CHAPTER II

REVIEW OF LITERATURE

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2.0 INTRODUCTION

Research takes advantage of the knowledge, which has been accumulated in the past as a constant human endeavor. It can never be taken in isolation of the work that has already been done. The researcher proposes problem that directly or indirectly related to the study. A careful review of the research journal, books, dissertation, thesis and other resourceful information on the problem to be investigated was done so that the proposed study could lead in the direct direction. Avoid duplication, source of the problem of the study, finding gaps, clear pictures of the problem, determining meaning and relationship among variables.

2.1 IMPORTANCE

Human knowledge has three phases: preservation, transmission and advancement. Practically all-human knowledge could be found in books, journal and papers. Before taking up specific research project in the development of specific research project in the development of a discipline the researcher must be thoroughly familiar with the previous studies.

2.2 STUDIES RELATED TO CONSTRUCTIVIST APPROACH

- **Pritinanda (Jan 2013),** conduct study on students' perception on collaborative learning a strategy for learning English. Analysis revealed that most students claim to have derived academic benefits such as better comprehension, improved performance, and acquired generic skills-enhanced communication. Most of the students believe they gained social skills: they found collaborative learning enjoyable. Most students agree that collaborative learning practices should be encouraged and continued. It was concluded that students' perception of collaborative learning is positive and accepted by students at secondary level.

- **Deepa, Sadananthan (2012),** conducted study on attitude of secondary school teachers towards cooperative learning.

Findings:

1. In the total sample of 180 teachers 45.6% (N=82 total mean 99.9) of teachers showed favorable attitude towards cooperative learning.
2. Age, sex, locality, subject of teaching had strong influence on the attitude towards cooperative learning.
3. Educational qualification of teachers had no influence on their attitude towards cooperative learning

- **Furtak, Seidel, Briggs (2012),** conducted study on Experimental and Quasi Experimental studies of Inquiry Based Science Teaching: A Meta analysis.

Finding revealed that-

1. A positive effect of this teaching approach on student learning, with a particularly large effect of student engaging in the epistemic and social domains combined.
2. Meta analysis also indicates higher effect sizes for studies that involved teacher lad activities.
3. Extending beyond the domain of inquiry based teaching, this Meta analysis has illustrated how a refined model for instructional approach can yield more nuanced interpretation of the effects of that approach on student learning.

- **Adlak (2010-11),** conducted a study to effectiveness of constructivist approach for teaching English class 6^{th} in terms of achievement.

Findings

1. Constructivist approach was effective in terms of students' achievement in English.
2. Gender did not produce any differential effect on the achievement in English.
3. There was no significant effect of learning on the students' achievement in English.
4. There was no interaction effect of treatment and styles of learning on the students' achievement in English

- **Prasad, (2009),** journal of teacher education and research A comparative study of achievement in biological science through traditional method and inquiry training model (ITM). From the analysis and interpretation of data, it is found that ITM model is worth applying in different school for teaching biology.

- **Jayaprabha (2009),** journal of teacher education and research. Metacognition instruction and achievement in science classroom. Their studies revealed that metacognition instruction were most effective in the experimental group in enhancing academic achievement than in control group.

- **Makwana (2007)** conducted a study to find the influence of constructivist approach on achievement of class 5th students in geometry. 2) To find out the difference between private schools and government school in achievement of class 5th students in geometry. 3) To find out the gender wise difference on achievement of class 5th students in geometry.

Findings

1. Teaching and learning process through constructivist approach learning situation could definitely help students.
2. There were significant increase in the posttest scores of both boys and girls.
3. The intensity of improvement of government school student due to the intervention of constructivist approach.
4. Constructivist learning situation improved constructivist approach on achievement of class 5th students in geometry of private and government school.

- **Patil (2006),** the study has investigated achievement in English language of class 6th students through structural approach and compares its achievement with traditional approach, which is currently used in the classroom. As the study intended to see the relative effectiveness of traditional approach and structural approach on the achievement of class 6th class students in English language, researchers adopted two group experimental designs.

The overall achievement of the students studying through structural approach is significantly higher than traditional approach.

- **Care Stenger and Benadette Garfinkel (2003),** how the constructivist approach to learn can be used to attain academic standards. The finding of this project showed all the students had responded well to the constructivist approach to learning. The students were able to work through their problem together.

- **Khare (1986)** conducted a study entitled "traditional and structural approaches of teaching English with references to learning outcomes". The objectives of the study were to test the general level of performance of junior high school students in various aspects of English, namely spelling, comprehension, applied grammar and vocabulary, 2) to make the comprehensive study of the average performance of the students taught through the structural

approach and traditional approach. Sample of the study comprised of 253 boys and 300 girls from four districts in U.P. 7 achievement tests for seven different dimensions of English were constructed. The following conclusions were drawn: 1) the students' achievement under the structural approach was better than those under the traditional method in the areas of spelling, pronunciation and applied grammar.

2.3 STUDIES RELATED TO ACHIEVEMENT IN SCIENCE

- **Gaude (2012)** conducted a comparative study of multimedia approach and traditional approach on the achievement in science of grade 8th students with different learning styles.

This study has investigated into in teaching science. The achievement in science of class 8th students studying through multimedia approach and compare its achievement with traditional approach which is currently used in the classroom as the study intended to see the relative effectiveness of the traditional approach and multimedia approach on the achievement in science.

- **Padmanabham(2005),** studied on effectiveness of constructivist approach on the achievement and problem solving ability in science of 7th std students. Her study shows positive effect on the achievement of students in science

- **Udovic, Morris, Dickman, Postlethwait & Wetherwax (2002),** workshop biology: Demonstrating the effectiveness of Active learning in an Introductory Biology Course. Bioscience, 52(3), 272-281. The article describes a program designed for increasing science literacy rates among non-majors of science at the University of Oregon.
Findings are discussed in brief, but it is shown that inquiry-based instructional strategies did aid student learning.

- **Switzer & Shriner (2000),** mimicking the science process in the Upper-Division Laboratory. Bioscience, 50(2), 157-162. In the article, two professors of an introductory biology courses discuss the implementation and assessment of inquiry-based learning strategies in their large lecture classrooms and associated labs. They present an argument that supports claims of researchers who suggest that the inclusion of such strategies aides students understanding of course content.

- **Black and McClintok (1999),** stress the importance of interpretation as being central to cognition and learning. Their design of Study Supported Environments (SSEs) based on

constructivist design principles called Interpretation Construction Design (ICON) focused mainly on the interpretative construction of authentic artifacts in the context of rich background materials, and spanning across different fields of study. Their study showed that in addition to learning specific content, students were able to acquire generalizable interpretation and argumentation skills.

- **Sutcliffe, Codgell, Hansel & Mcateer(1999):**Active learning in a large first year biology class: A collaborative Resource-based study Project on AIDS in Science and Society. Innovations in Education and Training, 36(1), 53-64.

The author provides a descriptive assessment of the implementation of a inquiry-based (i.e "resource-based") student projects, and alternative perspectives are discussed. Both students and tutors of the program enjoyed the program; and student work was found to be acceptable when examined using pre-intervention standards.

- **Lord, (1998):** Cooperative Learning that really works in Biology Teaching: Using Constructivist-Based Activities to challenge Student teams. The American biology teacher, 60(8), 580-588.This paper offers guidance in the development of constructivist, inquiry based activities within classes utilizing team learning. A review of relevant literature offers advice regarding the use of constructivist approaches for teaching in biology, cooperative learning, the development of useful inquiry-sensitive curricula, the management of cooperative learning, and the grading of cooperative learning tasks. Of note useful lecture, questioning strategies are discussed.

- **Ebert-May, Brewer & Allred, (1997).** Innovation in large lectures- Teaching for Active Learning Bioscience, 47(9,) 601-607. The author describes results of a study designed to test the affects of the inclusion of peer instruction strategies upon student understanding within large lecture introductory biology course. It was found that the implemented strategies aided student understanding the learning, as measured by performance on standardized assessments between control and experimental groups at two public universities.

- **Lunsford & Herzog, (1997).**Active Learning in Anatomy and Physiology: Student Reactions & Outcomes in a Non-traditional AP course. The American Biology Teacher, 59(2), 80-84.

Informally, the article reviews the work of the investigators in the teaching of anatomy and physiology. In summary, they have found inquiry-based strategies, if properly implemented

in the classroom, are not a detriment to future Allied Health students when they take licensing exams. In addition, students favour the inclusion of such learning strategies.

- **Lord, (1997).**A comparison between traditional and constructivist teaching in college biology innovative higher education, 21(3), 197-216. The findings of a study that assessed the learning of identical course content in two individual group treatments. One group receiving traditional instruction (n=86) & another receiving student centered constructivist instruction. It is found that the constructivist treated group outperformed the traditionally taught cohort on identical evaluation.

- **Groccia, & Miller, (1996).**Collegiality in the classroom: The Use of Peer Learning Assistants in Cooperative Learning in Introductory Biology Innovative Higher Education, 21(2), 87-100. The article summarizes the findings of a study that assessed the efficacy of peer learning assistants (PLAs) in an introductory college biology course, and attitudes concerning the employed assistants and the peer learning groups that the students participated in. it is discovered that students, as well as the PLAs and faculty benefited from the instructional practice. Also discussed is the development of the specific cooperative learning model employed in the study. Overall, students, faculty and the PLAs were satisfied with the method.

2.4 STUDIES RELATED TO ACHIEVEMENT IN GEOGRAPHY

- **Yasmeen Bano (2010)** conducted a study on comparison of constructive approach with traditional approach of teaching geography to class 9^{th} in terms variable related to cognitive and effective domain. Findings of the study were: Effectiveness of the constructive approach was studied in terms of the students' achievement in geography and the students' reaction towards the approach. **The findings are as follows:** a) Constructivist approach was effective in terms of students' achievement in geography. b) Constructivist approach was effective in terms of students' reaction towards the approach.

- **Windschitl (2002)** Classroom teachers are finding the implementation of constructivist instruction far more difficult than the reform community acknowledges. This article presents a theoretical analysis of constructivism in practice by building a framework of dilemmas that explicates the conceptual, pedagogical, cultural, and political planes of the constructivist teaching experience. In this context, "constructivism in practice" is a concept situated in the ambiguities, tensions, and compromises that arise among stakeholders in the educational enterprise as constructivism is used as a basis for teaching. In addition to

providing a unique theoretical perspective for researchers, the framework is a heuristic for teachers, providing critical question instructional routines, and understands more deeply the forces that influence their classroom practice.

2.5 STUDIES RELATED TO INSTRUCTIONAL MATERIAL

- **Shah (1981)** conducted a study to develop and try out programmed material in mathematics for student of class V. **The main objectives were:** (1) To develop programmed materials on various units of the mathematics syllabus of class V. (2) To try out the same on children of class V from the selected schools. **The findings of the study were:** (1) Programmed material on the selected units was effective.(2) The reaction of the student and the teacher was favorable.

- **Bhagwat (1992)** studied related to prepare a package of divergent production type problems in mathematics and to study the effectiveness of the package against level of intelligence and sex difference for standard VII students.

The main objectives were: (1) to prepare different production type problems on the standard VII mathematics syllabus in Maharashtra state, (2) to test the effectiveness of package against the level of intelligence for standard VII students and (3) to test the effectiveness of package against the sex differences of standard VII students. An incidental sample of 50 students (25 boys and girls) was chosen for the study. A similar procedure was followed for the main study sample was divided into two groups of 50 each based on level at intelligence. The tools used to collect data included, a standardized test measuring creativity in Mathematics, Ravens' Progressive Matrices, a package of divergent production type problem prepared by the researcher. The experiment was conducted using the pre test, posttest group design. The data were analyzed by using correlated 't' test and analysis of co-variance.

The major findings were:

1) There was a significant increase in the posttest scores in the case of both boys and girls.
2) Taking into consideration the three levels of intelligence, it was found that there was a significant increase in the posttest scores in the case of both boys and girls.

2.6 STUDIES RELATED TO ATTITUDE TOWARDS TEACHING PROFESSION

Studies on Attitude towards Teaching Profession by **Ramakrishnaiah (1980), Mahapatra (1987), Mathai (1992) and Cornelius (2000)** have shown that Attitude towards teaching profession is related to success in teaching. Numerous studies have been conducted particularly in the field of education to explore the effects of attitude of the teacher as well as the effects of different variables on the learning and modification of attitudes. The findings of such studies are summarized below

Studies on attitude towards teaching profession in India

- **Zambare, M, Shobhana (2012)** "A comparative study of Emotional competency and Teacher Attitude of B. Ed. trainees towards teaching profession".

Objectives: 1.To find out if there is any correlation between emotional competency scores and attitude towards teaching profession of teacher trainees.

1. To find out the significant differences, if any, in the attitude towards teaching profession of B. Ed trainees in terms of their sex, subject and locality.

Findings: 1.There exists a significant relationship between emotional competency and attitude towards teaching profession of B. Ed. trainees.

2. There exists a significant difference in the mean scores of emotional competence between male and female.

3. There exists a significant difference in the mean scores of emotional competency between urban and rural.

4. There exists a non significance difference in the mean scores in attitude towards teaching profession between male and female, arts and science and urban and rural B. Ed. trainees.

- **Dr. Chandrakant Borse (2012)** "Correlation Study of Self-Concept and Teaching Attitude of B. Ed. teacher trainees".

Objectives: 1.To study the correlation between Self-Concept and Teaching Attitude of female B. Ed. teacher-trainees.

2. To study the correlation between Self-Concept and Teaching Attitude of male B. Ed. teacher-trainees.

3. To study the correlation between self-Concept and Teaching Attitude of B. Ed. teacher trainees.

Findings:

1. There is a significant correlation between the self-concept and teaching attitude of a female teacher-trainee.

2. There is a significant correlation between the self-concept and teaching attitude of a male teacher-trainee.

3. There is a significant correlation between the self-concept and teaching attitude of a B. Ed. teacher-trainee.

- **Ambasana, Anil (2011)** "University teachers' attitude towards professionalism".

Objectives:

1. To develop an attitude scale to measure attitude towards professionalism.
2. To know the attitude of teachers working in four/five star universities towards professionalism.
3. To find out whether there is any significant difference in attitudes towards professionalism so far as the gender of teachers is concerned.
4. To know whether there is any significant difference in attitudes towards professionalism of teachers working in various faculties.
5. To find out the effect of teaching experience of teachers on their attitude towards professionalism.
6. To check whether there is any significant difference in attitudes towards professionalism of teachers so far as professional and non-professional courses are concerned.

Findings:

1. Average attitude towards professionalism was found reasonably high. Most of the teachers were possessing high attitudes towards professionalism.
2. There was no gender difference in attitudes towards professionalism.
3. Teachers working in various faculties such as social sciences, sciences and linguistics had equally high attitude towards professionalism.
4. There was no difference in the attitude towards professionalism of the teachers imparting professional courses and the teachers imparting non-professional courses.
5. Teaching experience had somewhat significant effect upon teachers' attitude towards professionalism. Teaching experience was positively influencing teacher's attitude towards professionalism particularly up to 20 years. After 20 years, a slight decline was observed in teachers; professionalism attitude.

2.7 CRITICAL APPRAISAL

Several studies have been conducted to verify the effectiveness of constructivist approach for learning in the classroom. As mentioned in the review of related literature to constructivism it has been observed that constructivism of teaching and learning is not only effective but also one of the most appropriate methods of teaching.

The approach contributes to critical and radical thinking among students as observed in Black and McClintock (1999) work with ICON Model where the study shows that students had developed argumentation skills after the treatment. It allows the learner in the most natural way.

The approach also develops problem solving ability and inquiry based learning in students as this can be observed in Padmanabham (2005), Switzer and Shriner (2005), and Lord (1998).

The constructivist approach also contributes to the development of social interaction, communication skills and social adjustment among the students. To some extend it improves the learning ability of the students as in collaborative learning; they learn from each other and improve. At times, the self-learning also takes place in the process. This can be observed in the Pritinanda's work.

Constructivist approach also develops the ability of contextualization among the students as revealed by the studies done by Windschitl (2002) in Geography, Makawana (2007) in Geometry, Khare (1986) in English.

One must work on the weakness of the approach, as it is difficult to find the negative interpretation about the constructivist approach. Though the approach is popular worldwide, it has constantly observed that while implementing the approach numerous difficulties are faced by the researcher.

2.8 CONCLUSION

Though the idea of constructivism is very old, research on its effectiveness in education is of recent origin. From the above the review it is clear that many studies have been done in the other areas of constructivism teaching and learning and its effectiveness in science. The present study aims to study Attitude of pre-service trainee teachers towards 5E model of creating learning situation: Achievability and Challenges.