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.