# CHAPTER - III

## REVIEW OF RELATED LITERATURE

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## 3.1 INTRODUCTION

This chapter provides a comprehensive presentation of research studies to find out the effectiveness of advance organizer in facilitating learning. While doing so, two objectives have been kept in mind. One is to show the trend of researches on advance organizer over the past thirty four years and the second is to find out the research gap which forms the basis of the present investigation. Almost all the studies conducted on advance organizer since 1960 have tried to see the effectiveness of advance organizer in fostering student learning in different subject areas and at different levels of education. Therefore, while reviewing all these studies, it was thought proper to categorise the studies under different levels of education and further sub-categorise them under major areas of study. While presenting the studies, those which show the positive effect of advance organizer in a major areas of study have been placed first followed by the studies showing negative effect of advance organizer. In the present chapter, four levels of education, namely, primary school, middle school, high school and college level and four major areas of study namely, arts and literature , social sciences, mathematics and sciences and reading comprehension have been taken as categories and sub-categories respectively. Although reading

comprehension is not considered as a major area of study, it has been categorised as a major area of study for the sake of review only. Primary school and middle school levels do not have arts and literature as a sub-category. Studies on advance organizer at the teacher training level have been discussed under a separate category.

## 3.2 ADVANCE ORGANIZER STUDIES AT THE PRIMARY SCHOOL LEVEL

Studies on advance organizer at the primary school level have been mainly in the areas of social sciences, mathematics and reading comprehension.

### i) Social Sciences

The use of advance organizer has both positive and negative effects in the facilitation of learning in social sciences at the primary school level. Little (1986) studied the differences that existed in the self-concept and social studies achievement of third-grade students receiving instruction in jigsaw cooperative small-groups using advance organizers and third-grade students in a control class receiving conventional instruction and found that the use of summaries, outlines, key terms, questions (with jigsaw) and the use of conventional social studies instructions were effective in improving the social studies achievement of students.

Clawsom (1972), using 20 third grade classes, compared the facilitative effects of pre-and post-organizers on the

learning of structured anthropology materials. The null hypothesis was tested at two time intervals at the end of 6 instructional lessons, and at the end of 24 instructional lessons. The study was unable to produce evidence supporting the hypothesis that either pre-or post-organizers facilitate learning structural anthropology materials at the third grade level. Pearson (1992) determined if oneof three pre-reading advance organizers : a verbal, a graphic, or a problematic situation organizer affected the comprehension of given fifth grade social studies reading selections. The results indicated no significant differences between the test scores following the control organizer and each of the studied organizer and significantly higher scores for the graphic organizer over the problematic situation.

ii) Mathematics and Sciences

Pizzini and Gross (1978) attempted to study the effects of advance organizers on an environmental education unit when advance organizers are utilised in conjunction with a one-day field experience and to assess retention of the instructional material one year later, and to determine if changes in perceptions of a woodland occur. The design used in the investigation was "separate sample pretest posttest design". Sixty six and two hundred and twenty five fifth grade students were selected for pretest and posttest respectively. Eighty-two sixth grade students were selected for posttest after one year.

The results indicate that the programme, consisting of advance organizers and a one-day field experience, was effective and beneficial in changing cognitive knowledge and perceptions of woodlands. Furthermore, even though a loss of cognitive knowledge was evident over a one year time period, the posttest group had retained a singificantly greater knowledge about woodlands than did the pretest group.

Righi (1988), using two third-grade classes and two fourth-grade classes, examined the effects of using an advance organizer to teach Basic Programming to primary-grade classes and found no facilitative effect of advance organizer, but a post organizer to be effective tool for teaching basic programming concepts to primary-grade children.

iii) Reading comprehension

Maher (1975) analyzed the effects of instructional objectives as advance organizers prior to a reading assignment and interpretive questions aimed at these objectives following the assignment, on interpretive comprehension of fourth and sixth-grade students. A selected sample of 84 students was assigned randomly to a control and two experimental groups. The findings of the study revealed that advance organizers in the form of interpretive objectives, and questions aimed at these objectives following the reading assignment, provided for significant improvement on the interpretive section of the California Reading Test.

Priddy (1989) compared the effects of two types of advance organizers on the comprehension of fourth grade students. Six intact classes were randomly assigned to one of the three treatment groups. The first group received a prose organizer, the second group a discussion organizer and the third group participated in both types of organizers. All of the activities were presented by regular classroom teachers. It was concluded that the discussion organizer alone or with a prose organizer facilitated better passage comprehension.

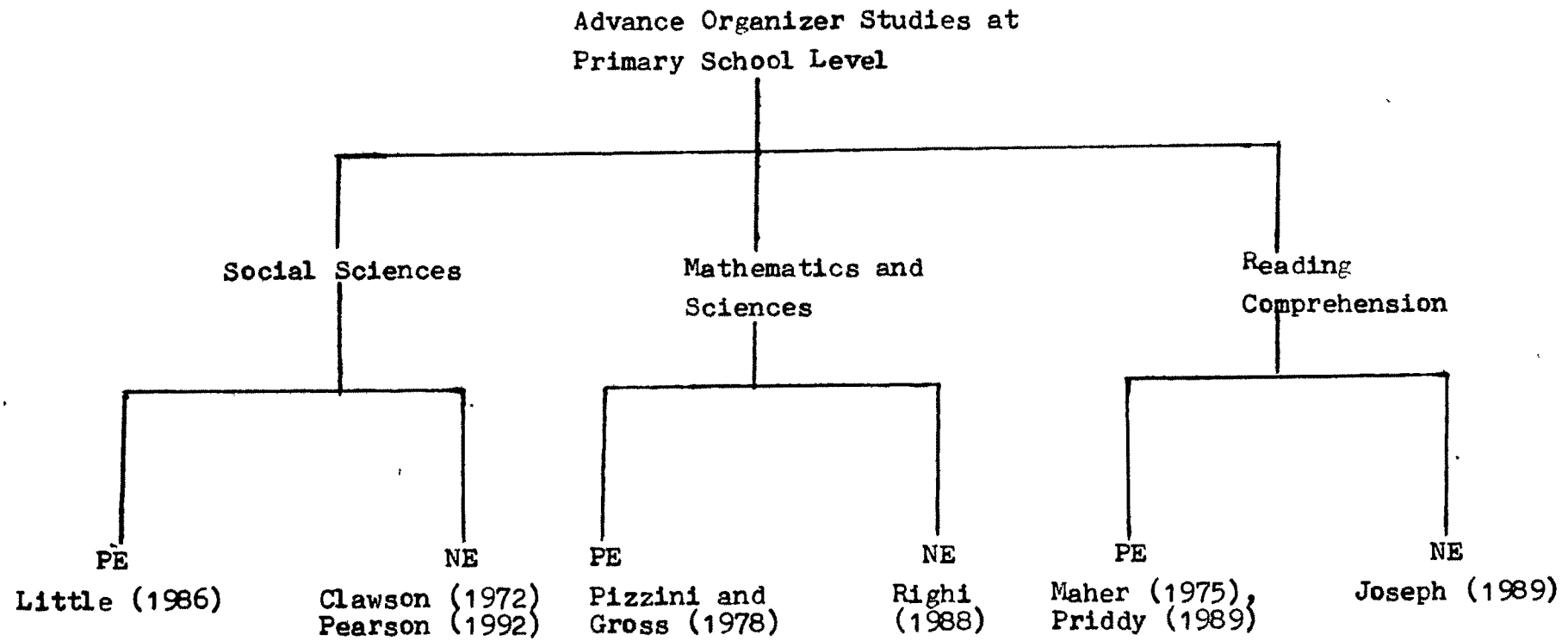
Joseph (1989) studied the effects of visual structured overviews and advance organizers on first grade deaf students' reading comprehension. The study included 18 severely to profoundly deaf students between the age of 8 and 12 years within a minimum of first grade reading level. Results of the study indicate that no practical advantages could be attributed to advance organizers or structural overviews when compared to text material not preceded by orienting activities as used by children with hearing impairements.

Classification of reviewed studies showing positive and negative effects of advance organizersin major areas of study at primary school level is presented in Table 3.1.

Discussions

The above studies reveal that use of advance organizer at the primary level has both facilitated and not facilitated

TABLE 3.1 : Classification of Reviewed Studies Showing Positive and Negative Effects of Advance Organizers in Major Areas of Study at Primary School Level.




PE - Positive Effect

NE - Negative Effect

student learning. It has been used mainly in improving learning in social sciences and reading comprehension. Very negligible researches have been done to improve students' achievement in general sciences using advance organizer.

In social sciences, Little (1986) found the effectiveness of advance organizer, whereas studies by Clawson (1972) and Pearson (1992) did not support the effectiveness of advance organizer on student learning. In mathematics and sciences section, the study by Pizzini and Gross (1978) showed positive effect of AO and the study by Righi (1988) pointed out negative effect of AO. In reading comprehension, the studies by Maher (1975) and Priddy (1989) supported the effectiveness of AO, whereas the study by Joseph (1989) did not.

## 3.3 ADVANCE ORGANIZER STUDIES AT THE MIDDLE SCHOOL LEVEL

At the middle school level, researchers have attempted to see the effectiveness of advance organizer in different subject areas.

### i) Social Sciences

Steinbrink (1970), using 97 fifth grade and 79 sixth grade students, determined whether or not advance organizers facilitate increased cognitive achievement among disadvantaged black elementary students. His experimental group was given a conceptual advance organizer and daily advance organizer and control group received the conceptual organizer at the end of

the unit and did not receive daily advance organizer. The study was conducted for 5 instructional periods. The researcher found a significant difference in favour of advance organizer.

Barnes (1972), using 12 sixth grade classes as the experimental population, compared the facilitative effects of pre-and post-organizers on the learning of structured anthropology at the sixth grade level and found no evidence supporting the research hypothesis that either pre- or post-organizers facilitate learning of structured anthropology materials at the sixth grade level.

Moore, Barnes, and Barnes (1975), using 92 fifth and sixth grade students in social studies classes, compared three groups. The study lasted for 5 days and was followed by an immediate posttest and a delayed posttest 6 days after treatment. They found no significant differences among groups on either test. Nor did they find an interaction between treatment and level of question when application level questions were analysed separately from knowledge and comprehension questions.

ii) Mathematics and Sciences

Neisworth (1968) compared the effectiveness of a 200 word advance organizer with a motivational introduction of similar length in science. He used 184 educable mentally retarded

adolescents and 184 intellectually normal children at the elementary stage, He reported significant difference in favour of the advance organizer group on the posttest and on the delayed posttestfor intellectually normal children.

Bowyer (1979), using 193 seventh grade students, investigated the effects of verbal and visual/verbal organizers on cognitive learning from films in seventh grade life science. Students were randomly assigned to either one of the two experimental groups, or to the control group. An immediate test followed each film, and a retention test was given two weeks after the final treatment. The result indicated neither statistically differences in mean scores between the three treatment groups nor among the three groups in the response or the no response mode.

Lucas (1972), using 196 seventh grade students, studied the effects of utilizing three types of advance organizers for learning a biological concept in science. Treatment groups included an audio advance organizer group, a visual advance organizer group, a written advance organizer group and a control group. Treatment, I.Q. abstract reasoning and sex comprised the four factors investigated. The results of the study indicated that the use of three types of advance organizers did not significantly affect the learning of the students and that no interactive effects of I.Q., abstract reasoning, and sex were found.

Schulz (1966), using 376 sixth grade students of above average ability, compared the group that received two advance organizers based on Ausubel's criteria with a group that did not receive organizers. The subject matter was science and the experiment lasted for 20 weeks. No statistically singificant difference was found on the posttest or on the delayed posttest among the sub-groups in the sample. Sub-groups were based on sex, ability and knowledge of background information.

Neisworth (1967), using 180 educable mentally retarded adolescents, compared the advance organizer with an introductory passage. The topic under study was accidental poisioning. The treatment lasted for 4 days plus the posttest. He found no significant difference in achievement between the groups. Barron (1971) tested three treatment conditions, a group using a graphic organizer, a group using a prose organizer, and a control group with no organizer. The sample consisted of classes from grades six to twelve in general science . The treatment was the same for all grades. Analysis of the data did not show a significant difference in favour of the organizer treatment at any grade level.

Camacho (1987), using 219 seventh grade students studied if a motion picture advance organizer would facilitate the learning of information about alcohol and alcohol use and

concluded that the movie advance organizer did not significantly affect the learning of information about alcohol and alchohol use.

iii) Reading Comprehension

Kneen (1979), using 96 seventh grade students, compared the effects of two types of advance organizers, the guide material and the structured overview, on comprehension of a reading task and concluded that (1) the structured overview resulted in significantly greater comprehension of the reading task than guide material as evidenced by comprehension test performance, (2) the structured overview was more effective in facilitating comprehension of the reading task than guide material for all the reading ability groups as evidenced by comprehension test performance.

Dana (1980), using 197 sixth grade students in a middle school, tested the effects of using a graphic advance organizer before, during, and after reading on the comprehension of written test. The students were assigned to a graphic advance organizer group and a reading only control group. The findings indicated that although graphic advance organizer did not facilitate comprehension of multi-thematic text, the use of graphic organizer with text facilitated delayed comprehension.

Borer (1981), using 96 students, investigated the effect of advance organizers and behavioural objectives as strategies for improving reading achievement skills of children with

defecits in selective attention skills. Eight teachers, in teams of two, participated in the study. Each of the four teams was randomly assigned to one of the four treatment conditions: advance organizers, behavioural objectives, advance organizersplus behavioural objectives and a control condition. He concluded that (a) there is a positive relationship between selective attention and reading achievement for sixth grade students, (b) Students at high levels of selective attention provided with strategies as advance organizers and behavioural objectives performed better than students not provided with advance organizers and/or behavioural objectives.

Brune (1982), using 60 seventh and eighth grade students, examined the effects of advance organizers on listening comprehension among learning disabled and non-learning disabled adolescents and reached the conclusion that advance organizers facilitated listening comprehension for both learning disabled and non-learning disabled groups in both narrative and expository modes.

Borine (1982), using 121 seventh grade students, investigated the effectiveness of 200 word advance organizers, 20 word advance organizer and no advance organizer using expository passages. Subjects were randomly assigned to one of the three treatment conditions, Results indicated that the 20 word advance organizer for level readers were superior

to the 200 words and no advance organizer on delayed retention. For above level readers on delayed retention, there were no facilitative effects among the 200 word, 20 word and no advance organizer readers.

Chang (1982) examined the effect that filmic advance organizers had on the learning and retention of facts and concepts from a sound film by the regular and the mainstreamed educable mentally retarded learners. Subjects were from sixth, sevemth and eighth grades. Results showed that filmic advance organizers prepared for this study appeared to provide facilitative effect for the regular subjects in acquisition and retention of facts and concepts presented in a consumer education film, and ability levels did not differentially affect the learning outcomes.

Welker (1989) studied the effects of various presentations of conceptually-oriented advance organizers on short story prose. It was also the intent of the researcher to compare the facilitating effects of the four advance-organizer treatments and control treatment on lower, middle, and higher-ability readers in reference to literal, interpretive and total learning and retention. The investigation involved ninety seventh-grade students who were randomly assigned, according to reading level, and gender, to five groups of naturally occuring classes with eighteen subjects in each group. His study implied that advance organizers with concrete examples, are appropriate for younger middle school readers, who possess less experiential knowledge.

Classification of reviewed studies showing positive and negative effects of advance organizer in major areas of study at middle school level is presented in Table 3.2.

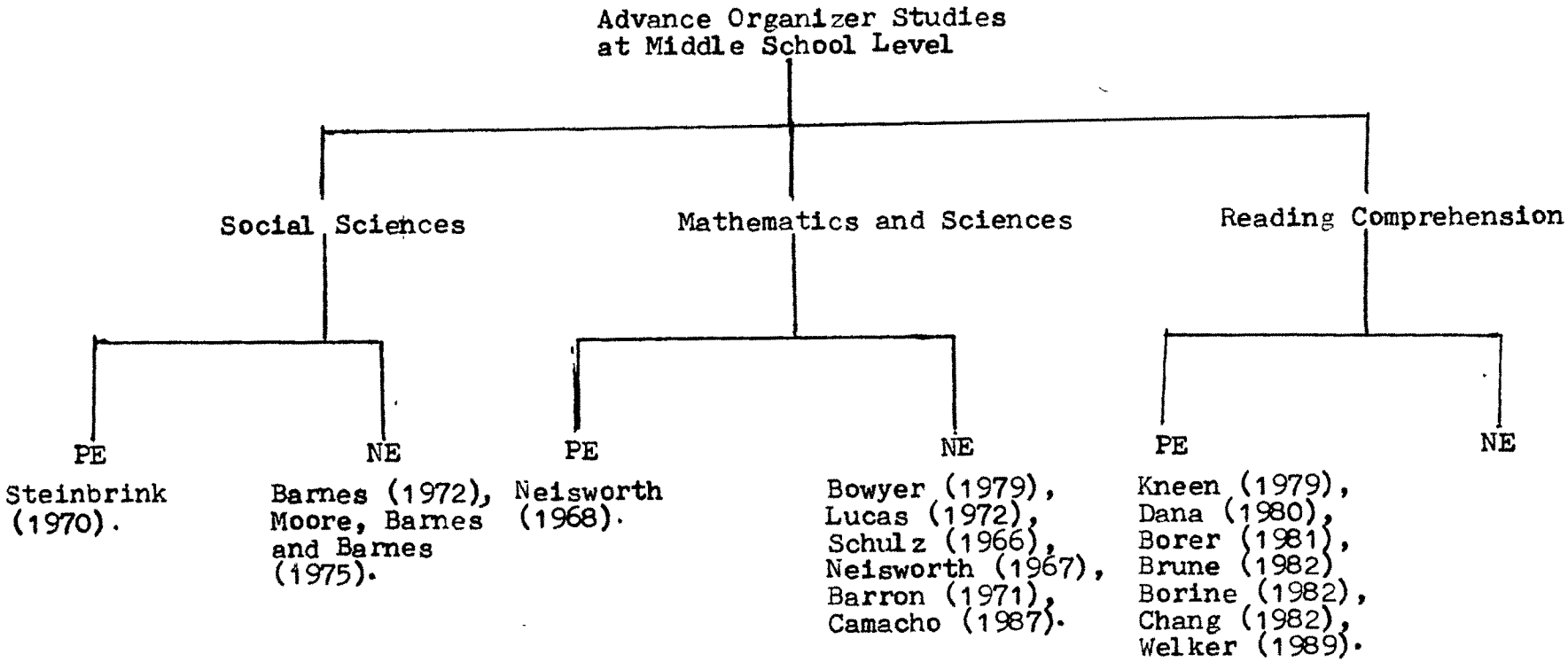
Discussions

At the middle school level, advance organizers have been used to improve student learning in social sciences and sciences as well as to improve reading and listening comprehension of students. All the studies at the middle school level have shown facilitative as well as negative effect of advance organizer. While the study by Steinbrink (1970) reported facilitative effect of advance organizer in social sciences, in other studies, Barnes (1972) and Moore, Barnes and Barnes (1975) showed negative effect of advance organizer. Neisworth (1968) found facilitative effect of advance organizer in sciences, while Bowyer (1979), Lucas (1972), Schulz (1966), Neisworth (1967), Barron (1971) and Camacho (1987) reported negative effect of advance organizer in sciences. All the studies conducted to improve reading and listening comprehension of students have shown positive effect of advance organizer.

## 3.4 ADVANCE ORGANIZER STUDIES AT THE HIGH SCHOOL LEVEL

Advance organizer studies at the high school level cover arts and literature, social sciences, mathematics and sciences and reading comprehension.

TABLE 3.2 : Classification of Reviewed Studies Showing Positive and Negative Effects of Advance Organizers in Major Areas of Study at Middle School Level.




PE - Positive Effect

NE - Negative Effect

i) Arts and Literature

Ewing (1977), using 80 eighth grade students, compared the effects of advance and non-organizers in the learning and retention of meaningful verbal materials in the Arts for separate knowledge, comprehension, and application scores and for these scores combined. The effects of restricted and unrestricted modes were also examined. Subjects were placed randomly to four treatment groups. He concluded that an advance organizer (as defined in the study) did significantly facilitate learning and retention for the combined knowledge, comprehension, and application scores in the restricted mode.

Crook (1978), using 360 tenth grade students, investigated whether two reading strategies, advance organizers or adjunct questions improved the comprehension of key elements of the short story (plot, character development and theme) for the students. Students were randomly selected to an advance organizer treatment, an adjunct questions treatment, or a control treatment. The results of the study indicate that the reading strategies of advance organizers and adjunct questions did not significantly increase the comprehension of the key elements of the story for secondary students at the tenth grade level.

Darrow (1980) compared the relative effectiveness of two pre-instructional treatments: an advance organizer and a

conventional overview on the learning and retention of material processing concepts by eighth and ninth grade industrial arts students. A between-groups and within-subjects partial hierarchical design was used which involved ten intact classes consisted of 178 students. No significant difference was found between treatment groups for either the initial learning or the retention measure.

Sood (1990) studied (1) whether acquisition of language concepts is affected by Strategies of Concept Attainment and Advance Organizer or not; and (2) whether there is any interaction among strategies of teaching, cognitive style, intelligence, and creativity. The sample of the study consisted of 288 students of class IX, of UT, Chandigarh. The subject for the study was Hindi. A 2x2x2x2 Anova was used for analysis of data. She found that Concept Attainment Strategy was found to be more effective mode of teaching Hindi concepts as compared to Advanced Organizer Strategy. The interaction involving the variables of teaching models, intelligence levels, cognitive styles and creativity levels were found to be insignificant.

ii) Social Sciences

Allen (1960), using 212 ninth-grade students, compared the effects of an advance organizer introduction and a non-advance organizer introduction in social studies. The treatment lasted for 4 class periods with the posttest

administered on the fifth day. A delayed posttest was administered after 3 weeks following the treatment. He concluded that the advance organizer enhanced learning for above average students as measured by the delayed posttest, but it had no facilitative effect with less able students.

Baker (1974) investigated the effects of informational organizer in ninth grade social studies classes based on the progressive differentiation of subject matter. The effects of informational organizer were investigated in two separate studies. Phase I investigated the effects of informational organizers on the learning and retention of ninth grade subjects following a single learning task - the reading of a social studies passage approximately 2500 words long. Phase II conducted in a different school, investigated the effects of informational organizers on the social studies knowledge of ninth grade subjects on two criterion measures following a six week unit of classroom instruction. A combination of Campbell and Stanley (1963) posttest only control group design and Lindquist's (1953) "treatments levels design" was used. He concluded that informational organizers significantly enhanced the learning and retention of information contained in a social studies reading selection for both "high verbal" and "low verbal" ninth grade students.

Oppong (1978), using 60 students, studied the facilitative effects of organizers on achievement using geography materials

at the ninth grade level and inferred from the study that the Ausubelian hypothesis regarding the facilitative effects of advance organizers on meaningful verbal learning, is apparently credible provided that the organizers themselves are learned to constitute a part of learners' cognitive structure.

Panda (1986) studied the effects of advance organizers and set induction on learning and retention. The sample consisted of 60 ninth grade students of St.Mary High School, Indore, studying Civics. It was found that the group using advance organizer and the group using set induction showed the superiority significantly over the traditional method.

Pandey (1986) compared the effects of Advance Organizer Model, Inquiry Training Model, and conventional teaching in terms of pupils' achievement in and attitude towards social studies. The sample consisted of 86 male students of a junior high school in Azamgarh. A pre-and post-test control group design was followed. His findings indicated that both advance organizer model and inquiry training model were significantly superior to the traditional method in terms of pupil's achievement, whereas all the three were equally effective in terms of pupils' attitude towards social studies.

Livingston (1970) conducted three experiments with advance organizers. Two were with eighth grade classes and one was with a high school. He used a simulation game as an

advance organizer. In each of his experiments, the control group scored higher, but not significantly higher than the advance organizer groups.

Dolan (1978) investigated the practical application of advance organizers, interspersed questions and a combination of the two on the reading comprehension of eighth grade social studies pupils of three levels of reading ability. The treatment period spanned a total of seventeen consequetive class sessions. The results of the study gave little support for the practical classroom use, with eighth grade pupils, of the advance organizers, interspersed questions, and a combination of the two.

Skinner (1986), using 106 students, studied the effects of modified cloze procedure and graphic organizer on the ability of secondary level United States history students to comprehend assigned textual content and found no significant interactions between social sciences and reading achievement levels with treatment.

Heide (1992) investigated whether cognitive structuring of new information gained from a hypertext can be mediated by an advance organizer. The study also examined change in the knowledge structure of tenth-grade American History students (honours and average) as a result of their reading a brief computer hypertext. Knowledge structures were displayed in the form of concept maps composed on the

computer screen. Experimental and control groups were drawn from each of the four classes, two honours and two regular classes. The research showed that both honours and average students could learn from reading a computer hypertext, but an advance organizer did not appear to mediate changes in learners' perspective.

iii) Mathematics and Sciences

Weisberg (1970), using 96 eighth-grade students, compared the use of three types of advance organizers. Two of them were visual in nature. One of them was in the form of a graph and the other was a map. The third advance organizer was written in expository form. He reported both visual organizers to have a significant facilitative effect on learning.

Lantz (1982), using 300 8th grade students, studied the effects of advance organizers and subsumers on cognitive learning of solar energy concepts. The advance organizers used were verbal/graphic and comparative. He concluded that advance organizers benefited students of all subsumers levels on cognitive learning of solar energy concepts in both immediate and delayed tests.

Gonzales (1982) investigated to evaluate the advance organizer as utilized to initiate preinstructional concepts

for the purpose of improving the understanding of new technical curriculum. A total of 94 subjects in six separate treatment groups (3 at each high schools), completed a pretest and posttest on each of three separate instructional units. Results were consistent with expectations, as subjects in treatment group 'A' (technical instruction + Advance Organizers) exceeded test scores of subjects in treatment group 'B' (technical instruction only) at the .01 level during units I, II and III.

Avalos(1986) tried to investigate the separate and combined effects on students'learning of:(1) the use of advance organizers at the middle and end of each learning task, (2) the enhancement of students pre-requisites, and (3) mastery learning. Two studies were conducted in different high schools. In the first study (Algebra), three groups were used and in the second study (Biology), four classes were used. The results of the Algebra study showed that the use of organizers, enhancement of pre-requisites, and mastery learning had significant positive effects on student learning.

Chitriv (1983) ascertained comparative effectiveness of Ausubel strategy with traditional strategy on the various criteria of concept acquisition in mathematics, comparative effectiveness of Bruner strategy with traditional strategy on the various criteria of concept acquisition in mathematics; relative effectiveness of Ausubel and Bruner strategies on the various criteria of concept acquisition in mathematics.

Sample consisted of 127 eleventh grade students of science stream. A pre-and post-test design was followed. He concluded that Advance Organizer Model as well as the Concept Attainment Model were significantly superior to the traditional method, whereas the Advance Organizer Model was superior to the Concept Attainment Model for teaching mathematical concepts to XI grade students.

Ghosh (1986), using 480 learners of IX which included 240 boys and 240 girls, attempted to make an appraisal of the relative effectiveness of two different types of advance organizers, namely, prose-passage type and pictorial type, on the criteria of immediate learning and retention of concepts in life science i.e. cognitive subsumption by having learners of different cognitive styles and different levels of readiness.A 2x2x2 factorial design was used to analyse the data. Findings of the study revealed that (1) the cognitive subsumption of the concepts of life science was facilitated by the advance introduction of relevant subsuming concepts, (2) Both types of AO facilitated the retention of subject matter even after an interval of four weeks, (3) instructional strategy with the pictorial type of AO was found better than the prose-passage type of AO, (4) Cognitive subsumption of learning task was dependent on readiness for learning and difference in cognitive style.

Grewal and Kaur (1987), using 130 students of Class IX students, compared Bruner's model, Ausubel's model and

traditional method of teaching for learning of concepts in science. They concluded that there existed significant differences between the efficacies of Bruner's model, Ausubel's model and conventional method in teaching science to class IX students.

Kaushik (1988) investigated the long term effect of written advance organizers on the achievement of ninth graders in Biology and studied the effect of advance organizers on students of different reading ability, intelligence and scientific attitude. A 3x3x2 factorial design was used. The sample consisted of 60 IXth grade students of Kendriya Vidyalaya. The experiment continued for 13 days and 13 lessons were imparted. Findings of the study indicated that (1) advance organizers facilitated immediate and delayed learning in Biology, (2) pupils with high intelligence, reading comprehension, and scientific attitude derived the greatest advantage from the presentation of advance organizer. General learners were also profited by the advance organizers.

Healy (1989), using 55 ninth grade science students, compared the effects of two pre-treatments, an advance organizer and a pre-requisite knowledge passage, on learning and retention measure at low (knowledge and comprehension) and high (application and analysis) levels of the cognitive domain. It was found that the advance organizer group performed significantly better than the pre-requisite knowledge

group ($p < .01$) on the first framework test and the pre-requisite knowledge group performed significantly better ($p < .01$) than the advance organizer group on the pre-requisite knowledge test.

Feller (1973), using 151 suburban tenth-grade students in a Biology class, compared the effects of two types of advance organizers with the effects of two types of spaced questions. He reported that neither advance organizer facilitated learning of facts, comprehension or application. He found no interaction between treatment and I.Q levels.

Andreozzi (1975), using 58 ninth grade students, assessed the effectiveness of advance organizers and written verbalizations and combinations thereof on the learning and retention of selected algebraic concepts and concluded that using the significance level 0.05, learning and retention were not significantly affected by advance organizers or written verbalizations.

Mc Adaragh (1981), using ninety 9th graders, questioned: (1) the effect of an advance organizer on attainment of science concepts and (2) the effect of background experience in science on the attainment of science concepts and concluded that the advance organizer made no significant difference in achievement as measured by the Dubins Earth Science Test, and no significant difference due to treatment or background experience.

Tamthai (1982), using a total of 188 students, determined the facilitating effect of a pictorial diagrammatic advance organizer on science learning achievement of eighth grade students of Thai demonstration school students with average academic ability. Six intact classes of 3 demonstration schools were chosen. It was found that the advance organizer had no facilitating effect on male students who were either field dependent or field independent.

Dennis (1984), using 72 tenth grade students enrolled in advanced Biology classes, investigated the effectiveness of advance organizers and repetition at the high school level with respect to : (a) measurement of lower level cognitive skills, and (b) measurement of higher level cognitive skills. The findings suggest that the students were able to assimilate the concepts presented, without the use of the advance organizer or repetition.

iv) Reading Comprehension

Saretsky (1975), using 288 8th graders, investigated the effect of the use of an advance organizer on learning, with learners at different reading ability levels for topically different prose passages. Subjects within reading ability groups were randomly assigned to one of the three topically different prose passage conditions and to one of the two advance organizer conditions. The results of this study have

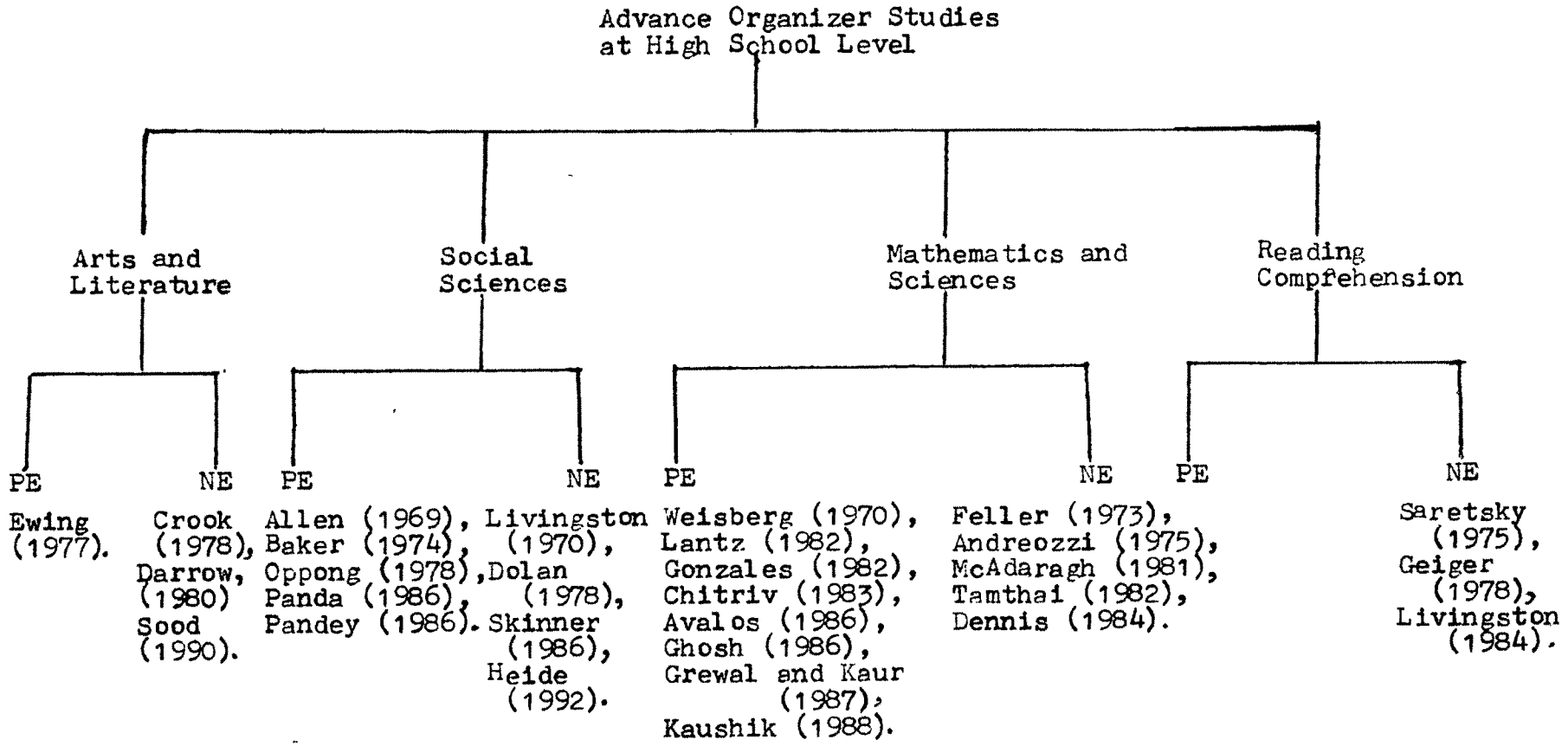
provided no support for the use of an advance organizer in facilitating learning from prose.

Geiger (1978), using 81 eighth grade students, investigated the relation between learner personality traits and verbal forms of advance organizers to determine whether learning and retention are facilitated by the advance organizers and if the advance organizers are differentially effective among learners who demonstrate varying degrees of selected personality traits. His findings were:(1) advance organizer format did not have a significant effect on learning, (2) there was a trend for the visual advance organizer group to achieve higher scores on learning and retention post-tests.

Livingston (1984), using 210 eighth grade students, studied the effects of advance organizers and direct instructions passages for high and low ability eighth grade students in the learning and retention of meaningful verbal material and found no statistical difference between the treatment means. High ability subjects in the advance organizer group achieved significantly higher scores than low ability students in this group on all three occasions.

Classification of reviewed studies showing positive and negative effects of advance organizers in major areas of study at high school level is shown in Table 3.3.

TABLE 3.3 : Classification of Reviewed Studies Showing Positive and Negative Effects of Advance Organizers in Major Areas of Study at High School Level.




PE - Positive Effect

NE - Negative Effect

Discussions

The effect of advance organizer on student learning has been studied at the high school level in different subject areas. Apart from social sciences, mathematics and sciences and reading comprehension, some researches have also been conducted to see the effectiveness of advance organizer in arts and literature. In arts and literature, while Ewing (1977) reported effectiveness of advance organizer, Crook (1978) and Darrow (1980) found no effect of advance organizer on student learning. In social sciences, a number of studies have proved the superiority of advance organizer over the traditional method (Allen, 1969; Baker, 1974; Oppong, 1978; Panda, 1986; and Pandey, 1986). On the contrary, studies by Livingston (1970), Dolan (1978), Skinner (1986) and Heide (1992) have not supported the effectiveness of advance organizer on student learning. In mathematics and sciences, studies by Weisberg (1970), Latnz (1982), Gonzales (1982), Avalos (1986), Chitriv (1983), Ghosh (1986), Grewal and Kaur (1987), Kaushik (1988), and Healy (1989) reported the effectiveness of advance organizer in facilitating student learning, whereas studies by Feller (1973), Andreozzi (1975), Mc Adaragh (1981), Tamthai (1982), and Dennis (1984) did not. The efforts by Saretsky (1975), Geiger (1978), and Livingston (1984) to improve reading comprehension of the students by using advance organizer proved to be futile. In conclusion, studies on advance organizer at the high school level have shown a mixed

result so far as student learning is concerned.

## 3.5 ADVANCE ORGANIZER STUDIES AT THE COLLEGE LEVEL

A number of studies have also been conducted at the college level to see the effectiveness of advance organizer on student learning. Studies, by Ausubel himself, on advance organizer were done at the college level.

### i) Arts and Literature

Haghighi (1981), using 144, undergraduate Iranian students enrolled in a college or university in United States, attempted to determine whether: (1) An underlined text was more effective on meaningful prose learning than the same text with no underlined; (2) Organizer treatments (advance, post, and placebo) had differential effect on meaningful prose learning; (3) Underlined/non-underlined treatment interacted with the organizer treatments, and (4) Combined treatments (underlined plus organizer) were more effective than the single treatments (organizer only). The data collected were analysed employing a two-way ANOVA and a Newman - Keuls' procedure. Conclusions drawn from the data analysis were: (1) advance organizers facilitate meaningful prose learning; (2) underlined cues facilitate meaningful prose learning.

ii) Social Sciences

Ausubel and Fitzgerald (1961), using 155 university undergraduate students, compared the effectiveness of three types of introductory passages, a comparative organizer, an expository organizer, and a historical introduction. The comparative organizer, pointed out explicitly the differences and similarities between the material to be learned, i.e. Buddhism and material which was already familiar to the learner, i.e. Christianity. The comparative organizer was designed to increase discriminability between the two sets of concepts. The expository organizer presented the principal Buddhist doctrine at a higher level of abstraction, generality and inclusiveness without making reference to Christianity. The treatment lasted for 3 days and was immediately followed by a posttest. A delayed posttest was administered on the tenth day following the treatment. On the posttest the comparative organizer was found to be significantly higher when compared with the expository organizer and the historical introduction. On the delayed posttest both the expository and the comparative organizer were significantly higher when compared with the historical introduction.

Ausubel and Youssef (1963) compared the effect of an advance organizer and a non ideational passage of historical and biographical nature. The study involved 162 senior college students. The treatment lasted for 4 days and included a posttest. It was followed by a delayed posttest

10 days after completion of the test. They reported significance in favour of the advance organizer.

Anderson (1973), using 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 was considered separately.

Elkin (1980), using 169 students, sought to determine the effectiveness of teaching the structures of the discipline of sociology as an advance organizer on reading comprehension and delayed recall in sociology. His study did not support Ausubel's advance organizer theory.

Johnson (1980), using 240 undergraduate introductory psychology students, investigated the effect of advance organizer on the retention of text material by college readers of varying reading ability. His hypothesis that there are differentiated effects on the recall of students with low, middle and high comprehension scores by the addition of advance organizers to the reading passage could not be supported.

iii) Mathematics and Sciences

Ausubel (1960), using 120 college seniors, compared a 500 words expository advance organizer with a historical

passage of the same length. Both introductory passage and the learning passage dealt with metallurgy, a topic found to be unfamiliar to the students on a pretest. The treatment was administered in one 35 minutes period, and the post-test was administered three days later. The difference between means of the experimental and control groups was, according to Ausubel, almost significant at .01 level in favour of the group, using advance organizer.

Ausubel and Fitzgerald (1962), using college undergraduates, compared effectiveness of an expository organizer and an introductory passage in a study of the endocrinology of pubesence. A comparison of the means of the total experimental group with the total control group produced non-significant results ( $p < .07$). Using verbal ability scores on the test as a basis for Plocking, they found significant results for the lower one third group in favour of the expository organizer.

Scandura and Wells (1967), using 104 college students majoring in elementary education, compared the use of an advance organizer in the form of a game, with a historical introduction. The function of the organizer was to present the structure of a mathematical group in terms familiar to them. The investigators reported that the organizer was superior to the historical introduction.

Grotelueschen and Sjogren (1968) conducted two experiments: one with 24 intellectually gifted adults (Experiment-1), and the other with 48 graduate education students (Experiment-2). They compared three experimental treatment groups and one control treatment group. The experimental treatment contained key ideas in the study of mathematics and the control treatment consisted of historical and descriptive information about units of measurement. They concluded from both the experiments that the experimental treatment materials not only facilitated the learning of new materials but also facilitated transfer, especially when the learning material was presented in a partially sequenced manner. Advance organizer also facilitated learning for intellectually gifted and graduate learners.

Hartje (1974), using both college and twelfth grade students, investigated the effects of using advance organizers on the learning and retention of specific mathematical concepts taken from elementary group theory and reported the advance organizers facilitated the learning and retention of the mathematical concepts presented in the instructional units.

Doyle (1981), using thirty six sections of remedial mathematics, determined if an advance organizer anchor a subsuming concept in cognitive structure. The results

indicated that (i) an advance organizer can anchor a formal level, mathematical concept , (ii) logical reasoning level is a significant correlate of ability to understand the advance organizer, (iii) the anchored subsumer facilitated learning, transfer and retention, (iv) an advance organizer can help in teaching for transfer.

Cahall (1985), using 145 third year nursing students, determined if the use of an advance organizer influenced the ability of the students to learn epidemiology. A content organisation map advance organizer was shown during each class to experimental group while the control group was not. The findings provided that the advance organizer group scored significantly higher on the post-test.

Cliburn (1985), using junior college students enrolled in anatomy and physiology classes, compared two systems of organizing and presenting lecture material: the traditional method of sequencing a close record with a text book and an Ausubelian approach using concept maps for sequencing and as advance organizer for instruction. Results showed that the experimental group exhibited marginally better performance on the immediate posttest than the control group where as it scored higher on the delayed post-test.

Russell (1991), using 37 adult nursing students, tested the usefulness of an advance organizer in helping nursing

students organize and retain knowledge and apply it to novel situations and identified the differential effects of an advance organizer on learning of subjects with field independent and field dependent cognitive styles. A factorial Anova supported the hypotheses that an advance organizer would improve scores on the application to novel situation subtests and no FD/FI main effect on interaction was observed.

Ruangruchira (1992), using 181 first year college students, investigated the effectiveness of an expository advance organizer in a general chemistry course. The subjects were randomly assigned to two treatment and control groups. He concluded that the advance organizer group performed significantly better than the control and introductory passage groups on the achievement post-test and retention test.

Baggett (1993), using 111 students from six intact biology classes in Southern Missisipi Community College, compared the relative merits of using different concept map presentations as advance organizers in teaching photosynthesis to students. This was done using the Ausubelian approach of concept maps as advance organizers in sequencing and presenting lecture material. A pretest and posttest experimental and control group design was used. Findings of the study showed that as advance organizers, the

photosynthesis concept maps and the photosynthesis physical science concepts were found to be effective.

Caponecchi (1973), using 91 college undergraduates in a mathematics class, compared the effects of an advance organizer, an introductory overview, and a historical passage. The duration of his study was 2 weeks, followed by a delayed posttest 3 weeks after the treatment ended. He found no significant differences among groups when subjects were classified according to ability based on ACT English and mathematics scores.

Kerston (1976), using 179 college students, examined the effects of an advance organizer on the learning and retention of algebra concepts, in two separate experiments and found no significant difference between advance organizer and control introduction means for either test in either experiment.

Forsythe (1982) investigated the efficacy of advance organizers and behavioural objectives when provided simultaneously, on the achievement of community college students studying science related material. The sample consisted of 144 students. The students who were divided into 4 sections, were told to use the organizers and/or objectives in preparing for the lectures and examinations. The study had five separate treatments. The result indicated that the efficacy of advance organizers and behavioural objectives

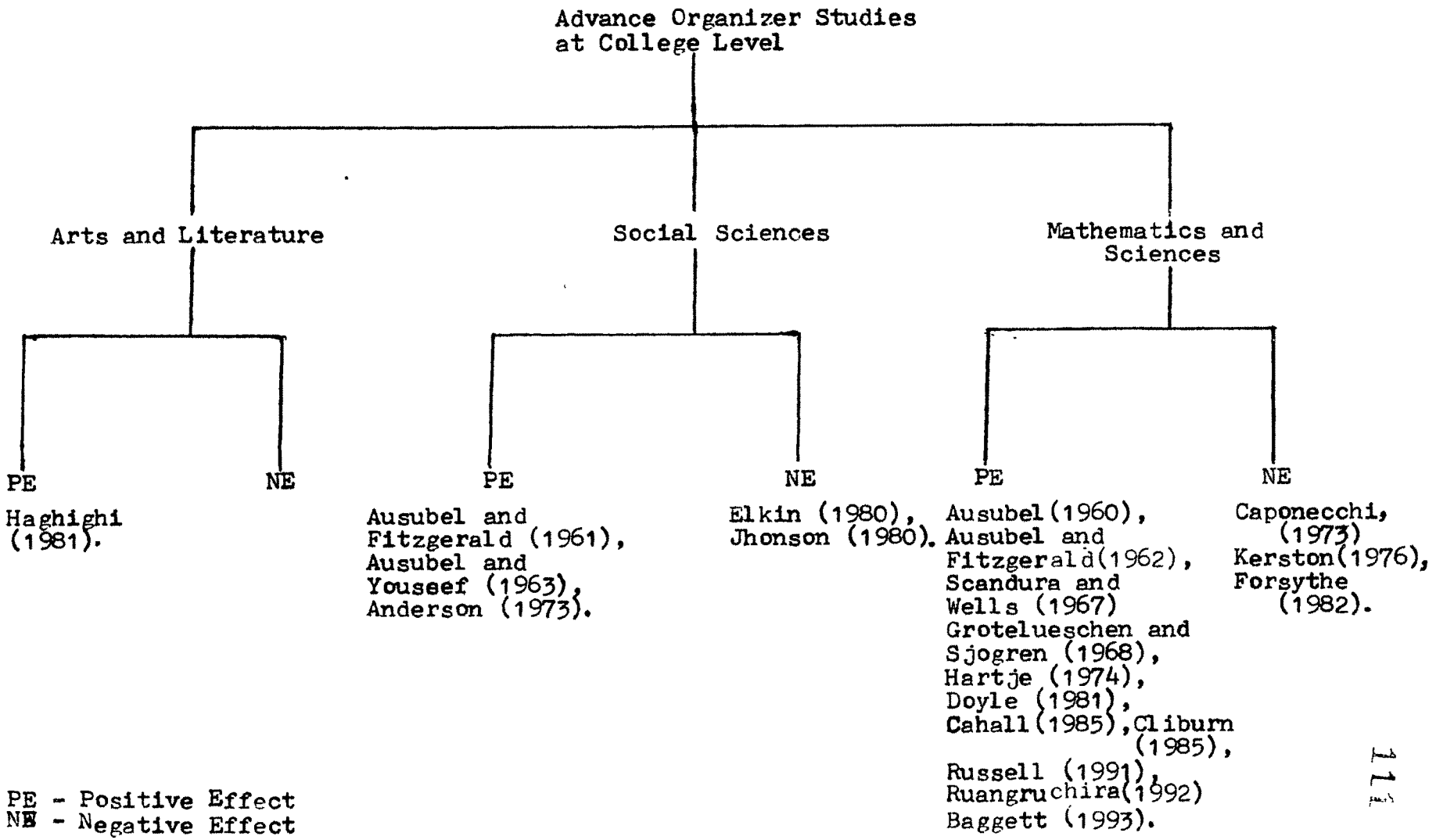
when used as a combined treatment with science related material would not be determined with assurance.

Classification of reviewed studies showing positive and negative effects of advance organizer in major areas of study at college level is shown in Table 3.4.

Discussions

Like primary, secondary and high school levels studies have been conducted at the college level to see the usefulness of advance organizer in promoting learning in arts and literature, social sciences, mathematics and sciences. In arts and literature, many studies have not been conducted. The study by Haghighi (1981) shows facilitating effect of advance organizer in prose learning. In social sciences, studies by Ausubel and Fitzgerald (1961), Ausubel and Youssef (1963), and Anderson (1973) reported usefulness of advance organizer in facilitating learning, whereas studies by Elkin (1980) and Jhonson (1980) did not support the use of advance organizer in teaching and learning. In mathematics and sciences, studies by Ausubel (1960), Ausubel and Fitzgerald (1962), Scandura and Wells (1967), Grotelueschen and Sjogren (1968), Hartje (1974), Doyle (1981) Cahall (1985), Cliburn (1985), Russell (1991), Ruangruchira (1992), and Baggett (1993) proved the superiority of advance

TABLE 3.4 : Classification of Reviewed Studies Showing Positive and Negative Effects of Advance Organizers in Major Areas of Study at College Level.




PE - Positive Effect
NE - Negative Effect

organizer over the traditional method so far as student learning is concerned. On the other hand, studies by Caponecchi (1973), Kersten (1976) and Forsythe (1982) failed to see the effectiveness of advance organizer in fostering science learning.

## 3.6 ADVANCE ORGANIZER STUDIES AT THE TEACHER TRAINING LEVEL

Studies have also been done to use Advance Organizer Model as a training strategy at the teacher training level. Some of the studies on AOM conducted at the teacher training level are discussed in the coming paragraphs.

Buddhisagar (1979) studied whole versus part presentation of advance organizer in text in relation to intelligence. At random 138 student teachers were distributed into three groups, viz., Experimental group, No.1, Experimental group No.2, and control group. The result indicated that the mean achievement of students studying through whole method, part method, and traditional method differed significantly from each other.

Rajoriya (1986) investigated the effectiveness of instructional material with advance organizers and without advance organizers separately in terms of achievement of students. The sample consisted of 135 students of B.Ed class

in Educational Psychology. Results indicated that the instructional material with advance organizer was found to be significantly superior to instructional material without advance organizer.

Senapati (1986) studied the effects of personality characteristics on achievement taught through programmed learning material, advance organizer material and traditional method. The sample of the study comprised 133 B.Ed students of DAVV, Indore. There were two experimental groups receiving the treatment of programmed learning material and advance organizer material respectively. The third group (control) received the treatment of traditional method. It was found that the advance organizer material was significantly effective than both programmed learning material and traditional method in terms of achievement of students.

Buddhisagar (1986) developed two types of instructional material, namely, material based on Advance Organizer Model, and Operant Conditioning Model for teaching Educational Psychology to B.Ed. students and studied their effectiveness in terms of achievement of students on the criterion tests and reaction of students towards the instructional materials. She also studied the interaction effects of treatment, attitude towards teaching profession, intelligence, creativity and personality. The study was carried out at two stages. The first stage involved development of materials and the second

stage was experimentation. The first stage had a sample of 109 B.Ed students whereas the second stage had a total of 139 students. The design of the study was post-test control group design. She concluded that the instructional materials based on Advance Organizer Model and Operant Conditioning Model were found to be effective in terms of achievement of students on different criterion tests and reaction of students in comparison to traditional method of teaching.

Patel (1987) found the wholist, partist and partist demonstration first training strategies in Advance Organizer Model to be equally effective in developing model competency. In a similar type of study, Satpathy (1987) found partist and partist first demonstration to be significantly more effective than wholist approach.

Passi, Sansanwal and Singh (1988) studied the relative effectiveness of different training strategies with regard to Advance Organizer Model and Jurisprudential Inquiry Model. The study was conducted in three phases. The objective of the Phase I was to study the effectiveness of training in the Advance Organizer Model and Jurisprudential Inquiry Model in terms of teacher educators' understanding, reactions and willingness to implement the models. The objective of the Phase II was to study the relative effectiveness of training strategies in terms of student teachers' understanding of

the models - AOM and JIM, their competence, reactions and willingness to implement the models. The objective of Phase III was to study the effectiveness of different training strategies for Advance Organizer Model and Jurisprudential Inquiry Model in terms of competence, reactions and willingness of student teachers at the school stage. The sample of the study consisted of 42 teacher educators, 408 student teachers and about 2700 pupils. The design of the study was a pretest-posttest single group design. The training programme consisted of the orientation about theory of the model followed by the explanation and discussion of the tools (i) Lesson Plan Guide (LPG), (ii) Training Analysis Guide (TAG), and (iii) Lesson Plan Format (LPF). The entire training programme was of 56 hours duration. The findings of the Phase I of the study revealed that the teacher educators, as a result of training on the models, understood the models, reacted favourably towards them and expressed willingness to implement them. The findings of the Phase II of the study revealed that the student teachers, as a result of the training, were able to understand and develop competence in the models. Further, all the training strategies developed favourable reactions and willingness for implementation of these models. The findings of the Phase III of the study showed that student teachers at the school stage expressed favourable reactions and willingness to implement the models. The pupils taught through the models also expressed

favourable reactions towards the model.

Gupta (1991) compared the effectiveness of teaching through AOM of Ausubel and conventional method in simulated condition as well as in real classroom condition on development of teaching competence of student-teachers. The objective of the study was also to compare the effect of teaching through AOM and conventional method on attitude of student teachers towards teaching. The sample consisted of 100 B.Ed students of Bijnor and Dhampur teacher-training colleges, Uttar Pradesh. Findings of the study revealed that the effect of training through AOM approach on experimental group was visible as they were good in teaching competence in simulated condition as well as in real classroom situation. There was an effect of AOM approach on the attitude of experimental group of student teachers.

Hanclosky (1985) compared task analysis, advance organizer and concept elaboration methods in teaching concepts and principles to 92 students enrolled in undergraduate teacher education core course. Three instructional treatments using the task analysis, advance organizer and concept elaboration approaches to teaching were administered. General results of the data indicated that the task analysis group performed significantly higher than the advance organizer and concept elaboration groups in both concept and principle learning.

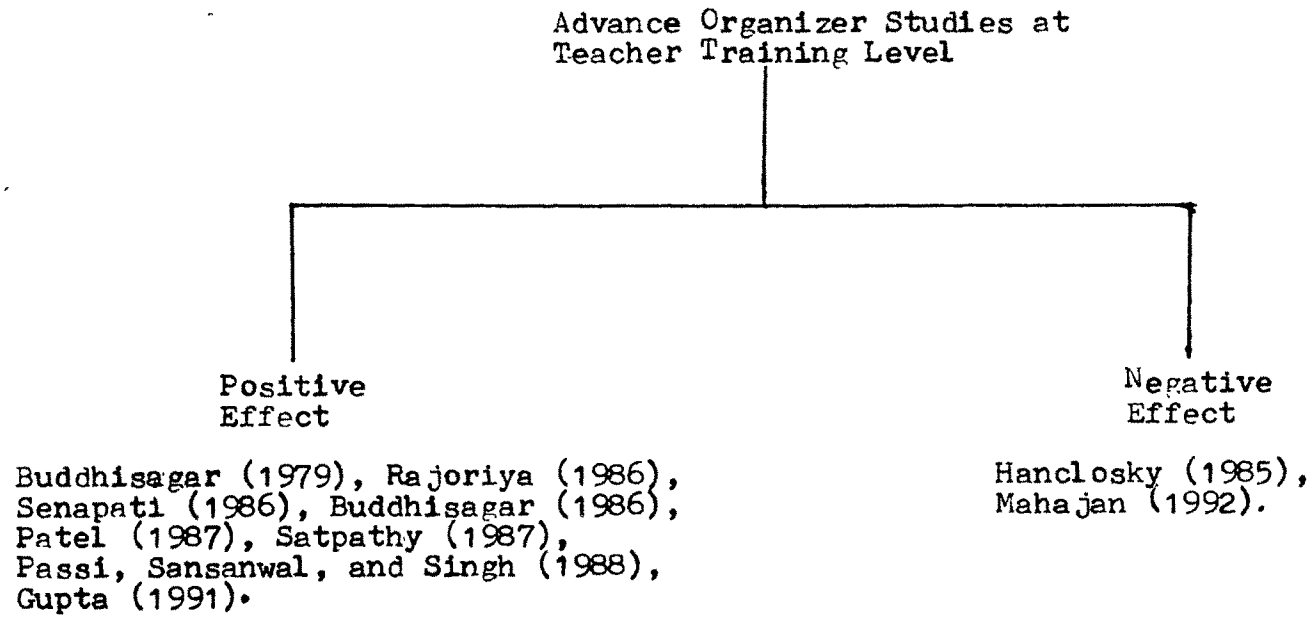
Mahajan (1992) compared the effectiveness of two models of teaching viz. Bruner's Concept Attainment Model and Ausubel's Advance Organizer Model on teaching abilities of student teachers and on achievenment of students in various schools. The study was conducted in two phases: Phase A - College based laboratory phase, Phase B - School based coaching phase. Three groups of 15 each formed the sample namely, High, Middle and Low on the Teaching Competence Assessment scale. Conclusions of the study indicated that during peer group sessions as well as classroom teaching sessions, a group which was taught by CAM based on Bruner's theory was found to be superior to a group which was taught by AOM based on Ausubel's theory and a group which was taught by routine method so far as teaching ability of the student teacher is concerned. Achievement of students who were taught by CAM was found to be better than that of the students by AOM and routine method.

Classification of reviewed studies showing positive and negative effects of AO in major areas of study at teacher training level is shown in Table 3.5.

Discussions

Advance organizer has been used by many researchers to improve learning of student teachers enrolled in teacher education courses. Rajoriya (1986), Senapati (1986), and Buddhisagar (1986) compared Advance Organizer Model with traditional method of teaching in terms of students'

TABLE 3.5 : Classification of Reviewed Studies Showing Positive and Negative Effects of Advance Organizersat Teacher Training Level.



achievement. Some of the researchers used Advance Organizer Model as a training strategy in teacher training course (Patel 1987; Satpathy, 1987; Passi, Sansanwal, Singh, 1988; and Gupta, 1991). Among these studies, the study by Passi, Sansanwal, and Singh was very comprehensive in nature. Their study aimed at training both teacher educators and student teachers on the line of Advance Organizer Model and revealed that both teacher educators and student teachers expressed favourable reactions towards the model and willingness to implement it in the school situation. However, the studies by Hanclosky (1985) and Mahajan (1992) do not support the effectiveness of advance organizer in teacher training programmes.

## 3.7 MAJOR TRENDS EMERGING OUT OF THE REVIEW OF RESEARCHES ON ADVANCE ORGANIZER

The following major trends emerge out of the review of reserches on AO taken in the present study.

i) Most of the researches on AO have studied the effectiveness of advance organizer on student learning.

ii) Advance Organizer studies have been conducted at all levels of education starting from primary to college level.

iii) The number of studies conducted on advance organizer is more at the middle school, the high school and the college levels in comparison to the primary school level.

iv) The number of studies conducted on advance organizer is more in case of subjects under social sciences than the subjects under arts and literature.

v) Studies on advance organizer in India are mainly confined to high school and teacher training levels.

vi) Almost all the studies on advance organizer have measured the immediate retention of meaningful learning, whereas a few studies have tested the delayed retention of meaningful learning.

vii) Studies on advance organizer report both positive and and negative effects of advance organizers on student learning.

viii) The nature of advance organizers used in studies is of different types, viz. verbal, expository, comparative, graphic, visual, pictorial, filmic,etc.

ix) The sample sizes used in the studies range from 37 (Russell, 1991) and 55 (Healy 1989) to 376 (Schulz, 1966).

x) Various types of experimental designs have been followed in the studies. For example, Pandey (1986) and Chitriv (1983) have followed pretest-posttest experimental control design, whereas Baker (1974) and Buddhisagar (1986) have used posttest only control group design.

xi) The gap between the immediate test and the retention test ranges from 6 days (Moore, Barnes and Barnes,1975) and 10 days (Ausubel and Fitzgerald,1961; and Ausubel

and Youssef, 1963) to one year (Pizzni and Gross,1978).

xii) The duration of the experiment ranges from 3 days (Ausubel and Fitzgerald, 1961) to 20 weeks (Schulz, 1966).

xiii) A few researchers have used concept maps in advance organizer studies.

xiv) Nurturant effects of the Advance Organizer Model, i.e. interest in inquiry and habits of precise thinking, have not been examined in the researches on AO.

## 3.8 THE PLACE OF THE PRESENT STUDY IN THE CONTEXT OF RESEARCHES REVIEWED

The present study aims at examining the effectiveness of Advance Organizer Model in terms of its instructional and nurturant effects. The study was conducted on eighth grade boys and girls in the subject of Civics. It was an experimental study in which the performance of the experimental group has been compared with that of the control group in terms of criterion tests. Apart from the instructional and nurturant effects the study has tried to see whether students are able to retain whatever they have learnt over a period of time. The reactions of the students towards the model have also been studied.

The earlier investigations have mainly attempted to see the effectiveness of advance organizer in facilitating learning in a particular subject at a particular level. The present study repeats the same thing by examining the effectiveness of

Advance Organizer Model in terms of its instructional and nurturant effects. While studying the effectiveness of the Advance Organizer Model in terms of its instructional effects in subject of Civics at high school level, the present investigation differs from the earlier studies in some respects. Whereas the earlier studies have mainly confined themselves to the measurement of meaningful verbal learning, the present study, alongwith measurement of meaningful verbal learning, has tried to see the development of conceptual structures in the students as a result of model treatment.

Very few studies in the past have tried to see the nurturant effects of the model i.e. habits of precise thinking and interest in inquiry. In this regard, the present investigation differs from the earlier investigations. It has attempted to examine the nurturant effects of the model. Like most of the earlier investigations, the present study has measured the retention of meaningful learning over a period of time. The present research, like many of the Indian studies, has also tried to study the reactions of the students towards the Advance Organizer Model.

To conclude, the present investigation repeats a few aspects of the model already covered by the earlier studies as well as explores certain new aspects of the model.

## 3.9 SUMMARY

The focus of the present chapter was on researches conducted on advance organizer and Advance Organizer Model of teaching. While reviewing researches, studies conducted on advance organizer over the last 34 years were taken into account. Of course, it was not possible to review all the researches conducted during this period. Hence, a few studies have been taken for review in the present investigation. Studies on advance organizer have been conducted at all levels of education and in all major areas of study. Almost all the studies have examined the effectiveness of advance organizer on student learning. The results of these studies show that advance organizers have both positive and negative effects on student learning. All these studies vary in terms of their objectives, sample size, design, data collection procedures, and findings. Although many researches have studied instructional effects of AO, few of them have examined the nurturant effects of AO. The present investigation aimed at examining both instructional and nurturant effects of AO. In the next chapter, the methodology of the present research is being discussed.