Chapter II
Review of Related Literature
CHAPTER – II

REVIEW OF RELATED LITERATURE

Review of related literature plays an important role in the field of research. The object of review of related study is to locate and evaluate the part as well as the current studies of research concerned with the planned investigation in hand. Practically all human knowledge can be found in books and libraries. Unlike other animals who must start afresh with each new generation, man builds upon the accumulated and recorded knowledge of the past. Best (1986) writes, “the research for reference material is a time consuming but fruitful phase. A familiarity with the literature in any problem area helps to discover, what is already known, what others have attempted to find out, what methods of attack have been promising or disappointing and what problems remain to be solved.”

In order to create a practical background to the plan and procedure of the study in hand, it is desirable to refer to the related studies on the subject of inquiry. The investigator has attempted to survey the literature available in the field of research and in related areas, with the aims of avoiding duplication and of making best use of the researches done in the past. The review of research studies has been presented in following sections:

2.1 Research studies related to Graphic Organizer Instruction.
2.2 Research studies related to learning outcomes.
2.3 Research studies related to study habits.

2.1 REVIEW OF RELATED LITERATURE ON GRAPHIC ORGANIZER INSTRUCTIONS.

Graber, Means and Johnsten (1972) investigated the effect of expository pre- and post organizers and a historical passage with 96 college under
Barron & Stone (1974) examined 141, 10th and 11th grade students' learning of vocabulary relationships in a passage on mental health. Students were randomly assigned to one of the three conditions: Graphic Advance Organizer (GAO), Graphic Post Organizer (GPO), or control (c). The dependent variable was a vocabulary relationship test (VRT) that was based on the content structure of the passage. Each item on the 25-item test consisted of four terms, three of which were related to the passage. The students’ task was to indicate which of the four terms were unrelated. Two orthogonal planned comparisons were undertaken. The first comparison contrasted achievement on the VRT between the GAO and GPO condition. The second comparison contrasted the performance between GAO and the control group and yielded no statistically significant difference. Although the findings appeared to support the facilitative effects of GPO, the study had fundamental methodological confound. Two variables, position of the graphic organizer (Pre or post) and teacher versus student construction, were manipulated simultaneously in the study. Therefore it is difficult to determine which variable contributed to the difference between conditions.

Moore and Readence (1980, 1984) found that graphic organizer instruction is more effective when used with expository texts than when used with lecture activities on seventh grade students. Graphic organizer instruction is most facilitative when used as a post reading activity than when used as a pre reading activity. Finally, graphic organizer instruction tends to produce greater gains when vocabulary, rather than comprehension is used as a criterion measure.

Anderson (1983) used four intact college classes in macro economics, compared pre and post organizers. He tested for recognition and understanding, simple application and complex application. The pre organizer
group did significantly better, when each of these cognitive levels were considered separately. His study lasted 5 class periods with a delayed post-test administrated 3 weeks after the unit of study ended.

Huard (1983) examined the effect of graphic post organizer training on sixth grade subjects’ independent learning from text ability. Although students in the graphic organizer treatments constructed better graphic organizers than control subjects did, graphic organizer training failed to result in significantly higher scores on either recognition or recall tasks. Based on these results, Huard concluded that it was possible to train students to graphically organize text materials; however, teaching subjects to graphically organize the text did not appear to transfer and increase general learning from the text.

Richard (1985) found that

(i) The advance organizer in verbal or graphic form was an effective approach to learning and retention of an aeronautical concept.

(ii) The verbal advance organizer tended to be more effective than the graphic in both learning and retention; and

The graphic advance organizer was most effective in the retention of material by these students who had exhibited a lower stand and overall performance (CGPA) in the past.

Little (1986) revealed that the use of summaries, outlines, key terms and questions were effective in improving the social studies achievement of pupils. However, the use of outlines and questions were effective and the use of summaries and key terms were not effective in improving the teacher-perceived self-concept of IX grade students.

Rancourt (1986) results revealed that comparative organizer group scored significantly higher than did the expository organizer group on both the achievement and retention test on VIth class students. An examination of
the mean scores on the achievement and retention test for students of high and low mathematical ability in the comparative organizer group showed high mean scores than those obtained by students of high or low mathematical ability in expository organizer group.

Simmons, Griffin & Kameenui (1988) have studied the effects of teacher constructed pre and post graphic organizer instruction on sixth grade science students’ comprehension and recall. This investigation compared the effectiveness of three instructional procedures for facilitating sixth graders’ comprehension and retention of science content: (a) use of teacher constructed graphic organizers (GO) before text reading (pre GO), (b) use of teacher constructed graphic organizers after text reading (post GO) and (c) use of a traditional form of instruction consisting of frequent questions and text oriented discussion interjected before; during, and after text reading. The result suggested that teacher constructed graphic organizers, whether presented prior to or following textual reading, appear no more effective than traditional instruction in increasing sixth grade children’s comprehension and retention of science content area information.

Anderson & Huang (1989) examined a study in which 131 Junior high students were taught to analyze content ideas and put those ideas into a concept map. The students then were divided into three groups: two treatment and one control. One treatment group read a passage about the structure and functions of green plant leaves, and the other listened to an oral script that explained the relationships between green plant leaves, viewed accompanying color slides, and then read the same passage. The control group received no instruction related to green plant leaves and read an unrelated passage. Results indicated a statistically significant gain on the post-mapping test scores for the two treatment groups versus the control group, but no statistically significant differences between the two treatment groups.
Classidy (1989) have studied about using graphic organizers to develop critical thinking to xth class students. Graphic organizers can help gifted students organize information and ideas related to a given topic. The result suggested that venn diagrams, story maps, and character analysis charts help teacher to develop analysis, synthesis and evaluation as critical thinking skills.

After constructing more than 100 graphic organizers as part of their research on the graphic organizer. Horton and Lovitt (1989) found that when graphic post organizers (GPO’s) were constructed using certain steps, the ability of secondary students with disabilities to be successful in regular education, content-area classrooms was enhanced. The steps these authors recommended include the following: (a) select and divide chapters to be modified into passage of about 1,500 words, (b) construct an outline of the main ideas in the reading passage, (c) choose a graphic organizer format that fits the structure of the information and (d) prepare teacher and student versions of the graphic organizer.

Classidy & Hossler (1992) studied about help High School students get the main idea with graphic organizers. Three graphic organizers were presented to teach students the concept of main idea. One graphic organizer described how to examine details in an article to determine the main idea. Another explained how specific details support main ideas. The third graphic described deduction, stressing the importance of expository detail to support the main idea. The result suggested that graphic organizer help high school students to get main idea successfully.

Dunstone (1992) studied a critique of graphic organizer research. He studied the use of graphic organizers to facilitate reading comprehension for seventh class students. He concluded that the research was inconclusive in determining the type of organizer to be used, when organizers should be introduced, and the type of students that benefit most from organizers.
Backer (1993) investigated the effect of Advance organizers on the cognitive and psychomotor performance of nursing procedures by beginning nursing students. Since some research indicates that visual advance organizer may offer more power for learning and retention than verbal advance organizer. Both effects of visual and verbal advance organizers were investigated. The study provided evidence that the students did learn and retain both cognitive and psychomotor nursing skills. The introduction of the advance organisers however, did not have a significant impact on the learning and retention of nursing skills.

Baggelt, (1993) investigated the use of advance organisers and found that the photosynthesis concept maps and the photosynthesis physical science concept maps were found to be effective when used for photosynthesis instruction in community college biology classes. No statistically significant overall effects on learning outcomes could be attributed to be predictor variable of piagetian developmental level, education background, age and gender. Aside from their documented usefulness in planning for instruction and in learning to learn, these concept maps useful in assessing changes in the subject’s structural knowledge of photosynthesis.

Smith (1993) conducted a study regarding the impact of graphic organizers – achievement and retention in hypermedia based instruction for formal and non-formal learners. In this study, 76 students of 12th grade enrolled in an introductory biology course were identified as having formal traditional or concrete reasoning levels. Random assignment was made within their category of reasoning level to one of the two categories: Hypermedia with or without a graphic organizer. All students were tested for achievement immediately after completion of the lesson and one week later retention. The result of this study provides evidence that students with formal reasoning skills are more likely to succeed in a hypermedia based instructional environment than those students with non formal reasoning skills.
Clarke (1994) studied that high school students research assignments in history and social studies often yield disappointing results with limited summaries of facts. He argued that graphic organizers can help students with historical inquiry and result in improved thinking skills, more sophisticated conclusions, and better decision making.

Two studies (Englert & Mariage, 1994 Bos and Anders, 1995) used mapping strategies as interventions to improve, Vth class students ability to understand textual ideas. Though the mapping strategies were different. Results from that students in the mapping conditions outperformed non mapping students on reading comprehension and vocabulary understanding.

Rice (1994) researched relating to graphic organizers. He suggested that no systematic approach to analyzing graphic organizer research exists, resulting in a lack of explanations for why graphic organizers work or do not work. He also suggested a framework through which graphic organizer research may be better understood in relation to the cognitive processes of the reader.

Griffin, Malone and Kameenui (1995) conducted a study to examine the effect of graphic organizer instruction on fifth grade students. This study was undertaken to examine two fundamental questions related to the use of graphic organizer instruction with fifth grade, normal achieving students; (a) Does graphic organizer instruction facilitate comprehension, recall and transfer of information contained in an expository text book? (b) what degree is explicit instruction necessary for independent generation and use of graphic organizers by students? In four experimental conditions, participants read social studies information with or without the graphic organizer. Participants in the control conditions received traditional basal, instruction, as prescribed by the teacher’s manual of the district – adopted text book. The result revealed that participants receiving the graphic organizer and explicit
instruction performed better on the measure of transfer than students who received traditional basal instruction.

Griffin & Tulbert (1995) have studied the effect of graphic organizers on sixth grade students’ comprehension and recall of expository text. They concluded graphic organizers are means to assist students in the complex act of making sense of content-area text. He explored the theoretical and historical foundations of the graphic organizer.

Robinson & Kiewra (1995) investigated the visual argument that is whether graphic organizers are superior to outlines in improving learning from text. Two experiments were conducted that represented attempts to address these problems in answering the question. “What type of text information do graphic organizers and outlines help college students learn?” Results revealed that when given enough time, students studying graphic organizers learned more hierarchical and co-ordinate relations and as a result, they were more successful in applying that knowledge and in writing integrated essays than students studying outlines or text alone.

Shih (1995) studied the effect of instruction in summarizing and outlines on reading comprehension and study habits and attitudes of EFL Taiwan College Students. Subjects, 64 of EFL freshmen college students enrolled in the English Department of University in Taiwan, were randomly split into the experimental and control group. A thirty two week study was conducted with all 64 students. During the whole school year, 32 students participated in the experimental group, took the intensive training of two study strategies, summarizing and outlines. The control group received regular reading instruction without training in the two study strategies. The results indicated that the experimental group did not show a significant difference on reading comprehension in comparison with the control group. The experimental group significantly outperformed the control group on
Mazure (1996) conducted a study of graphic organizer in the social studies with fifth grade students. To explore the value of graphic organizers in the study of social studies with 5th grade students, a research study was developed using two social studies classes. One class used graphic organizer instruction and construction with their social studies lessons, while the other class used text based activities with social studies. Both groups were pre-post and post-post tested on the same material. In post-testing there were no significant differences found between sample groups in attitude towards or retention of social studies material. In post -post testing, however the experimental group demonstrated a significant increase in chapter retention.

Monroe, (1997) conducted a study of using graphic Organizers to teach vocabulary to IXth class. The literature indicates that effective use of graphic organizers can help develop conceptual understanding by promoting student involvement and emphasizing deep processing of words. Four issues needing further study are: (i) which research designs provide the best information regarding the efficacy of graphic organizers in teaching mathematics vocabulary; (ii) which graphic organizers effectively teach mathematics vocabulary (iii) how graphic organizers compare to other methods of teaching mathematics vocabulary at various grade levels. (iv) what strategies best help teachers incorporate the use of graphic organizers into their instruction.

Culbert, Flood and Windler (1998) examined a qualitative investigation of the use of graphic organizers. Subjects consisted of 107 kindergarten through eighth grade teachers (both regular and special educators) teaching in rural and urban districts in western New York. Teachers were surveyed regarding the use of graphic organizers; more in-depth interviews were conducted with six teachers. Findings of both the survey and the interview show that many teachers do not grade their students’ graphic organizers.
90.2% of respondents indicated that their instruction was improved through the use of graphic organizers. Some teachers feel that use of graphic organizers increases student comprehension of text, and that students were more engaged in learning when they participated in the completion of graphic organizers.

Ekhaml (1998) studied Graphic Organizers: outlets of your thoughts. In this study graphs, bars, charts and diagrams have been used by designers, writers and scientists to communicate. This study describes graphic organizers: sequential, conceptual, hierarchical, cyclical, venn, fishbone, KWL chart and flow chart. This research suggests that graphic organizers benefit teaching and learning.

Doyle, (1999) studied about the use of Graphic organizers to improve comprehension of learning disabled student in social studies. An approach using the graphic organizer in the form of visual displays was compared to the traditional method, in which students were presented content through lecture, text and linear note taking. Four chapters from the history text were chosen and taught to eight senior high school learning disabled students. Two chapters were taught using graphic organizers as a teaching method and study tool, and two chapters were taught via lecture/linear notetaking. Results indicated significant positive effects favouring graphic organizer instruction.

Egan (1999) studied the reflections on effective use of graphic organizers. Addresses the precise planning needed to use graphic organizers in the classroom by offering four instructional suggestions for their use: be authentically prepared; promote interaction among students. Use graphic organizers with discrimination, expand use of graphic organizers. Results indicated significant effects of graphic organizer instruction.

Pepper (1999) conducted a study related with graphic organizer instruction in the teaching of IXth standard biology. This study was conducted to determine if the use of graphic organizers in the teaching of standard
biology would increase student achievement, involvement and quality of activities. The study was conducted over a six-week period in an instructional setting using action research as the investigate format. Random selection was used to determine to GO class and the control class. The graphic organizer class was taught using the same instructional methods, but without the use of graphic organizers. The result suggested that students’ gains from instructional activities using graphic organizers were positive and merit the continuation of their use as an instructional tool.

Wells (1999) measured the change, if any, in the students’ conceptual understanding of biology course content using concept maps (experimental) or a standard lecture format (control) on 190 community college students enrolled in General Biology. The findings of the investigation revealed that concept maps used as advance organizers had a significant impact on students’ conceptual understanding of biology course content. The use of concept maps as advance organizers had a significant effect on student conceptual understanding of biology when students are classified according to their cognitive development level, age, gender, major, course time, and educational background. A significant relationship between cognitive development and conceptual understanding was also found significant. The researcher concluded that the use of concept maps as advance organizers is an effective method for improving student learning in General Biology classes and a positive relationships exists between students’ cognitive development level and conceptual understanding.

Kealy (2000) studied the role of semantic congruency in the design of graphic organizers. In this, subjects concurrently viewed a graphic organizer (GO) presenting this information in a matrix-like format. Half the GOs were semantically congruent with the text, organized according to social grouping; the others were spatially organized. It was found that semantic congruity influenced GO efficacy only for delayed recall of material related to the main topic of the text of IX class students.
Guestello (2000) addressed many of the general limitations of GO research. Guestello randomly assigned low-achieving seventh-grade students to conditions in which they were taught to use concept maps or received a traditional teacher-lead read-and-discuss approach during biology instruction. Using standardized achievement test as a covariate, students in the experimental group statistically outperformed the control group on a teacher constructed, 20 question short answer vocabulary measure. The effect size for the concept mapping treatment was estimated to be 5.98, indicating that concept mapping facilitated greater comprehension.

Millet (2000) conducted a study on the effects of graphic organizers on reading comprehension achievement of second grade students. The sample consisted of two equal groups, one taught by basal reader instruction and the other taught by using the basal reader with graphic organizers. A pre test, Post test design using a 10 item multiple choice test and oral story retelling was used to measure the reading comprehension achievement of the students. In fact, including graphic organizer instruction in a traditional basal reader environment resulted in significantly better reading comprehension achievement than exclusive basal reader instruction.

One study attempted to control for knowledge forms in the design of the GO. In a methodologically adequate study involving 26 learning-disabled students, Dicecco and Gleason (2002) found that GOs facilitated retention and recall of content knowledge, application of relational knowledge. However, on factual multiple choice quizzes, no statistical differences were found between the GO group and no GO group. Only on application essays, which required students to explain the influence of technology on the assembly line and the causes and effects of the stock Market Crash of 1929, did the GO group outperformed the no GO group with respect to the number of words written, and numbers of relational statements written. The result is found that the GO only reflected explicit relationships of the concepts.
Twyman (2003) studied about the effect of conceptually framed, problem/solution/effect of graphic organizer on content comprehension and problem solving skills for seventh grade social studies students. The experimental group used the GO during instruction, while the control group used a note-taking strategy. Both groups were pre and post tested for comprehension and problem solving skills. Two factor repeated measures analysis of variance (ANOVA) were used for all statistical analysis. The important findings from this study indicate that framing GOs with hierarchical knowledge forms within a problem/solution/effect paradigm provides students with both an entree to the content by minimizing curriculum and ability barriers and serve as a concrete proxy for developing problem solving skills.

Hakansson, (2004) examined the graphic representation and visualisation as modelling support for the knowledge acquisition process. To make the knowledge base more comprehensible and expressive, she incorporated visual conceptualization into UML’s (unified Modelling language) diagrams to describe the contents. The concrete result of the research is that the students have good knowledge who have studied with help of graphic presentations than students who have studied without graphic representation.

2.2 REVIEW OF RESEARCH STUDIES ON LEARNING OUTCOMES

In a research review, the importance of students’ efforts and involvement in their academic and curricular activities as the decisive elements in promoting positive learning outcomes has been emphasized (Davis, Todd and Patricia, 1994). As schools have struggled to extend opportunities, an accompanying expectation for students to assume responsibility for their own education often has been lacking (Pace, 1990; Davis 1994). Learning outcomes are tied to the effort that students put into
their work and the degree to which they are involved with their studies and school life (Kuh, 1991; Pascarella, 1991; Astin, 1993; Maneir, 1993).

Learning outcome based education focuses on educational practices by ensuring that student master those learning outcomes and it asserts that all students can succeed. (Maneir, 1993; Pedago, 1994).

Lee (1977) advocated that high kinetic structure was a predominant factor in producing greater knowledge acquisition and retention. Also high structure with visuals did not produce greater retention than high structure without visuals and low structure without visuals did not produce greater retention than low structure without visuals.

Kaplan & Pascoe (1977) reported that concept illustrated in a humorous manner might be learned and retained more easily than a concept presented in a dull style.

Ware (1977) found that Bloom’s Mastry strategy resulted in greater retention and transfer than Keller’s strategy.

Duchastel & Nungester (1982) revealed that practice of following learning period with a test situation can drastically enhance long term retention of what has been learned.

Halpin and Halpin (1982) found that students who studied for and took a test not only achieve more, but also retained their learning longer than the students who studied in order to learn rather than for a rest.

Chitriv (1983) found that advance organizer model and concept attainment model were superior to the traditional method in knowledge, transfer, heuristic transfer, short term retention and long term retention of concepts.

Zimmer (1985) found that students who read non-structured text (as opposed to structured text) scored higher after a delay, but now when tested.
immediately, he concluded that the lack of structure required a deeper interaction with the text, resulting in more distinctive and durable encoding.

Kiewra et al (1988) found that students studying outlines showed a greater decrement in performance from immediate to delayed testing than those studying graphic organizers. This advance was explained in terms of graphic organizer producing more among concepts relations in memory.

Mayer & Anderson (1991) studied that information represented both visually and verbally is recalled better than information represented only one way. For example, a person remembers a face better if he also knew a name, and remembers a name better if he can connect it to a face.

Backer (1993) indicated that visual advance organizers lead to better retention of nursing skills than verbal advance organizers.

Robinson & Schraw (1994) found that advantages of studying a graphic organizer disappeared when testing was delayed and suggested that some displays communicate information so effectively that students limit their cognitive effort while studying the displays.

Semb & Ellis (1994) in reviewing research on retention, noted that laboratory studies of retention of nonsense words and other artificial material greatly under estimate the degree to which information and skills learned in schools can be retained.

Robertson (1995) found that Advance Organizer (AO) meta cognitive (MS) strategies were consistently higher than all the other strategies on both learning and retention, such as AP versus AO and MS, AO versus MS and MS versus the control group.

Slavin (1997) studied that instructional strategies that actively involve students in lessons contribute to long term retention.
Kim (1998) conducted a study of the effects of computer-enhanced instruction (CEI) compared with traditional instruction. One class was instructed with CEI and other with traditional instruction. Students in both classes received the same lectures, assignments and study guides. There was no significant difference between the mean posttest scores of students who received CEI and TI. A significant difference in mean posttest scores was found between visually perceptive students and non visually perceptive students.

Sood (1998) reported that high intelligence students retained more than low intelligence students of IVth class. Students taught with concept attainment model retained in Hindi much more than those taught with Advance Organizer Model.

A study conducted by Garatti (1999), on their interplay among second language (L₂) modes of syntax presentation, learners, abstract reasoning abilities (Induction and deduction), IQ and instructional preferences on 66 beginner students of Italian students studying at a US State University revealed that differences in instructional modes did not result in differences of achievement or transfer of the rule. Example based group inductive reasoning significantly related to achievement or transfer. Other evidences from the study indicated that there were no discrepancy between students understanding of the rule and its actual implementation. The findings from the self-reports also indicated that students vary on both examples and rules when instantiating rules, even when only examples or rules are provided during instruction.

Hoadley (1999) examined what students in the middle school science course learned through on the line peer discussion through cognitive accounts of collaboration stressing on interacting with ideas and socially situated accounts stressing on the interpersonal context. Results indicated that there was a large affect of discussion group on learning outcomes which is not
Reducible to group composition or gross measures of group process. Experimental manipulations in the types of social cues available to students suggest that many students to use socially relevant representations to support their understanding of multiple viewpoints and science reasoning.

Anchuthengil (2000) investigated the effect of learning styles (based on Kolb’s experimental learning theory), learning environments (Synchronous interactive television) and student achievement of physical therapy, on students enrolled in distance education. The results indicated significant interaction effect between two independent variables. Simple main effect analysis of interaction reported a positive effect of learning environment at diverger and assimilator learning style types and no effect for converger and accommodator types. The research concluded that the information generated would expand the knowledge base of learning styles and its relationship to learning environment on student achievement of physical therapy of graduate students. The research findings of the study supported faculty development programs designed to increase awareness of learning styles differences and equip faculty to meet the diverse needs of the students.

Brogan & Kong (2000) evaluated student achievement and attitudes using different learning models to understand how applications of technology based learning approaches can be improved to address several contemporary issues regarding learning outcomes. Using multiple methods, the study compared three different learning models used with college age students at the Dallas Country Community College System. Results included evidence that computers can deliver successful learning outcomes based on pass rates and grades, as well as student satisfaction. Strong linkages between attitudes and success, full learning outcomes got the need to focus on enabling positive attitudes. Implementation issues can play a key role in influencing outcomes and attitudes. Another major finding in the study is the need to reframe our view of successful learning outcomes, away from grades and pass-rates and towards assessing successful attainment of learning goals.
Flynn (2000) examined the effectiveness of cooperative learning process where 9th class students became more comfortable communicating with others and made them more secure in their abilities. The process also involves a change in the teacher’s role from lecturer to facilitator to organize group and to encourage working together. Different lessons and laboratory exercises had to be implemented for the program to work. The findings were that cooperative learning does increase the student’s understanding of the material, retention of knowledge and makes them feel better about themselves and school.

Khalaf (2000) explored variables related to chemistry achievement of 12th grade Science students in the United Arab Emirates (UAE). The focus is to identify student, teacher and school variables that predict chemistry achievement. The results indicate that demographic, home environment, prior knowledge, scholastic ability, attitudes and perceptions related to Chemistry and Science and student perception of instructional practices variables correlated with student chemistry achievement. Results indicate that the strongest predictors of Chemistry achievement are prior achievement in Science, Arabic, Language and Mathematics, student perception of teacher effectiveness, and teacher experience and expertise.

Kong (2000) studied student’s engagement in the process of mathematics learning and its effects on learning outcomes. Three constructs, (behavioural engagement, cognitive engagement and affective engagement) were identified. By the use of classroom observations and follow-up interviews, results indicated that student engagement in mathematics curriculum vary not only quantitatively, but also qualitatively. With path analysis, it was found that students behavioural engagement was closely associated with performance in computative and simple problem solving. Cognitive engagement and effective engagement were also significantly correlated with each other.
Miles (2000) investigated that the student participants of a science enrichment program also agreed more than those students who had not participated in one that self-motivation influenced academic achievement in their present science class. Finally, participants of an extra-curricular science activity agreed more than those who did not participate in such activities, that a tutor was also influential in their achievement completion of a science course, and influential in future aspirations in science.

Millar (2000) examined mathematics knowledge of pre-service elementary teachers within the context of a course designed to be consistent with mathematics reform. The findings of the study indicated that students needed to experience learning mathematics with in a course structure that was consistent with reform. Most students identified school experiences and teachers as the primary source of their beliefs about mathematics. Finally, the study showed that the course was effective in increasing the three types of mathematics knowledge in changing some students inhibiting beliefs and attitudes regarding mathematics, and in reducing mathematics anxiety.

Rothman (2000) conducted a study of the impact of computer based versus ‘traditional’ textbook Science instruction on selected student learning outcomes. Pre test data related to each of the student learning outcomes was collected at the beginning of the school year and post test data was collected at the end of the school year. This study concluded that non-traditional, computer based instruction in science significantly improved high school students’ attitudes towards science learning and their level of English language development. Positive trends were found for the following student learning outcomes overall science achievement and development of critical thinking – inquiry skills.

Simmering (2000) studied the effect of learner control and individual differences on learning outcomes of 189 grammar skills on high school students and writing assignments. Results of this study indicated that
mastery oriented individuals were more motivated to learn. Additionally, perceptions of the legitimacy of training were related to motivation to learn and were moderated by the amount of learner control in training. A predicted relationship between motivation to learn and learning was not found different with self report measures of motivation to learn. However, two unobtrusive measures of motivation to learn were positively related to training and finally, learning was significantly related to transfer of training.

But other researches conducted on learning the cognitive load of discovery learning of students did not find any significant difference in learning outcomes despite differences in prior experiences with databases. The study therefore concluded that discovery learning (i.e. exploratory practice) is not as useful for students with minimal prior knowledge studying high element interactivity material as a worked examples approach, but if the students have good prior knowledge, the two formats of instruction are equivalent (Tuorinen, 2000).

Webb (2000) studied the moderating effects of information technology on knowledge delivery: An examination of interaction processes and learning outcomes. A model was developed and empirically validated to explain the effects of information technology on learning outcomes. Result indicated that the use of information technology was a significant positive effect on an objective measure of learning outcomes.

Cleverson (2001) examined the responses of families to bilingual communication methods, text versus video, designed to facilitate school to home communication to increase parents involvement and seventh grade students achievement in the science fair project. Significant results were that the video communication method was positively associated with student achievement on the science fair project.

Neeru (2001) reported that Class V field independent students retained more than their field dependent counterparts in maths. Students at
knowledge category retained better as compared to the comprehension category of objectives.

Tyrrell (2001) indicated that the National Science Foundation predicts a shortage of scientists and engineers within the next 15 years. Some agree that the participants of women in science will be required to help meet the future demand for scientists. Consequently conscientious teachers search for learning strategies that provide opportunities for young women to achieve success with others in their sciences classes. This research concerned a note taking and teaching strategy that involves seventh grade science students. The results showed that achievement improved significantly when reviewing or using guided notes independently. The results also showed that significant improvements in achievement are not observed when participants used guided notes and reviewing together. Research showed that both boys and girls significantly improved their achievement in Science equally will for all treatment conditions.

2.3 REVIEW OF RESEARCH STUDIES ON STUDY HABITS

Pelufo (1988) studied the study habits of the students in the first year university. He found that those students who have followed the programme improved their study habits. The conditions have also improved giving rise to a better study situation.

Ngailiankim (1988) studied the attitude and study habits related to achievement in mathematics of class IX students is Shillong. No significant difference was found in study habits search of high, average and low achievers in mathematics of students grouped high, average and low on mathematics achievement.

Deb (1990) studied the relationship between study habits and academic achievement of undergraduate home science final year students. Significant
relationship between study habits and academic achievement was found. Students' habits and interests also influenced their academic achievement.

Swarup, Budhisagar & Rajoria (1991) reported that study habits on the whole did not have any significant effect on the achievement of the two groups studying through instructional material “with” and “without” advance organizer. Concentration (study habit component) has its influence on the achievement of the students disregarding the type of instructional material they are given to study. Other study habit components had not shown any significant effect on the achievement of the two groups.

Rhody (1993) studied the characteristics of study behaviour and attitudes of 96 incoming freshmen at a country suburban school in Oregon and the relationship of these characteristics to subsequent first term analysis suggest that the extent to which students have problems has a major impact on their performance. Only study skills instructions are not likely to be helping, unless accompanied by other factors affecting achievement.

Patel (1996) conducted a study on study habits of VIIIth class pupils and its impact upon academic achievement. The population comprised of 578 pupils of class VIII, each of urban and rural settings of Kheda District (Gujrat). 72 pupils were finally selected through random selection method. It was found that the achievement scores of the pupils having high and low general mental ability were significantly different. Those pupils who had good study habits get significantly more achievement scores than those who had poor study habits. It was also found that sex and study habits interact significantly in explaining achievement scores.

Mullen (1997) studied the difference in study habits and study attitudes between two groups of college students. Results indicated that students participating in experimental learning scored significantly higher than students not participating in experimental learning. The data further revealed a significant difference is study habits and study attitudes exist
between students across their age groups. Mean scores for students age thirty-five and above were higher than mean scores for students age eighteen to twenty-four.

Gordon (1998) determined the relationship among constructs of academic self concept, academic achievement, study habits and perceived school environment. The participants in this study were VII and VIII grade students (N=214). The results of this study indicated that academic self-concept, academic achievement and persistence are related significantly to academic self-concept and academic achievement. Further analysis using LISREL indicated that the data fit the reduced model that used self attributions to explain the relationships among academic self-concept, academic achievement and persistence the best.

Hazard (1998) studied the effect of locus of control and attitudes toward intelligence on study habits on college students. Results showed that study skills training did improve students’ self reported use of proper study habits. The participation in study skills training positively influenced their academic achievement.

Hungai (1998) investigated the study habits of female students in rural primary schools. It also examined the habits of high and low achievers to determine if they would differ in the quality of their information processing. The researcher found that each of two family factors that is social and school factor had an independent and significant effect on student achievement and study habits. It is also found that the father’s education had positive influence on the study habits of the females.

Carry (1999) studied the effects of learning styles, awareness and knowledge of instructional models on the study habits of college students at risk for academic failure. The findings from this study showed that students were able to change some of their study habits as awareness of their own
learning styles and understanding of how university instructors used teaching models was enhanced.

Lewis Tamara L (2001) this quantitative study examined collaborative learning strategies as a method for increasing the academic achievement of community college students. Results showed a significant difference between the self-reported learning gains, scores of students scoring low, medium or high in academic integration.

Carter, (2002) determined the relationship of study habits, attitude and motivation to academic achievement in a selected course of study. Analysis of data revealed that there is significant relationship between study habits and achievement as measured by final grade in principles of accounting academic achievement and II (study habit, attitude and motivation). No statistically significant relationship was found between attitude motivation and academic achievements.

Mehra & Khare (2002) compared the effect of three teaching strategies viz., inductive thinking model, advance organizer model and conventional method of teaching on study habits and attitudes towards educational technology of B.Ed. students. The result showed that students taught by Inductive thinking model and advance organizer model developed better study habits as compared to those taught by conventional method of teaching. Low intelligence groups was benefited more with respect to development of study habits as compared to their high intelligence counterparts.