implementation [INQUIRIES?] resulted subjects that can be given, besides all levels of Bloom's science of teaching which ought to be refined by the utilization of the flipped classroom concept. Understudies are asked to come out of the examination lobby to adjust openly of spot time and moreover to pick the very supportive examination procedure for their self paced learning. Additionally, it is discovered that educators who has utilized the flipped study hall pedagogical technique, has bring improvement to such means that they do have, by its gained insightful discussions and discussed instructional techniques with each other.

It was discovered that the flipped classroom pedagogy has been used in many ways controls of tutoring with the purpose of growing participation and tweaked scheduled span among understudies and teachers in the investigation lobby. With-In-class practices and out side-the-class practices that are being traded for a confined season of different subjects streams , for instance, clinical medication store exercise, food, neurologic pharmacotherapy, microeconomics, people prosperity, science, actuarial science, English language and straight polynomial math. A large portion of studies depicted that there was an enormous advantageous change in understudy sees through the flipped study hall approach. The outcomes of the composing survey in this examination display that there is an information opening as regards the flipped study hall methodology. Next assessment is prescribed to describe to plan conclusions of flipped study lobbies to truly explore the use of development and transcendent evaluation instruments. Besides this, it is suggested to lead exploration on the impact of a flipped learning atmosphere on procuring desirable gaining results and an ideal proportion of eye to eye direction which can give best exploiting to understudies from flipped teaching.

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List of the Activities performed during Ph.D. Program

National Seminars Attended with Paper Presentation

1) Central University of Haryana (2017, October 15th& 16th). I*nclusive and qualitative expansion of higher education in Haryana.* Paper presented on *"A concept note on new working models of PPP for access of differently-abled students."*

2) Guru GhasidasVishwavidyalaya, (2018, February 23rd& 24th). *Incorporation of ICT trends for the interactive learning environment in teacher education.*

3) Tika Ram College Of Education, (2018, February 25th). *Education for peace and the social construction of knowledge.*

4) Govt. College for Women, Sirsa (2018, February 10th). ***Addiction to Modern Technologies and Health Issues -A Perspective Cohort'***

5) Mohan Memorial College of Education Distt. Fatehabad, (2018, March 14th). *Innovative ICT trends for the interactive learning environment in teacher education.*

Participation in National Seminars

- The Central University of Haryana, (2017, August 5th-8th). *Higher education leadership program*

National Conferences:

Paper Presented

- The Central University of Haryana, (2018, October 11th& 12th). *Spiritual Development Through Education.* Paper presented on *"Perseverance of Spiritualism and its Impacts on Modern Life."*

Attended

- The central University of Haryana, (2018, December 3rd& 4th). *LIS Education Research and Training (LISERT): Capacity Building and Sustainable Development Goal.*

International Conferences and Seminars:

Paper Presented:

- D.A.V College of Education,Abohar (2018, February 17th). ***Mental Haze, Its Identification,Consequences, and Treatment."***

- Punjab University Chandigarh, (2018, October 26th-28th). *Metacognitive Strategies: A Way to Enhance Self Learning*

Webinars Attended

1) Centre of Education and IQAC,IITE(Indian Institute of Teacher Education Gujarat, (2020, April 27th& 28th). E*ducation in the era of pandemic, leading and inspiring through uncertain times.*

2) Tamil Nadu Teacher's Education University Chennai, (2020, May 19th-21st). C*reative interactive e-content.*

3) Jan Nayak Ch. Devi Lal(P.G.) College of Education Sirsa,Haryana, (2020, May 26th). P*lanning of teacher education in post covid -19 world.*

4) Sharma S. (2020, June 8th). *Inclusive Education in India.* GGSIP University Delhi Teachers Group.

5) Anand, S. (2020, June 17th). *Construction of Achievement Test.* by GGSIP University Delhi Teachers Group

6) Amit. (2020). *Cooperative learning.* School of Education MGAHV, Wardha.

7) Bhatia, R.K. (2020). *Flipped Classroom.* JamiaMilliaIslamia University, Delhi.

8) Sharma, S. (2020, August 6th). *Educational administration.* Central University of Haryana.

9) The Central University of Haryana, (2020, September 5th). *National webinar on teacher and teacher education: national education policy 2020*

10) Central University of Haryana, (2020, October 2nd). *Mental health for all greater investment-greater access.*

Workshops

1) Central University of Haryana, (2017, October 30th-November 3rd). C*ritical perspective "inclusive education"*

2) Central University of Haryana ,Mehendergarh (2018, March 19th-23rd). *Statistical techniques and data analysis using 'r'.*

3) Central University of Haryana,Mahendergarh. (2018, May 14th-16th). *Teaching,learning, and evaluation online with moodlemooc platform &open education resources*

4) CDLU Sirsa (2018, August 25th-September 3rd). *Research methodology*

5) Govt.College for Women, Sirsa (2019, February 9th& 10th). *Psychological Testing.*

6) Punjab University Chandigarh (2019, 13th-21st). S*tatistical software SPSS*

7) Guru Nanak Dev University, Amritsar (2019). *Flipped classroom and ICT enabled teaching-learning.*

8) M.D.U Rohtak, Haryana (2020, April 10th-15th). *MOOCS and E-Learning Technologies.*

9) Hindustan Institute of Technology and Sciences (2020, May 4th – 9th). *Research Methodologies in Social Sciences.*

10) Dhiman R. (2020, May 30th-31st). *Art Of Writing a Paper.*

11) Central University of Jammu (2020, June 16th-18th). *Development and Standardization of tools for research in social sciences.*

12) Dhiman, R.; Parmar, Y.S. (2020, July 5th). *Reference Management Using-MendeleyDesktop.*

13) Guru Angad Dev Teaching Learning Centre, SGTB Khalsa College (2020, October 14th). *Research analysis:tools and technique*

14) Guru Angad Dev Teaching Learning Centre, SGTB Khalsa College (2020, November 26th). *Flipped learning approach: a novel ICT-empowered pedagogy for 21st-century learning needs*

Any Other Participation /Achievement during the Ph.D. Program

1) The central University of Haryana, (2017, December 5th-8th). *Higher education leadership program.*

2) Central University Of Haryana Mahendergarh (2018, February 15th). *Bridging the gaps between higher education and school education*

3) Participated As A Volunteer In Foundation Day & Cultural Fest (Spandan-2019),CENTRAL UNIVERSITY OF HARYANA

Courses

- Kee, L.; Bataviya, P.S. (2020, April 22nd-May 15th). TTT-*teach the teacher using flipped classroom* Link http://oe4bw-ijs.si/project/teach-the-teacher/

Research Paper Published

1) Mehta, E. (2018). Inclusive Growth: Vision Of Digital India. *Sustainability & Digitalization :Present Reality & Future Perspective* , 148-156.

2) Mehta, E. (2018). Innovative ICT Trends For Interactive Learning Environment in Teacher Education. *An International Journal of Research in Social Sciences, 8* (5), 787-791.

3) Mehta, E. (2018). Mental Haze- Its Identification, Consequences, and Treatment. *IIMJ, 6* (4), 182-187.

4) Mehta, E. (2018). Special Education:It's Index,Need & Challenges in India. *Special Education:Practices and Challenges*, 189-193.

5) Mehta, E. (2020). Meta-cognitive Strategies- A way to Enhance Self Learning. *Innovation The Research Concept journal, 5* (10).

6) Mehta, E. (2020.). Flipped Classroom –A New Paradigm in Higher Education Pedagogies. *Innovation The Research Concept journal*