

## CHAPTER-IV

### ANALYSIS AND INTERPRETATION

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

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

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

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

So the Analysis and Interpretation are stated underneath:

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

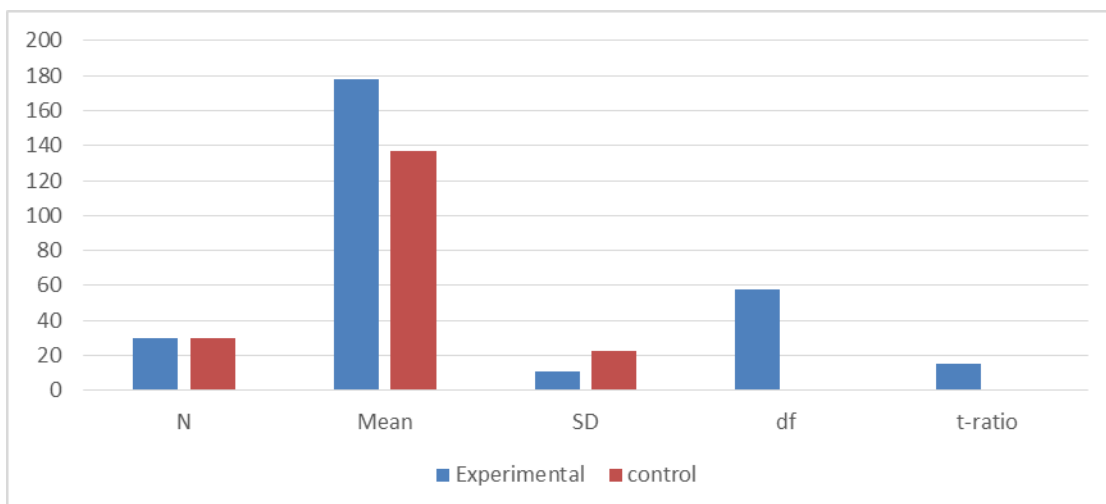
4.1. For this purpose, the researcher administered the Flipped Class intervention to the students of the Experimental group and taught traditionally to the Control group and the result of the same has been interpreted as below:

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

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

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

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



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

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

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

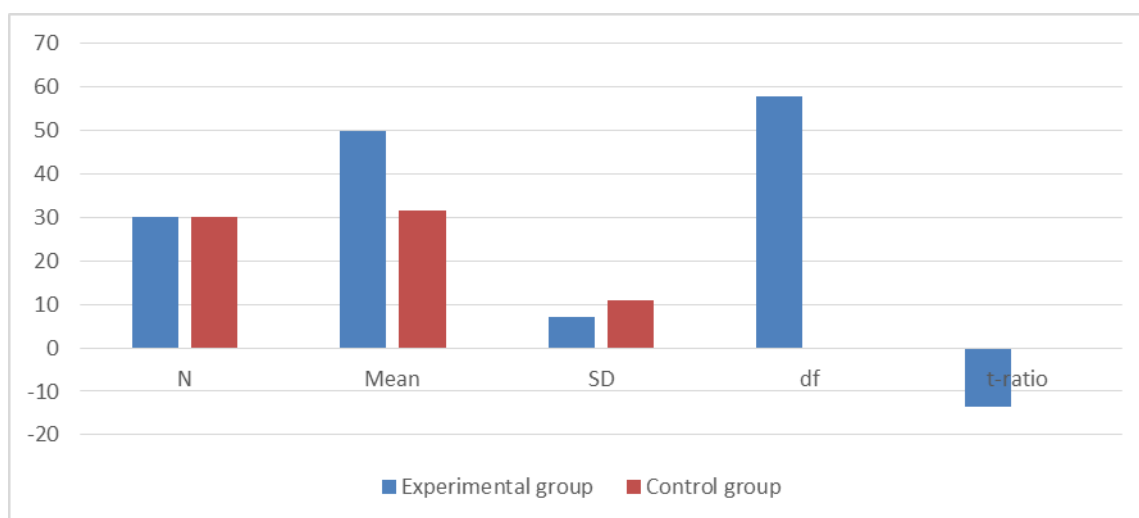
**Section – II.** Comparison of the scores of Experimental and Control Group on Classroom Environment of B.Ed. students to see the effect of the flipped intervention and their assessment through the self-prepared questionnaire.

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

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

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

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



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

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

It is exhibited from table 4.2. that mean scores among B.Ed. students in Experimental and Control groups on Classroom Environment is 50.05 and 31.65 which means that both the two groups are different. Whereas the calculated value of 't' is 13.45 which is more than the table value for the degree of freedom 58 at .01 level of significance which shows that the value is significant. Therefore, it

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

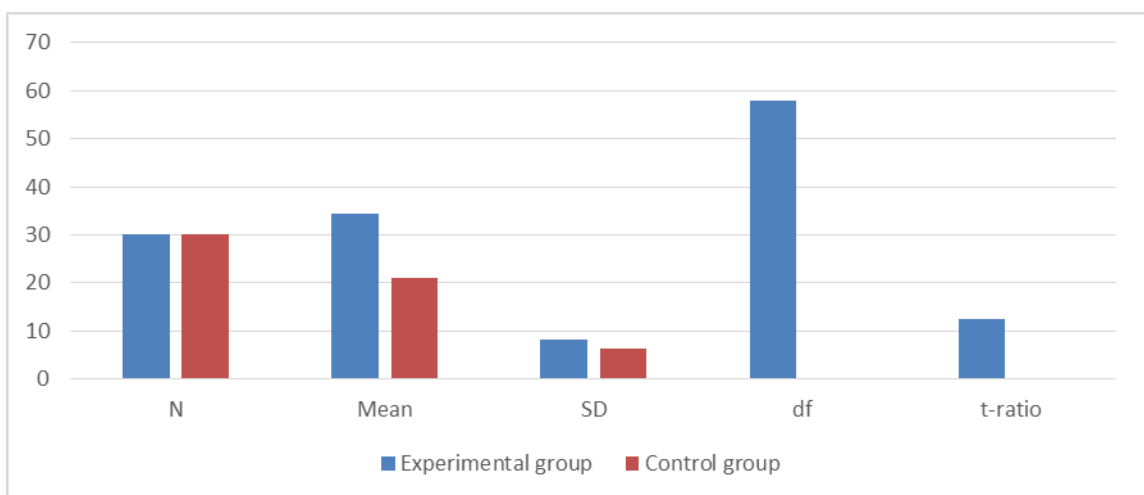
**Section – III.** Comparison of the scores of Experimental and Control Group on Academic Achievement of B.Ed. students to see the effect of the flipped intervention and their assessment through the self-prepared questionnaire.

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

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

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

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



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

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

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

#### **4.4. MAJOR FINDINGS**

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

#### **4.5. DISCUSSION**

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

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

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

### **Flipped Classroom:**

#### **Singh, K.K. (2012)**

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

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

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

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

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



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

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**Masha, Smallhorn (2017).**

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

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

**Didem, Selçuk (2018).**

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

**Michael T. Holik. (2016).**

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

**Metacognition**

**Elenora Papeontiou-Louca (2003),**

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

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

**Gregory P. Thomas (2003),**

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

**Xu, Li Hu, ((2006).**

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

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

**Donald Christian Kenna (2014),**

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

The sample of 21, 12<sup>th</sup>-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 assess the self-efficacy of the students. The findings revealed that the self-efficacy score was at an average level with the flipping class. On the other hand, the conventional class reduces the average score of the learners.

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

### **Maclellan, (2012)**

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

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

### **Sun (2015)**

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

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

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

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



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

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

Classroom environment.

### **Casey, Katherine (2013)**

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

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

**Lee Ann Lindsey (2015).**

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

**Diane Pare (2017)**

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

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

### **Heather Phipps (2010)**

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

### **Academic Achievement**

#### **Cara A. Marlowe (2012)**

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

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

### **Ibrahim Agamy (2012)**

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

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

**Renata, Pavanelli. (2018)**

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

**4.6. Conclusion**

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

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