

The Effects of an Advance and a Post Organizer
on Learning and Retention of an ESL Videotape

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ABSTRACT

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The relative effectiveness of advance and post organizers as instructional strategies for an ESL (English as a second language) video was investigated to determine the extent to which they influence the outcome of learning for beginning level high and low aptitude adult ESL subjects when the materials presented were unfamiliar yet relatable to past experience. Both an advance organizer and a post organizer were included to determine the locus of organizer effect, whether at the encoding (advance) or retrieval (post) stage of the memorial process.

One hundred four subjects were assigned to one of four groups: advance organizer, post organizer, advance and post organizer, and control, and stratified to ensure that thirteen high aptitude and thirteen low aptitude subjects were represented in each of the four groups. An immediate posttest was administered, followed by a delayed posttest ten days later to determine differential learning and retentional effects.

An analysis of covariance was conducted with aptitude as the covariate which revealed that, as hypothesized, the advance organizer strategy was more beneficial than the post organizer for both high and low aptitude subjects although both were significantly beneficial.

In addition, a significant main effect was found for the covariate, aptitude. A subsequent multiple regression analysis further revealed that aptitude was the overwhelming predictor of the outcomes on both the immediate and delayed posttests across all treatment groups and control group, thus diminishing the impact of the instructional strategies. No significant interaction effects were found.

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CHAPTER 1

Rationale

Despite an immense body of research on learning and retention, little is still understood about how they can best be facilitated through the aid of instructional materials and strategies. Partial theories abound but little integration or synthesis of ideas has emerged that point in any one clear direction. Perhaps when more is understood about the nature of the learning process, we will be able to achieve some sort of coalescence of ideas upon which to construct an organized body of instructional design principles to use as a guide to designing instructional materials that truly enhance learning and retention of verbal information. But until then, instructional designers must rely on the fragmented knowledge that educational and psychological research have established over the years.

One body of research that has yielded a rich, though as yet inconclusive source of knowledge about verbal and conceptually-oriented learning which is valuable to instructional designers is that of advance organizers. Initially based on David Ausubel's subsumption theory of meaningful reception learning (Ausubel, 1963, 1968) and later interpreted more successfully by Richard Mayer's assimilation theory, advance organizers are introductory materials (usually prose) presented in advance of instruction to aid the learner in incorporating into his cognitive structure unfamiliar but meaningful material (Ausubel, 1960, 1961, 1962). Unlike overviews and summaries, they are stated at a higher level of abstraction, generality and inclusiveness than the learning material.

According to Ausubel, (1968, 1978) learning and retention are facilitated if there exist in cognitive structure relevant subsuming concepts to provide optimal anchorage for the incoming concepts. Without relevant subsuming concepts or ideational scaffolding for the new concepts to hang onto, their stable incorporation and retention in cognitive structure will be tenuous. Thus, by deliberately generating relevant and appropriately inclusive and general subsuming concepts into cognitive structure in the form of advance organizers, one enhances both the incorporability and longevity of the more detailed and specific information in the learning material (Ausubel, 1961).

Ausubel's advance organizer strategy is not only logically described and explained, it is intuitively appealing. It rests on the well-established notion in educational and psychological research that knowledge must build on previously learned knowledge. But for all its intuitive appeal and logic, its effectiveness as an instructional strategy has not been firmly established.

While many of the recent reviews and studies provide evidence showing that advance organizers have a small, but facilitative effect on learning and retention (Stone, 1982; Luiten, Ames, and Ackerson, 1980; Kozlow, 1978), there has been only partial support for Ausubel's model of learning (Stone, 1982). A survey of advance organizer research shows that it is replete with inconsistencies in results (Stone, 1982; Luiten, 1980; Clark and Bean, 1980). Many of these inconsistencies, however, are due to a lack of understanding of precisely what an advance organizer is and how it is constructed (Mayer, 1980, 1979; Ausubel, 1978). Such lack of theoretical understanding of the concept of advance organizer has forced at least two reviewers, Barnes and

Clawson (1975) to conclude that "advance organizers as presently constructed do not facilitate learning" (p.651). Later reviews, however, effectively countered the conclusions made by Barnes and Clawson by pointing out the serious flaws in their review. Lawton and Wanska (1977), for example, criticized them for their misinterpretation of the nature of an advance organizer and their faulty reviewing method. Richard Mayer (1979) also criticized Barnes and Clawson for their inadequate representation of Ausubel's theory, inadequate experimental control and inadequate analysis of outcomes. Even Ausubel (1978) himself defended the attack on advance organizers by his critics on the basis that their studies showed a surprising lack of familiarity with the correct meaning and construction of advance organizers as well as methodological deficiencies in research design.

With few exceptions, advance organizer research has investigated the effectiveness of prose advance organizers in facilitating learning and retention from prose material. Little research has been devoted to investigating the effects of non-prose advance organizers in facilitating learning either from prose or visual instructional materials, particularly videotapes. To date, three studies have investigated the effectiveness of non-prose advance organizers in learning from videotaped or other instructional materials, two of which reported positive results. (Nugent, Tipton, and Brooks, 1980; Lesh, 1976(c)). The third study (Bertou, Clasen, and Lambert, 1972) found that interspersed questions throughout a televised lecture on the origins and production of atomic energy were more effective than either a non-prose advance or post organizer.

Over represented in advance organizer studies as well are science (i.e., the hard sciences) and mathematics instructional materials, both of which contain indentifiable conceptual hierarchies which lend themselves easily to the construction of an Ausubelian advance organizer for more conceptually specific instructional materials. Few studies have been done in the social sciences (i.e., religion, psychology, geography, economics, art, language, etc.). But of the studies that have been done, Luiten et al. (1980) found that an advance organizer has the greatest effect on learning with its effectiveness declining for retention.

Finally, the preponderance of advance organizer research has investigated the effectiveness of prose advance organizers as opposed to non-prose advance organizers. Visual organizers in the form of graphs, diagrams, maps, etc. have been investigated in a number of studies (Shanahan, 1982; Alverman, 1982, 1981; Mayer, 1979; Mayer and Bromage, 1979; Mayer, 1975; Weisberg, 1970) yielding a general small effect (Moore and Readence, 1980). The meta-analysis conducted by Luiten et al. (1980) cited only four aural advance organizer studies and found the average effect size (ES = .30) for aural mode advance organizer studies to be twice that of written advance organizer studies. As studies varying organizer presentation mode and those measuring retention were so few in number, they were not presented in this meta-analysis.

Clearly, more research is required to determine advance organizer effectiveness with instructional materials other than prose and in subject areas other than science and math. Because of the paucity of

non-prose advance organizer research, this study proposes to investigate the effectiveness of an audiotaped advance organizer for learning and retaining videotaped ESL instructional material. The selection of language as the subject matter in this study was to, indirectly, provide a test of Ausubel's assumption that cognitive structure is hierarchically organized since language concepts, unlike math and science concepts, are not easily classified in a hierarchical order. Language learning does not presuppose hierarchical learning.

A post organizer was included in the study as well to determine the locus of effect of the organizer, that is, whether it primarily affects the encoding process (advance) or primarily the retrieval process (post). As research reveals few but conflicting results of the relative effects of advance and post organizers on learning and retention (Mayer, 1982), its inclusion in the study was clearly warranted.

It is generally acknowledged (Mayer, 1982, 1979; Luiten et al., 1980; Ausubel, 1960) that an advance organizer strategy is most effective when the materials to be learned are unfamiliar or unorganized but meaningful in which case it would appear to be an extremely useful strategy to incorporate into instructional materials in a second language, particularly in video and with beginning level students. Learning aspects of the language (e.g. the phonological, linguistic and semantic systems) from a video is a difficult task, especially for beginning level students. With students being expected to cope with the language presented on videotape in all its richness and complexity since current ESL methodology insists on presenting language authentically, they must either develop strategies on their own to process the

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information effectively or be provided with a strategy from the instructional system. Both "learner-assigned" and "instruction system-assigned" cognitive strategies as Rigney (1978) has referred them as, are essential for optimal learning. An optimum mixture of both are required, according to Rigney (1978), and it is the task of the instructional system to determine the appropriate starting and terminating mixture for each student (p.171). Thus, it seems not only appropriate but necessary to incorporate some sort of instructional strategy, like that of an advance organizer, into the design of instructional materials in order to aid students in effectively processing information. Other, and perhaps better, means of inculcating the strategies that will ensure optimal processing of language information exist, of course, so the incorporation of advance organizers are not essential. However, their proper construction can ensure that they act as content bridges, orienting tasks or cognitive strategies which students can internalize and apply not only to the learning task at hand but subsequent learning tasks as well. That is, an advance organizer can function as a generalized cognitive processing skill applicable to a variety of learning situations.

While instruction-assigned strategies, such as advance organizers, are generally effective instructional tools, they are not effective in all situations. Recent research on learning strategies has shown that this category of strategies can, in fact, impede learning (Salomon, 1979; Bovy, 1981; Winn, 1982). More specifically, this research indicates that high aptitude learners do not benefit from external instructional stimulation. As Salomon (1979) found, high initial scores on cue attendance performed less well after external modelling

of the underlying cognitive operation of cue attendance (i.e., by zooming in and out of details of a dense pictorial stimulus). Such modelling of the appropriate cognitive process, on the other hand, benefitted the less skilled learners who presumably lacked an appropriate strategy. It seems that high aptitude learners already possess the relevant cognitive skills and strategies which they can successfully apply to various learning tasks; imposed strategies apparently interfere.

Advance organizer research over the past twenty years yielded conflicting results with respect to their relative effectiveness for high and low aptitude learners. The initial studies conducted by Ausubel (1962, 1963) found that advance organizers were most effective with less able learners, presuming that average and better than average learners were capable of spontaneously organizing new material around relevant, more inclusive concepts. Subsequent studies, however, yielded contradictory results. Mayer (1982) in his review of twenty years of advance organizer research concluded that in some cases there were no interactive effects between ability and treatment, while in others, organizers tended to aid low ability learners better than high ability learners. Lower ability groups were favoured, according to Mayer, only when the content of the materials was other than science or math. The recent meta-analyses (Stone, 1982; Luiten et al., 1980; Kozlow, 1978) were more definitive in their conclusions. They found that advance organizers were effective for both low and high aptitude learners, but more effective for high aptitude learners. No reasons were given to explain the results.

Because of the contradictory nature of the research results, this study investigated the relative effectiveness of advance organizers and post organizers with high and low aptitude language learners.

Aptitude in learning languages is presently measured by the Modern Language Aptitude Test (MLAT), administered to native speakers of English and the Test d'Aptitude aux Langues Vivantes (TALV), administered to native speakers of French. It was developed by Carroll and Sapon in 1959 and is published and administered by various psychological establishments throughout the United States and Canada. Carroll (1973) most recently has defined aptitude as "the rate at which persons at the secondary school, university and adult level learn to criterion." The definition is clearly vague. However, although it has been difficult to isolate, describe and assess aptitude in second language learning, progress has been made in the last few decades (Stern, 1980). Difficulty in defining aptitude and measuring it can be attributed, as Stern (1980) points out, because it is based on language teaching theories, interpretations of learner characteristics and the language learning process, are factors of which change and evolve. The most recent aptitude test devised is the MLAT which reflects audiolinguistic principles in language learning and teaching. As a result, the test assumes the following characteristics of the audiolingual theory: discrimination of speech sounds, the capacity to relate sounds to given symbols, rote memory, sensitivity to sentence structure and inductive language learning capacity.

For the purpose of this study, the TALV was used to assess aptitude as it is the most recent and valid and reliable test developed. The definition of aptitude has and always will be amorphous given the era

changing nature of the language process upon which aptitude must be defined and measured. Aptitude is amorphous as well because it is and cannot even be a single definable entity. By its nature, it is a composite of different characteristics, consisting of several constituents which learners possess to varying degrees (Stern, 1980).

With respect to learning ESL via videotape, it would appear that, given the complexity of the task in terms of extracting and organizing the salient elements of the videotape and producing them in the target language, low ability learners should benefit more from the advance organizer since most low aptitude second language learners lack sufficient cognitive skills and strategies to organize language material in a meaningful way. An advance organizer can function to limit the semantic field open to the learner, that is, to establish or stimulate recall of the schema appropriate to incorporate the new language material. Such a function of an advance organizer, specifically as it applied to developing second language instructional video materials, was envisioned by Ingrid Marino (1982). The study here, thus, attempted to determine whether low or high aptitude language learners would benefit from advance organizers, particularly when the learning material was presented in a contextually rich and complex format.

Summary Statement of the Problem

This study was designed to determine the relative effects of an advance organizer and a post organizer written in French and recorded on an audiotape on both learning and retention of an ESL videotape. Both the aural and written modes were used to communicate the advance

organizer and post organizer in order to accommodate any individual differences in processing the information and to ensure group equivalency: An advance organizer and a post organizer were included to determine the locus of organizer effect, whether at the encoding (advance) or retrieval (post) stage of the memorial process. An ESL videotape was selected for the study with a view to extending organizer research to include non-prose instructional materials as well as materials other than science and math.

Finally, the differential learning and retentional effects of an advance organizer and a post organizer were assessed for both high and low aptitude learners to determine which group would benefit more from the adjunct aids.

CHAPTER 2

Literature Review

Ausubel's Concept of Advance Organizer

Although the concept of advance organizer originated with David Ausubel, it is predicated in part on the notion of schema theory which finds its roots in the work of Bartlett (1932) and Hebb (1920). Schema, according to Bartlett, refers to an active organization of past reactions or of past experiences (p.201). Theoretically, it postulates how knowledge is represented in cognitive structure. Despite its vagueness, Ausubel (1963) compared the structure and function of schema to that of a subsuming concept (p.64).

For Ausubel, cognitive structure is hierarchically organized in terms of highly inclusive subconcepts and informational data (1960, p.267). This system of knowledge, he adds, is characterized by progressive differentiation of content on the basis of ideational inclusiveness with each part linked to the next higher (more inclusive) step in the organizational hierarchy through a process of subsumption (1963, p.42). The acquisition of new, meaningful information, Ausubel further postulates, is highly dependent on the relevant ideas or subsumers already in cognitive structure to the extent that the new information can only be stably incorporated into cognitive structure if it is subsumable under relevant existing concepts. Without relevant subsuming concepts available in cognitive structure to provide optimal anchorage, the process of learning would be rote rather than meaningful and would not likely suffer from obliterative subsumption or the process of forgetting.

To ensure that meaningful learning of new information when relevant subsuming concepts are lacking in cognitive structure, Ausubel devised an advance organizer strategy that would bridge the gap between what the learners already knew and what they needed to know before meaningful learning could occur. Advance organizers would either provide ideational scaffolding for the stable incorporation and retention of the more detailed and differentiated materials that followed in the learning passage or they would increase discriminability between the instructional material to be learned and similar or conflicting ideas in cognitive structure. These organizers, according to Ausubel (1963, 1978) are normally introduced in advance of the learning materials itself and furnish anchoring ideas at a superordinate level. Organizers, in other words, are presented at a higher level of abstraction, generality and inclusiveness than the new material to be learned. And they are distinguished from summaries and overviews, Ausubel (1978) says, in that summaries and overviews are presented at the same level of abstraction, generality and inclusiveness as the material itself (p.171).

A further distinction is made between two types of organizers: an expository and a comparative organizer. Expository organizers are used when the new learning material is completely unfamiliar to the learner. In this case, the purpose of the advance organizer is to provide ideational anchorage for the incoming information. Comparative organizers, by contrast, are used when the new material is relatively familiar and relatable to similar concepts in cognitive structure. Their purpose is to increase discriminability between new and existing ideas that are essentially different but confusingly similar.

The Development and Interpretation of the Organizer Strategy

Advance Organizer Studies. Ausubel's theory of meaningful reception learning which is predicated on his assumption that cognitive structure is hierarchically organized and his hypothesis that learning and retention of unfamiliar but meaningful material can be facilitated by the advance introduction of relevant subsuming concepts (organizers) were supported in his early studies (1960, 1961, 1962, 1963).

In a study conducted by Ausubel and Fitzgerald (1961) for example, using as a learning task a 2500 word passage on the principles of Buddhism and a comparative organizer, an expository organizer and a control passage, it was demonstrated that learning and retention were enhanced by the use of a comparative organizer, especially when discriminability between two sets of concepts (one known and the other unknown) was low because of inadequate prior knowledge. In addition, it was found that the principal ideas on Buddhism at a higher level of abstraction, generality and inclusiveness than the learning passage, resulted in a significant enhancement of learning and retention over a ten day interval. Subsequent studies to Ausubel's gave consistently positive results (Grotelueschen and Sjorgren, 1968; Scandura and Wells, 1967; Smith and Hesse, 1969; Weisberg, 1970; Kuhn and Novak, 1970, 1971; Proger, 1973; Mayer, 1975, 1975a, 1976; Kahle and Rastovac, 1976; Jones, 1977) despite variations in the nature of the learning materials and the nature of the advance organizer.

A number of studies, however, did not provide consistent support for advance organizers, leading reviewers Barnes and Clawson (1975) to conclude that "the efficacy of advance organizers have not been established" (p.651). Of the thirty-two studies analyzed by Barnes and

Clawson (1975) in their review, they found twelve supporting advance organizers and twenty reporting no facilitative effects when the variables - length of study, ability level of subjects, grade level, type of organizer and cognitive level of the learning tasks - were analyzed separately, no clear patterns emerged, thus leading them to their conclusion that the efficacy of advance organizers had not been established (p.651). Even Hartley and Davies (1976) and Clark and Bean (1980) suggested that further experimental research in advance organizers be delayed until some agreement could be reached concerning an operational definition to guide the construction of advance organizers.

Despite Ausubel's (1978) staunch defence of the operationally unambiguous nature of advance organizers (p.252), most researchers (Clark and Bean, 1980; Mayer, 1982; Anderson, 1978; Lawton and Wanska, 1977; Hartley and Davies, 1976) remain unconvinced. Interpreted within his reception theory of learning, advance organizers have only been partially supported by empirical research (Mayer, 1979, 1982). However, interpreted by assimilation theory (Mayer, 1979), advance organizers have yielded more concrete and positive results. In effect, what Mayer's application of assimilation theory has done is provide a meaningful context within which to interpret advance organizers as well as establish a framework to guide future research.

Assimilation Theory. "Assimilation theory" Mayer (1979) explains, "refers to the process of learning as the acquisition of new material in the learner by connecting it with (or assimilating it to) some aspect of existing cognitive structure or schema, and the product of learning as the newly reorganized cognitive structure which, in turn, may serve

as an assimilative schema for subsequent learning" (p.369). According to this view, meaningful learning requires fulfillment of three conditions: (1) reception of the to-be learned materials, (2) availability of a meaningful structure of familiar ideas that can be used to organize and assimilate new incoming material, and (3) activation of this meaningful set during learning.

The function of advance organizers, Mayer (1982) further explains, concerns the second and third conditions. Advance organizers interpreted within reception theory do not even consider these two conditions of meaningful learning. According to reception theory, the amount learned is a function only of how much was presented and received by the learner (1982, p.4).

Mayer (1982) surmises that many of the negative results obtained in advance organizer studies were due to certain conditions that, of necessity, must be present if advance organizers are to be effective, not being met. He is quite certain that many of the reported "failures" may be attributed to one of the following six situations that assimilation theory predicts will not produce effects for advance organizers:

Situation A. The material that is used presents or tends to elicit a meaningful context for learning.

An example would be a spiral text that used many familiar examples or provided remediation when learners lacked prerequisite concepts.

Situation B. The material that is used is mainly a collection of unsystematic facts that have no unifying organization. An example would be a text listing the characteristics of imaginary countries or a list of

historical facts.

Situation C. The advance organizer does not provide information for understanding the material. An example would be an advance organizer that simply summarizes the to-be learned material or which lists the key terms.

Situation D. The advance organizer does not encourage the learner to integrate the information even though an assimilative context may be available. An example would be an advance organizer that presents a model that learners fail to perceive as being related to the to-be learned material.

Situation E. The learner already has much pre-requisite experience and normally learns by relating this conceptual experience with new incoming information. An example would be that advance organizers such as concrete models are not needed to teach professionals who have already developed their own "models".

Situation F. The test measures only simple, verbatim retention. Such a test may fail to assess the breadth of learning.

Expanding upon the theoretical basis underlying the concept of advance organizer, Mayer has been able to interpret advance organizer studies much more positively than previous researchers have. His interpretation, it seems, has resulted in Ausubel deleting the term "reception" theory in his later writings. An assimilation theory seems to be the best predictor of the effects of organizers as Mayer (1979) claims, it also seems that further studies should be directed towards

testing some of its predictions which include that the locus of the organizer effect is at encoding rather than retrieval stage of the memorial process, that advance organizers should have a stronger effect for materials that are poorly organized or unfamiliar than when the materials are well integrated or familiar (a materials x treatment interaction), that advance organizers should have a stronger effect for learners lacking rich previous experience (a knowledge x treatment interaction), that advance organizers should have stronger effects for low ability subjects (ability x treatment interaction), and that advance organizers should have a strong positive effect for tests assessing transfer but not for tests of immediate retention (a treatment x post-test interaction).

Although advance organizer studies, interpreted within an assimilation theoretical framework, have generally supported the effectiveness of advance organizers, they have not provided unequivocal support for all of the theory's predictions. For example, there is only weak empirical support for a knowledge x treatment interaction which assimilation theory predicts in Ausubel's studies. Assimilation theory predicts a knowledge x treatment interaction in which advance organizers have a strong effect for inexperienced or low ability learners but not for experienced or high ability learners. This prediction, says Mayer (1982), is based on the idea that experienced learners may easily have and use their existing knowledge as an assimilative set during learning, i.e., such subjects already have existing anchoring ideas and have learned the strategy of using them in learning - while inexperienced (or low ability) learners may not normally try to connect new knowledge with any assimilative set (p.21).

When Ausubel and Fitzgerald (1961) studied the effects of a comparative organizer, an expository organizer and no organizer on retention scores of college students who read a passage on Buddhism, the results indicated a knowledge x treatment interaction, but in a later study Ausubel and Youssef (1963) failed to replicate the same interaction. Furthermore, in 1962 Ausubel and Fitzgerald and in 1963 Fitzgerald and Ausubel obtained only partial support for the interaction. In the first study, the advance organizer decreased performances for the intermediate knowledge group and in the second one the knowledge x treatment interaction was not strong for an immediate test but was strong for the retention test.

Assimilation theory also predicts an ability x treatment interaction in which advance organizers should have stronger effects for low ability subjects than for high ability subjects. This prediction, Mayer (1982) states, is based on the idea that low ability learners may be less likely to try to find and use an assimilative context during learning and thus will be most served by an explicit direction to do so (p.25). Once again only partial empirical support exists for this prediction. Ausubel's studies (1962, 1963) provide strong support for the prediction as well as studies conducted by Proger (1973), Mayer (1975) and Koran and Koran (1973). However, the results of three recent meta-analyses (Kozlow, 1978; Luiten et al., 1980; Stone, 1982) failed to substantiate the prediction. Luiten et al., (1980) found that advance organizers were effective with individuals of all ability levels and most effective with high ability learners (p.216). Similarly, Kozlow (1978) and Stone (1982) indicated a lack of any special facilitative effects either for low ability or low knowledge learners.

With respect to the nature of the advance organizer itself, Stone (1982) as well as Mayer (1982) found that effective advance organizers were more likely to be non-subsuming concrete models, analogies or examples than subsuming, abstract concepts as Ausubel predicted.

The failure to achieve conclusive evidence of their effectiveness, it appears, seems to lie in their definition and construction. While Ausubel (1978) adamantly contends that his definition of advance organizers is quite explicit, many researchers take the opposite view (Hartley and Davies, 1976; Anderson et al., 1978; Clark and Bean, 1980; Stone, 1982; Mayer, 1982). These researchers have consistently stressed the need for objectively defined and constructed advance organizers and more objective methods for qualifying and quantifying resultant learning (Clark and Bean, 1980).

The lack of operational specificity has prevented the concept of advance organizers from developing into a theory that is not only descriptive and explanatory but predictive as well. Clearly, if advance organizer research is to produce consistent and conclusive results, every effort must be made to operationalize its definition and construction. The process of operationally defining advance organizers, though, is problematic, because of a lack of appropriate tools or instrumentation with which to describe the learning of prose (Clark and Bean, 1980). However, in recent years, theoretical paradigms have emerged to describe and explain not only prose learning in particular (i.e., discourse analysis) but knowledge processing in general (i.e., schema theory). Development in these two areas, although still in their infancy are fertile ground for the development of a theory of advance organizers, particularly prose advance organizers, that is comprehensive.

As this particular study does not involve learning prose material, research in discourse analysis will not be discussed. Schema theory, because of its general and direct relevancy will be discussed.

Schema Theory. The concept of advance organizers implies that individuals possess a hierarchically organized cognitive structure made up of complex interrelated concepts, moving from greater abstractness, generality and inclusiveness to lesser abstractness, generality and inclusiveness. It further assumes that optimal learning will occur if abstract, general and more inclusive concepts of a particular subject matter are presented in advance of its more specific and less inclusive concepts. Clearly, then, advance organizer theory is predicated on the notion that memory is organized in a particular way. Schema research, particularly with respect to processing prose material, provides a framework for understanding human knowledge processing (Thorndyke and Yekovich, 1980) which lends at least partial support to the concept of advance organizer.

The notion of schema has been defined in many different ways by many researchers and even under various terms. Minsky (1975), Kuipers (1975) and Winograd (1975), for example, use the term "frame" to describe schema while Schank and Abelson (1975) refer to schema as "scripts". But despite the various terms and definitions used, there is a commonality of meaning among them as Thorndyke and Roth (1979a) point out. They list the following four common properties (p.83):

- (1) A schema represents a prototypical abstraction of the complex concept it represents. "For example, a "face" schema might contain two eyes, a nose, a mouth, and two ears, even though a particular face missing one or more of these

features is still a face.

(2) Schemata are induced from past experience with numerous exemplars of the complex concept it represents. Presumably, we abstract the concept of a face after seeing many of them.

(3) A schema can guide the organization of incoming information into clusters of knowledge that are "instantiations" of the schema. This represents a goal-directed focusing of processing by active memory schemata. So when we catch a glimpse of a head, we consult our face schema and hence know what features to look for on it.

(4) When one of the constituent concepts of a schema is missing in the input, its features can be inferred from "default values" in the schema. So if the face is in shadows and we cannot see the mouth, we may still reasonably infer that it has two lips.

Thorndyke and Yekovich (1980) in their critique of schema theory add a fifth property supportive of one of Ausubel's assumptions, namely that schemata is organized hierarchically.

According to schema theory, a text does not carry meaning; people carry meaning (Bransford, Barclay and Franks, 1972). It only provides directions for listeners or readers as to how they should retrieve or construct meaning from their own, previously acquired knowledge or background knowledge or schema (Bartlett, 1932; Rumelhart, 1980). Comprehending a text, according to schema theory, is an interactive process between the reader's background knowledge and the text, and efficient comprehension requires the ability to relate the textual material to one's own knowledge. As Anderson, R.C., Reynolds, R.E., Schallert, D.L. & Goetz, E.T.

point out "every act of comprehension involves one's knowledge of the world as well" (p.369).

Schema research indicates that readers use previously learned schemata to aid comprehension and encoding of simple narrative stories in memory (Rumelhart and Ortony, 1977; Thorndyke and Hayes-Roth, 1979; Mandler and Johnson, 1977). Anderson, Reynold, Schallet and Goetz (1977) found after giving thirty psychology education students and thirty music education students a passage to read that could be given either a prison break or wrestling interpretation and another passage that could be understood in terms of an evening of card playing or a rehearsal of a woodwind ensemble and then testing their interpretations through a free recall test, that the subjects' interpretations were unequivocally influenced by their personal history, knowledge and beliefs. It was deduced from these results that high level schemata provided the interpretive framework for comprehending the passages.

Further evidence of schemata as a framework for understanding discourse was found by Anderson, Spiro and Anderson (1978) in their experiment involving a restaurant and supermarket narratives. They found that subjects reading the more highly constrained restaurant passage recalled eighteen items of food from categories determined to be part of more people's restaurant schemata. Their findings helped to lend support to their conclusion that schemata and not advance organizers provide "ideational scaffolding" for text information (p.438). In light of schema theory, Anderson et al. (1978) are unconvinced that when a reader does not possess relevant schemata, they can be simply acquired from a few abstractly worded sentences in the form of an advance organizer (Anderson, 1977).

Although schema theory, like advance organizer theory, is intuitively appealing and widely supported by research, it has not been submitted to the empirical evaluation required of scientific theories (Thorndyke and Yekovich, 1980). Thus, it is hardly sufficiently established to discredit Ausubel's advance organizer as Anderson et al. contend. On the contrary, it appears that the two theories are reconcilable in that one theory can be interpreted within the framework of the other. Interpreted within the framework of schema theory and assimilation-to-schema theory, perhaps the concept of advance organizer can be more specifically defined, interpreted and applied. So far, proponents of schema theory and advance organizer theory have not come together to accept the realities each theory has been able to explain.

Operationalizing Advance Organizers. Ausubel has been widely criticized for the vagueness of his definition of an advance organizer (Clark and Bean, 1980; Anderson et al., 1978; Anderson, 1977; Mayer and Brommage, 1980) and despite his contention that he has clearly outlined its essential properties and provided clear guidelines for its construction (Ausubel, 1977, 1978), he has failed to convince researchers.

In recent years, however, some researchers have attempted to offer definitions and operations for constructing advance organizers. Mayer (1979, 1980) and Mayer and Brommage (1980), for example, have reinterpreted and redefined advance organizers in broader terms in light of their as well as other research, and as a consequence have been able to find consistent support for advance organizers. They have defined advance organizers as a stimulus

(usually a prose passage) that (a) is presented prior to learning and (b) contains a system for

logically organizing the incoming information into a unified structure. The advance organizer may be abstract (such as giving a list of general rules or principles) or concrete (such as physical analogy), but it must serve to logically integrate the new information.

Attempts have been to operationalize advance organizers over the years (Barron, 1969; Clawson and Barnes, 1974; Singleton, 1979) which have proved useful in guiding researchers in constructing adequate advance organizers; however, they were limited in that they provided an incomplete procedure for constructing advance organizers (Zeitoun, 1983). An essential step that was missing, according to Zeitoun, was that of mapping the cognitive structure of learners. Below is his eight step procedure, including the missing step:

1. analyzing the learning materials
2. mapping the cognitive structures of the learners
3. determining the characteristics of the advance organizer
4. estimating the readability of the advance organizer
5. checking the understandability of the advance organizer
6. assessing the study time of the advance organizer
7. valuing the validity of the advance organizer
8. revising the advance organizers.

Zeitoun has also described each step in some detail so as to facilitate an objective application of the procedure. The steps and their interactions are diagrammatically represented in Figure 1.

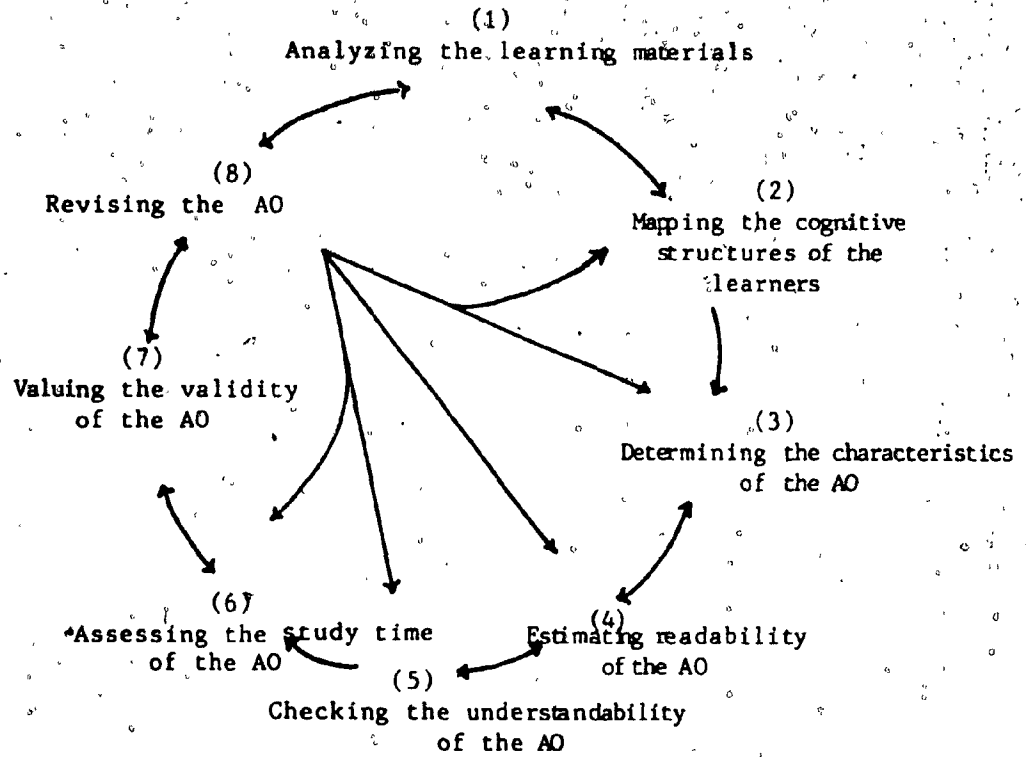


Figure 1. Steps of Constructing the Advance Organizer.

Yet, although these steps help to establish a systematic procedure for operationalizing advance organizers, the problem still remains of how to scientifically apply and evaluate the procedures. How, for example, can a researcher map the cognitive structures of learners when little is known about the nature, organization and function of the nebulous network referred to as "cognitive structure"? Furthermore, the techniques that have been recently developed for mapping cognitive structures such as clinical interviews, concept map line labeling task and sentence generation task have not yet been proven to be sensitive or reliable mapping instruments. Zeitoun's procedure, it seems, comes closer to elucidating the essential aspects of advance organizer construction, but it nonetheless still suffers from vagueness.

Post Organizer Studies. After Ausubel's studies on advance organizers in the early 1960's, other researchers expanded the advance organizer strategy to better determine its effect on learning and retention. As well as placing the organizer before instruction, these researchers placed it after instruction (post organizer) so as to determine whether organizers impacted on the encoding stage of the memorial process more than on the retrieval stage as assimilation theory predicts.

Of the 17 studies isolated by Mayer (1982), ten showed the advance organizer group outperforming the post organizer group under prespecified conditions such as only on transfer problems or only for poorly organized material. Seven studies found only partial or no differences (p.15). After analyzing the ten positive results for advance organizers, Mayer found that in most cases the subject matter was mathematics, requiring a pre-established conceptual structure to fully grasp the new

material. It can be concluded that the advance organizers provided the assimilative context necessary for optimal understanding and completion of the learning tasks, while the post organizer group lacked such a context during the learning process.

The seven studies showing partial or no support (Buyuk, R.J., Proger, B.B. & Mann, L., 1970; Bertou et al., 1972; Graber et al., 1972; Clawson, E.U. & Barnes, B.R., 1973; Peterson, J.C., Thomas, M.L., Lovett, C.J. & Bright, 1973; Romberg, T.A. & Wilson, J.W., 1973; Schnell, T.R., 1973) could not be adequately analyzed, Mayer (1982) notes, as for four of the negative results it was impossible to determine whether there was a difference between the advance organizer and post organizer due to inadequate presentation of data (p.16). They all failed to report means, and some failed to report statistical tests used, thus making comparisons between groups impossible. Three studies reported means but were deficient in other ways. Peterson (1973), for example, constructed a dubious advance organizer that seemed to fail to provide adequate conceptual anchoring of the learning of mathematical network tracing. Such a serious inadequacy as this certainly compromises the validity of its results. The remaining three studies reporting means did show the advance organizer group slightly outperforming the post organizer group, but as inadequate statistical testing was carried out, it is impossible to determine the exact nature of the differences (Mayer, 1982).

With such inconclusive and incomplete results it is patently clear that the research to date has not adequately delineated the relative effects of advance and post organizers. Consequently, the inclusion of both types of organizers are essential in future studies in order to provide more conclusive evidence of their relative effects.

Non-Prose Organizer Studies. The majority of advance organizer studies have tested the effects of prose organizers on prose learning material. Few studies have tested non-prose advance organizers and non-prose learning materials. Little is known about their effectiveness with learning materials other than prose. Despite the paucity of research in this area, the general trend has resulted in a support of the strategy.

One of the earliest non-prose advance organizer studies was concluded by Barron (1971). In fact, Barron in 1969 introduced graphic organizers to the professional and research literature as a variation of Ausubel's advance organizers (Barron, 1980). He investigated the effectiveness of prose and graphic organizers over prose organizers. His study, though, has been criticized because it did not take into account the different grade levels of the subjects nor their varying degrees of prior knowledge. Weisberg (1970), on the other hand, investigated two types of a map of the North Atlantic ocean floor, a diagram of the floor and a prose organizer consisting of a 500 word verbal description of the ocean floor, finding that the prose organizer was significantly more effective than either of the two graphic organizers. Alvermann (1981) also found that partial support for graphic organizers. Using tenth grade students as subjects she assessed the interactive effects of graphic organizers, text structure and reading comprehension level on recall and found that students exposed to graphic organizers recalled more than the controls under one of the text conditions (attributive) but suggested that graphic organizers may provide visual/verbal anchors which enable readers to hold incoming information from text that is less than optimal in its organization. Alvermann also found that, regardless

of reading level, all students benefitted from the instructional support provided by graphic organizers. She cautions, however, that graphic organizers differ from traditional advance organizers in that graphic organizers are written at the same level as the to-be-learned material, not at a higher or more abstract level (p.44).

A meta-analysis of graphic organizers conducted by Moore and Readance (1980) revealed a small overall effect of graphic organizers on learning from text but relatively strong effects were obtained when students constructed graphic organizers after encountering content and when vocabulary was the dependent variable (p.3). Moore and Readance (1983) conducted a second meta-analysis combining both quantitative and qualitative procedures and found in their review of twenty-three graphic organizer studies that learners treated with graphic organizers outperformed learners in control group situations by about two tenths of a standard deviation. They concluded that graphic organizers generally produce only a small effect on learning from text, but those effects could vary widely. They further concluded that graphic post organizers seemed to produce greater effects than graphic advance organizers (p.11-12).

Lesh (1976c) used a videotape advance organizer prior to giving subjects a four-hour unit on finite geometry and found that it improved learning outcomes, especially for hierarchically structured units. This finding contradicted an earlier study conducted by Bertou, Clasen and Lambert (1972) in which they found only partial support for an audiotape advance organizer. The learning material was a thirty minute videotape on atomic energy. These researchers found that interspersed questions throughout the videotape were more effective than either an advance or a

post organizer. Peterson, Thomas, Lovett and Bright (1973) also reported negative results for their nonprose advance organizer consisting of a discussion of Konigsberg bridge problem. Neither the advance organizer nor the post organizer which was the same as the advance organizer aided either graders and college students in facilitating their learning of ~~the~~ pages on mathematical network tracing.

Another recent study indicated positive results for a non-prose advance organizer with non-prose learning material. Calvert (1982) used a "preplay" technique as an advance organizer summarizing important plot events of several televised stories. The preplay techniques on the television screen varied from visual and nonvisual and concrete/inferential narration. She found that fourth grade subjects who saw preplays were better able to temporally integrate the televised stories.

But, as there is a paucity of research on the use and effectiveness of non-prose advance organizers and post organizers with either prose or non-prose learning material, it is hasty to generalize the findings.

What can be gleaned from a review of the literature of the advance organizer strategy is that it has over the years generated a massive amount of inconclusive data. It has been widely misunderstood, misinterpreted and misapplied. This study, as a consequence, has tried to contribute to the growing body of research which aims at determining in as scientific way as possible the exact nature and effects of advance organizers. Future research must be devoted not only to delineating the concept itself but also to determining its effects with such variables as age, ability, prior knowledge, different types of learning materials and different organizational patterns of the learning materials. For only then can a truly coherent theory of advance organizer emerge.

CHAPTER 3

MethodDesign

This study compared the relative effectiveness of an advance and a post organizer as instructional strategies in the teaching of a particular language concept linguistically realized in two structural forms. The structure to be learned were contained in an ESL videotape. Both the advance and post organizers were presented before and after the ESL videotape respectively. With the control group included, the first independent variable, instructional strategy, contained four levels: the advance organizer group, post organizer group, advance and post organizer group and control group.

Language aptitude, the second independent variable, was selected as the covariate to be examined to determine whether it had an effect on the learning and retention outcomes as measured by the dependent variables: the immediate and delayed posttests. The variable was measured by the French equivalent of the Modern Language Aptitude Test, the TALV (Test d'Aptitude de Langue Vivante) test, which was administered to the subjects prior to treatment. Based on the results of the test, two levels (high and low) were differentiated.

Another third independent variable examined was recall. To test the relative effects of short and long term retention, each group was required to take two tests: an immediate posttest and a delayed posttest ten days later.

The design for this study, thus, was a mixed-group design format (see Figure 2). It was a 2 X 2 X 2 factorial design with the factors being organizer (advance vs. no advance organizer), (post vs. no post organizer) and recall (immediate vs. delayed). The first two independent variables were between group while the last one was a repeated measure. The dependent variables were the scores on the two posttests.

Subjects

The sample was made up of 104 male and female French Canadian military personnel between the ages of 17-39 enrolled in an intensive English language program at CFB St. Jean, Richelieu. The first language of all the subjects was French. They all had little language training (i.e., from no formal training to one month of formal training) and had only an elementary background knowledge of English which did not include the target material. Their educational backgrounds ranged from secondary two to third year university (i.e., grade eight to university graduate).

Materials

Instrumentation. The TALV (Test d'Aptitude de Langue Vivante) test was used to differentiate language aptitude between high and low. The duration of the test was seventy-five minutes and measured auditory memory, sensitivity to grammatical structures, vocabulary, sound-symbol association, and rote memory.

No prior knowledge test was included in this study as all the subjects had just begun their language training and had little or no

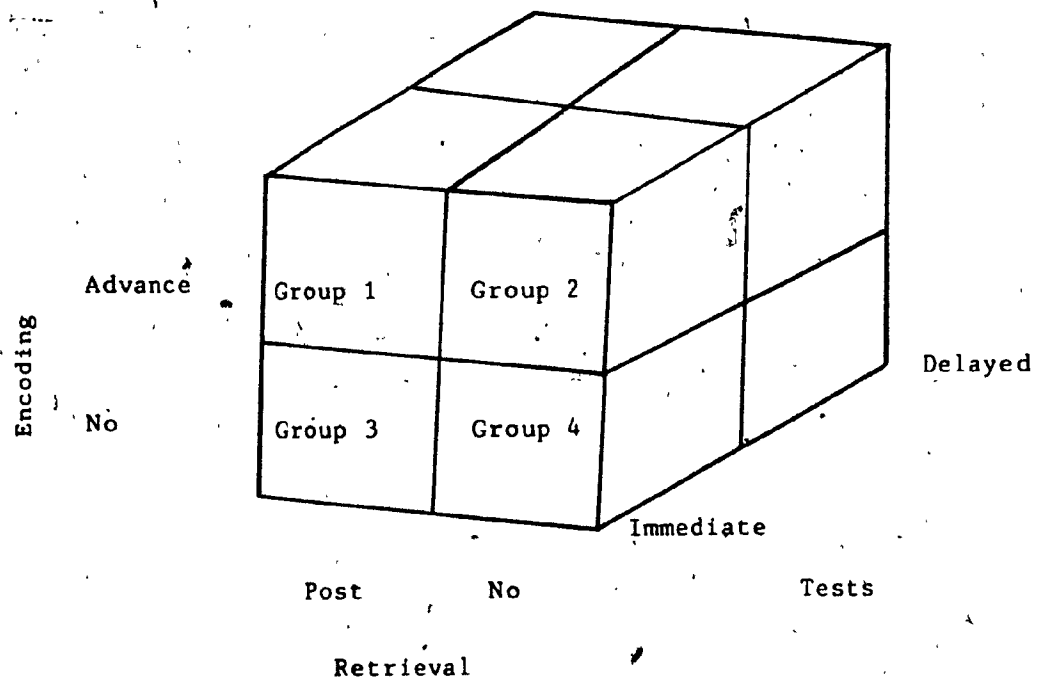


Figure 2. The Experimental design.

formal training in English. Moreover, the target structures were to be formally introduced only midway in the course.

The immediate posttest consisted of twenty-five items (see Appendix C), ten directly from the video and fifteen transfer questions. The delayed posttest consisted of twenty-five items (see Appendix D), the same ten taken directly from the video but arranged in a different order and fifteen new transfer items. Both transfer and recall were tested in order to assess another prediction of assimilation theory which states that advance organizers should have their strongest effect for test items that measure transfer to novel situations (Mayer, 1982). The ten content items and fifteen transfer items were multiple choice questions read on audiotape and transcribed in writing. Four distractors were provided. The last ten transfer items consisted of ten pictures to coincide with the multiple choice questions so as to give students visual contextual cues.

Learning Materials. The instructional content to be learned consisted of a five minute colour ESL video on shopping for shoes entitled "The Difficult Consumer" (see script in Appendix B). Only English was used in the learning segment. The videotape was designed to teach beginning ESL learners the appropriate use of the comparative structures "too + adjective + for" and "not + adjective + enough for".

- eg. The shoes are too small for her.
- The heel isn't high enough for her.

Two instructional strategies, an audiotape and written advance organizer and an audio taped and written post organizer (see Appendix A) were used to assess their relative effects on the learning and retention of the grammatical structures presented on videotape. They were recorded on

audiocassette before (advance) and after the videotape (post) and consisted of a forty-five second description in French outlining the salient features of the concept depicted in the video, but stated at a higher level of abstraction, generality and inclusiveness than the learning material themselves (Ausubel, 1963). A written version of the same strategies were provided for the subjects to compensate for differential processing of the strategies. The only deviation from the strict Ausubelian concept of advance organizer was the provision of a concrete example. It was included to facilitate the learning of the abstract concept of comparison contained in the video. It was felt that the subjects learning from the video would be unnecessarily impeded by the lack of a concrete example for them to relate to experiences in their first language.

Organizer Construction. As the target structures were unfamiliar to the subjects in English, but familiar to them in French, a comparative organizer was constructed for this study. The learners, in other words, already possessed the relevant subsumers to which the new material could be related. The comparative organizer, thus, was designed to help the learners discriminate between the use of the comparative concept (i.e., comparison with a noun) presented in the video linguistically realized in the English structures "too + adjective + for" and "not + adjective + enough for" and the use of the same concept in French linguistically realized in the structure "trop + adjectif + pour" and "pas assez + adjectif + pour".

Particular case, however, was taken in constructing the organizer so that it provided a broad conceptual framework for the new material without presenting any information specifically needed for answering

the posttest questions and without providing simply an overview presented at the same level of abstraction, generality and inclusiveness as the learning material. The organizer, in effect, had a superordinate relationship to the concept in the video.

In this study, the organizer consisted of a brief description of the general concept of comparison, illustrating by way of examples its use in French. Specifically, the organizers explained the notion that comparisons, in general, note similarities and differences between two or among more than two things, ideas, people, etc. The subjects were told that things, ideas, people, etc. were compared either to each other or to a noun, and that in both cases adjectives and adverbs were used to linguistically realize the comparisons. Examples illustrating each case were provided. The specific concept of comparison presented in the video was not to be focused on in the discussion in order to strictly adhere to the conditions of an Ausubelian organizer. Thus, the organizers served as a general conceptual framework or schema within which the specific comparative structures contained in the video could be incorporated. The advance organizer provided an assimilative context for the to-be-learned material while the post organizer served as a retrieval aid.

Procedure

On the basis of the TALV results, the subjects were discriminated between high and low aptitude. The assignment of subjects to the four groups were stratified to ensure that thirteen high aptitude and thirteen low aptitude subjects were represented in each of the four groups. After stratification, the subjects were randomly assigned to

one of the four groups.

The subjects then participated in the experiment. The experimenter outlined the experimental procedure, ensuring that each subject understood what was expected of him or her. Over three days, the 104 subjects in groups of between eight and ten subjects completed the learning tasks and the immediate posttest. To ensure group equivalency with respect to time spent in completing the various tasks of the experiment, an interpolated task (see Appendix E) was given to the advance organizer, post organizer and control group. This task varied in length according to the length of the experimental conditions and indirectly related to the experiment so as to confuse the subjects; that is, it contained no information that directly helped the subjects in answering the posttest items, nor did it contain information that was so unrelated to the learning material that it confounded the subjects. The task consisted of a short reading passage written and recorded in French on the topic of shopping and credit cards to equalize the time spent by the advance + post organizer group in reading and listening to both experimental conditions (90 seconds), the advance and the post organizer groups each was required to listen to and read part of the passage (45 seconds) prior to participating in the actual experiment. The control group was required to listen to and read the entire passage (90 seconds) also prior to participating in the experiment.

Ten days later an unannounced delayed posttest was given to all the groups in order to determine any differential retention effects. It was administered in the same manner as the immediate posttest.

CHAPTER 4

Results

Introduction. The purpose of this study was to investigate the relative effectiveness of an advance organizer and a post organizer as instructional strategies to determine the extent to which they influence the outcome of learning for beginning level high and low aptitude adult ESL learners. As a result, three treatment groups (advance organizer, post organizer and advance and post organizer) and a control group totalling 104 subjects were used, each group consisting of 13 high aptitude and 13 low aptitude subjects. Besides instructional strategy and aptitude, a third variable, recall (immediate and delayed) was investigated to determine differential retentional effects.

It was hypothesized that of the two strategies, advance and post, the advance would have the most beneficial effect on both the high and low aptitude subjects equally because of its ability to delineate clearly and precisely beforehand the similarities and differences between the new concepts presented in the ESL video and those concepts already existing in the subjects' cognitive structure. It is presumed that the presence of this strategy would activate the appropriate schema in advance of the new material so that the learning of it would be optimally facilitated relative to the post organizer strategy.

Reliability. A reliability analysis was conducted for both the posttest and the delayed posttest and revealed coefficients of .50 and .45 respectively. The relatively low coefficient values can be explained by the fact that each of the two posttests contained only ten of the twenty-five items that were strictly recall. Fifteen of the items tested transfer of learning, and contained highly variable vocabulary

items and contextual situations which could have accounted for the variability in test scores for those items amongst the subjects.

Test of Parallelism Assumption. An additional preliminary test was conducted on the two posttests to verify the tenability of the covariance results. The test of homogeneity of regression was run to ascertain whether an interaction had occurred between the levels of the independent variable which would invalidate the adjusted means. When it was run on the average of the two posttests (immediate and delayed), no significant treatment by the covariate (aptitude) was observed, $F(1,195) = p < .80$. The regression slopes of the treatment, in other words, were parallel, yielding no interaction effect.

Main Experiment

Analysis of Covariance. An analysis of covariance was conducted using aptitude as the covariance. The means and the standard deviations of the covariate are shown in Table 1 and the adjusted means are shown in Table 2. The results of the analysis of covariance yielded three significant main effects as shown in Table 3, but no interaction effects between or among any of the other treatments. Significant main effects were found for the advance organizer treatment $F(1,99) = 14.93, p < .001$, the post organizer $F(1,99) = 6.46, p < .01$, and for the covariate aptitude, $F(1,99) = 4.07, p < .001$. That is, both high and low aptitude subjects using the advance and post organizer significantly outperformed the subjects in the control group with the advance organizer group outperforming the post organizer group.

Table 1

Means and Standard Deviations of the Covariate
Aptitude for the Immediate and Delayed Posttest

Experimental Group	Immediate Posttest		Delayed Posttest	
	\bar{X}	SD	\bar{X}	SD
Advance Organizer	15.15	3.11	16.12	2.34
Post Organizer	14.77	3.30	15.77	3.13
Advance & Post Organizer	15.85	3.00	17.31	3.72
Control	14.19	2.62	15.38	2.37

Table 2
Adjusted Means of the Covariate Aptitude
for the Immediate and Delayed Posttest

Experimental Group	Immediate Posttest \bar{X}	Delayed Posttest \bar{X}
Advance Organizer	15.15	16.11
Post Organizer	14.76	15.76
Advance & Post Organizer	15.85	17.31
Control	14.19	15.39

Table 3
 Summary of Analysis of Covariance

Source	Ss	Df	Ms	F	P
Advance Organizer (A)	60.81	1	60.81	14.93	.0002
Post Organizer (P)	26.33	1	26.33	6.46	.0126
A x P	2.99	1	2.99	.73	.3937
Covariate	1188.49	1	1188.49	291.84	0.0000
Error	403.17	99	4.07		
Tests (T)					
T.	69.23	1	69.23	37.08	.0000
T x A	.17	1	.17	.09	.7614
T x P	.31	1	.31	.16	.6857
T x A x P	1.56	1	1.56	.83	.3633
Error	186.73	100	1.87		

Tests = Immediate and Delayed Posttests

The covariate, aptitude, was shown to have a significant effect on the outcome of the posttests, with high aptitude subjects significantly outperforming low aptitude subjects across all groups.

To determine the amount of variance accounted for by the covariate and for the organizer, a multiple regression analysis was conducted, yielding a multiple r^2 of .809 for the combined independent variables. The covariate, thus, was the overwhelming predictor of the outcomes on the two posttests. The organizer strategies, by comparison, accounted for a negligible amount of variance in the posttest scores, revealing themselves to be weak predictor variables.

Summary of Results. The results of this experiment confirmed the stated hypothesis that the advance organizer rather than the post organizer has the more beneficial impact on high and low aptitude subjects even though the post organizer strategy also significantly facilitated learning and retention. However, this finding was overshadowed by the finding that aptitude, the covariate, was the single most significant predictor of the posttest scores across all treatment groups and the control group. Aptitude, not strategy, overwhelmingly determined the extent to which the new material was learned and retained.

CHAPTER 5

Discussion

This study found that instructional strategies such as advance and post organizers given prior to (advance) and subsequent to (post) instruction facilitate the learning of new second language material presented on videotape for both high and low ability learners. Aptitude, though, was found to be the most significant factor in determining the amount learned and retained from the instruction. High aptitude learners who in the majority of cases were the most highly educated overwhelming outperformed the low aptitude learners who in the majority of cases were the least highly educated.

These results coincide with a preponderance of evidence in second language learning that suggests that high aptitude learners, generally being those with higher educational backgrounds, tend to learn faster, especially when the material to be learned is of a conceptual nature (Krashen, 1982; Hatch, 1978; Stern, H.H., 1983). The high aptitude subjects in this study were generally better educated and were obviously well acquainted with academic techniques and strategies for learning conceptual material. Moreover, they had obviously used them to their advantage. The videotape contained material that required an ability to understand the abstract notion of comparison to a norm and both the advance and post organizers were abstractly written and recorded except for the concrete example. It can be interpreted that high aptitude learners have an innate or learned capacity for grasping abstract concepts and applying them at a concrete level whether they are conveyed in prose or visual and audio form much more efficiently than low

aptitude learners. They seem to possess certain strategies for processing concepts and ideas both propositionally and virtually in an efficient manner. Inefficient learners, it has been shown need to be taught appropriate or taught how to use appropriate strategies in order to improve on their visual and verbal literacy level (Winn, 1982; Kosslyn, 1980; Bovy, 1981).

Although the high aptitude subjects did outperform low aptitude subjects quite dramatically, both groups benefitted from the pre and post instructional strategies as later research and meta-analyses suggest (Luiten et al., 1980; Mayer, 1982; Stone, 1982; Kozlow, 1978). That instructional strategies such as advance and post organizers augment learning is supported as well by another meta-analysis on preinstructional strategies (Klauer, 1984) which reveals that overall learning is slightly improved by such preinstructional acts as behavioural objectives, learning directions or questions before an instructional text. Although the scope of the meta-analysis did not extend to preinstructional strategies as advance organizers, it is perhaps fair to extrapolate the findings to include other preinstructional strategies. The results of this particular study indicated the value of providing students with ways of creating an appropriate mental set prior to learning so as to better prepare them for the learning task ahead. Intuitively, we know that the learning of a specific idea, concept, etc., particularly if it is completely unknown to us, is greatly facilitated by prior orienting tasks that set in motion or circumscribe the cognitive processes necessary for learning the task at hand. Research in schema theory and learning theory also provides concrete evidence to support this intuitive feeling, for it postulates

that the learning of newly presented material is facilitated when it can somehow be related to prior experience or knowledge. This prior experience or knowledge presumably provides the learner with the assimilative context in cognitive structure that narrows the semantic field and provides for meaningful learning.

Intentional preinstructional acts which can take on a number of different forms, organizers being one of them, obviously appear to have positive effects on subsequent learning according to this meta-analysis, for it is a large determining factor of what information will be processed. The results of the analysis indicate that instructional goals influence intentions and that intentions direct the learner's attentional processes to those parts of incoming information that are relevant to his or her intentions (p.335).

Extrapolating from the results we can understand how both the advance and post organizers in this study had a significant effect on the learning outcomes of both high and low aptitude learners. That the inclusion of both pre and post instructional strategies had a beneficial effect on both high and low aptitude learners can be explained by the fact that they acted as content as well as conceptual bridges to what was already stored in the subjects' cognitive structure. The strategies which included concrete examples were written and recorded in the subjects' native language so the subjects could more easily relate the concept presented in their own language to the comparable concept of comparison to norm presented in English. Furthermore, the to be-learned concept was a simple one already existing within the subjects' schemata, so activating the appropriate schema that would trigger the learning mechanism and optimize learning did not require a great deal

of mental effort.

Learning, as everyone is aware, requires a certain amount of mental effort. Without it, learning can not take place. For some researchers (Salomon, 1982; Winn, 1982; Kosslyn, 1980), this learner variable is the single most important determiner of the extent of learning. The thinking is that the least investment of effort leads to "mindless" and "shallow" processing, resulting in the least amount of schema change (Salomon, 1982). External learning strategies such as advance organizers are helpful aids to the learning process, but in fact, effective learning can be impeded if the external learning strategy conflicts with an individual's learning strategies which may already serve him efficiently well (Salomon, 1982; Bovy, 1981). Efficient learners develop their own learning strategies which are often idiosyncratic but effective, while inefficient learners either lack appropriate strategies or any strategies whatsoever. It is presumed that external aids are needed by the latter group, but these aids will only be effective, Bovy (1981) points out, if the learners understand the strategies and can apply them appropriately.

That the overriding determining factor contributing to the learning of the concepts presented in the video was aptitude has some implications for learning and learning strategies. Firstly, the results of this study suggests that given strategies are perhaps more often ignored by high aptitude learners. A process of "supplantation" occurs (Salomon, 1979). Low aptitude learners are more apt to use external strategies, but only if these learners are directed to use them and taught how to use them (Bovy, 1981; Winn, 1982). Thus, it is not the strategy that is important but the appropriate use of it.

What instructional designers must be directing their attention to as a result is not only the development of external strategies but also the development of internal and generalized strategies that learners can apply to all learning tasks. Strategies whether learner-assigned or system-assigned are important, as this study indicates, but they are clearly not the most important. Recent research (Winn, 1982; Kosslyn, 1980) indicates that above all knowledge of the learning task is a crucial determining factor of successful learning. Without this knowledge, both high and low aptitude learners will be unable to efficiently process new information. These researches have shown that high aptitude learners need only know what is expected of them in the learning task while low aptitude learners in addition to understanding the task need to be forced into using a facilitating strategy. They must, in other words, be trained to use appropriate strategies. Such research findings explain the development in recent years of skills and strategies training programs designed not only to adapt learners to instruction but instruction to learning (McCombs, 1981). Learning strategies, thus, are facilitative adjunct aids to the instructional environment as this study confirms, but they must be appropriately constructed and applied if they are to be effective to all learners.

Interpreted within Ausubel's meaningful learning paradigm, it can also be said that the instructional strategies in this study provided the essential and relevant subsuming concepts or ideational scaffolding for the new concepts to hang onto to ensure their stable incorporation and retention in cognitive structure. The strategies could be interpreted as providing the content bridge linking the learner's new learning experience with his own previous experience. The results of

this study find support for Ausubel's assumptions and theories.

However, one would be remiss in ending the analysis within one frame of reference. If educational and psychological research is to continue to transcend the outer limits of its boundaries, the results of studies must be interpreted within new frames of references. Certainly, the results of this study can be interpreted in a multitude of ways.

Within a linguistic or language acquisition paradigm, the results would be interpreted quite differently from an educational psychological perspective. From a strictly linguistic and language acquisition point of view, it could be interpreted that the advance organizer and post organizer groups performed significantly better than the control group because they were given the restraints of a structured teaching environment in the classroom. Given such a situation, it seems clear that learners, in order to expedite their learning process, will need to develop some strategies to cope with the overwhelming complexity of the language as it exists in its natural context. Not all learners are equipped to handle learning situations that test the limits of their abilities. Strategies in some form are required to make sense of linguistic situations that are not graded or structured for second language learners. The video that was used as the main learning material in this experiment was reflective of the new approach to language learning. It presented a particular structure and concept (i.e., comparison) within a natural and contextually rich situation. Thus, it seemed only natural and appropriate to apply a learning strategy that could facilitate the difficult process of learning in a somewhat holistic and abstract manner.

This study indicated a need for such strategies in ESL learning as advance and post organizers, although it should be stressed that they should be used cautiously and combined with other strategies. It is clear too that other strategies must also be developed. Research has not singled out any one or set of strategies that are overwhelmingly effective. Rigney (1978) is convinced both learner-assigned and system-assigned strategies are essential for optimal learning. Optimal learning would require a mixture of both these strategies in his view. This study appears to support Rigney's view.

What we can glean from this study and from research in learning strategies is that a complex set of interacting learner variables, unknown and known, exist which affect the outcome of learning and that this complexity virtually makes it impossible to determine the single impact of any one of the variables. This reality can partially at least explain the large body of inconclusive data on the effectiveness of advance organizers in the literature. More theoretical and scientific understanding of learning strategies and learning in general must be gained before such concepts as advance organizers can be effectively applied in a variety of learning situations.

Conclusions and Recommendations

This study revealed that external instructional strategies do have a facilitative effect on learning and retention of new material. But it also revealed a caveat, and that is that other learner variables appear to have more of an impact. It suggests that aptitude is chiefly responsible for learning outcomes, which in turn also suggests that researchers ought to direct more energy towards helping low aptitude

learners increase their aptitude and not simply compensate for their weaknesses by providing them with instructional props. As Winn (1982) points out, learners benefit from external aids provided by the instructional environment, but they also benefit and probably more so from developing internal aids. Adaptive instruction, in other words, should include both adapting instruction to the learner as well as adapting the learner to instruction. With respect to learning material from an ESL video, perhaps by teaching students skills in interpreting visual clues more efficiently they will learn more from the video (Candlin, Charles & Willis, 1982).

The results of this study, it was also stated could be interpreted within a multitude of frames of reference, suggesting a difficulty in understanding the implications of the results. Does the study support the theory of advance organizers or does it support schema theory? Can it be interpreted to support both theories? These questions have not been sufficiently developed and defined. More research is required in operationally defining advance organizers and in understanding the complex cognitive processes upon which these two theories are based. Clearly, the development and standardization of test instruments are required for both theories. Schema-type tests, for example, as Milligan (1979) suggests hold great potential as truly objective measures relatively independent of past experience, language skills and examiner/ interruption bias (p.206). He further notes that there must also be actual validation attempts in which stable and predictable relationships are identified between the schema formation instrument and various educational skills. Similarly, an advance organizer theory would benefit from such scientific applications.

When future research is able to describe and explain more precisely and scientifically the cognitive processes involved in learning and the development and functions of the knowledge structures stored in memory, then will we understand more of how advance organizers can be constructed and applied. There is much that is still a matter of speculation at this time. Still unknown, DiSibio (1982) concludes, are the precise conditions under which new information does or does not get assimilated to existing schemata. Even more speculative are the conditions under which knowledge structures change or "accommodate" to new information (p.172).

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APPENDICES

APPENDIX A

Audio Script Of Advance And Post Organizers

(English Translation)

Advance Organizer

When shopping for something for ourselves, take shoes, for example, we usually have an idea of what we would consider to be just right for us, the right size, the right colour, the right style.

In other words, we have a standard of what is acceptable for us, and we compare everything else to that standard. Anything that does not meet with that standard is rejected.

For example, if we try on a pair of shoes and they're not the right size for us, we would probably tell the salesperson something like the shoes were too small or too big for us.

In the video you are about to see, a woman is shopping for a new pair of shoes. Pay attention to the language she uses to tell the salesman that the ones he shows her are not just right for her.

Post Organizer

As you saw in the video, "The Difficult Customer" a woman was shopping for a pair of shoes. You also saw that she did not find a pair that was suitable for her. She rejected them because they were not acceptable according to her standard.

When we shop for something for ourselves, we usually have an idea of what we would consider to be just right for us, the right size, the right colour, the right style! And we compare everything to that standard. Anything that does not meet with that standard is rejected.

For example, if we try on a pair of shoes and they're not the right size for us, we would probably tell the salesperson that the shoes were too big or too small, as the woman in the video did. In this video, what language did the woman use to tell the salesman that the ones he showed her were not just right for her?

APPENDIX B

Video Script Of "The Difficult Customer"

VIDEO SCRIPT"THE DIFFICULT CUSTOMER"

LEAD-IN: Scene in a shoe store, shows a woman looking at several pairs of shoes and a clerk walking up to help her.

Clerk: May I help you, Madam?

Woman: Yes, I'm looking for a pair of shoes, black patent leather.

Clerk: Certainly, we have a lot of them in stock.

Woman: Good.

Clerk: What size shoe do you wear?

Woman: 4½ - umm - maybe 5. It depends how they're made.

(Clerk goes to get shoes.)

Clerk: Here we are ... How about these?

Woman: Oh no no.. They're too heavy.

Clerk: Ah - and these?

Woman: Ah - the heel's too high. (Clerk gives her another pair)
oh no, no, too old-fashioned, not elegant enough.

Clerk: Um - here, why don't you have a look at these? They're just in from Paris.

Woman: Oh, from Paris.

Clerk: Umm - humm.

Woman: Oh well they're too big. They're not small enough for my feet.

Clerk: Well - uh, why don't you try them on?

Woman: Well -- Alright...

Clerk: Maybe we'll be able to find something here for you.

Woman: I hope so... Oh, not bad. Umm...

Clerk: Do you want to try them on?

Woman: Oh alright. Well, oh no they're not comfortable enough... oh... (knocks over stack of boxes with her foot). Is that all you have... nothing else?

Clerk: Look lady why don't you buy yourself a dress?

Woman: A dress? I don't want a dress. I want a pair of shoes.

Clerk: Buy maybe they'll be able to suit you better in the dress department.

Woman: But I don't need a dress. I need shoes.

Clerk: The store is yours, Madam.

Woman: (Stomps out) Oh really!!!

APPENDIX C
Immediate Posttest

Immediate Posttest

Part I

Directions:

Choose the correct completion of the phrases given from the video

"The Difficult Customer". Circle the correct response.

1. The shoes from Paris were
 - a) not big enough for her
 - b) big enough for her
 - c) small enough for her
 - d) too big for her

2. The heels on one pair of shoes were
 - a) too low for her
 - b) too high for her
 - c) low
 - d) high

3. At the beginning of the video, the clerk in the shoe store was
 - a) impolite
 - b) not polite enough
 - c) too polite
 - d) polite

4. At the end of the video, the clerk was
 - a) not tired of the customer
 - b) tired of the customer
 - c) not tired enough of the customer
 - d) too happy for the customer

5. The customer in the video was
 - a) too rude
 - b) not rude enough
 - c) too polite
 - d) polite

Part IIDirections:

Choose the sentence that is closest in meaning to the sentence you hear on tape. e.g. The apple is not sweet enough.

- a) It is sour
- b) It is not sour enough
- c) It is too sour
- d) It is too sweet

The correct answer is c) It is too sour

6. "They're not elegant enough"

- a) They're too elegant
- b) They're not elegant
- c) They are enough elegant
- d) They are elegant

7. "They're too heavy"

- a) She wants heavy shoes
- b) They're not heavy enough
- c) She doesn't want heavy shoes
- d) They're light

8. "They're too big"

- a) She likes big shoes
- b) They're not small enough
- c) They're not big enough
- d) They're the correct size

9. "The heels aren't high enough"

- a) The heels aren't enough high
- b) The heels are high enough
- c) The heels are too low
- d) The heels aren't too low

10. "The shoes are too wide"

- a) The shoes are wide enough
- b) The shoes are narrow
- c) The shoes aren't wide enough
- d) The shoes are very wide for her

11. "He's not old enough to drive"

- a) He's too old to drive
- b) He's very old to drive
- c) He's too young to drive
- d) He's old enough to drive

12. "She's too tired to watch T.V."

- a) She's not very tired to watch T.V.
- b) She's very tired to watch T.V.
- c) She's not tired enough to watch T.V.
- d) She's tired enough to watch T.V.

13. "The soup is very hot"

- a) The soup is too hot to eat
- b) The soup is hot enough to eat
- c) The soup is very cool
- d) The soup is too cool to eat

14. "The shoes are too old fashioned"

- a) The shoes are modern
- b) The shoes are too outdated
- c) The shoes aren't outdated enough
- d) The shoes are old fashioned enough

15. "The saleslady is too busy to help the customer"

- a) She can't help the customer
- b) She's not busy enough to help the customer
- c) She is trying to help the customer
- d) She is not very busy.

Part IIIDirections:

Look at each of the following pictures and listen to the four sentences used to describe each picture. Choose the sentence that best describes the picture.

- e.g. a) She's well
b) She's tired
c) She's too well to go to work
d) She's too sick to go to work

d) is the correct answer

16. a) He's too afraid to stay in the house
b) He's not afraid enough to stay in the house
c) It's too cold to stay in the house
d) He's not fast enough to stay in the house
17. a) The students are motivated to study for the test
b) The students are too bored to study for the test
c) The students are bored enough to study for the test
d) The test is not interesting enough to write
18. a) The belt is strong enough for the man
b) The belt is too long for the man
c) The belt is not big enough for the man
d) The man is not big enough for the belt
19. a) The coat is too cheap for her to buy
b) The girl is not expensive enough to buy the coat
c) The girl is too poor to buy the coat
d) The coat is too old-fashioned to wear
20. a) The man is too tall to reach the light
b) The man is too short to reach the light
c) The man is tall enough to reach the light
d) The man is short enough to reach the light

21. a) He's too tired to get up
b) The alarm is not loud enough to hear
c) The clock is too loud for the boy to hear
d) The boy is tired enough to hear the alarm
22. a) Jack is too fat so he can get through the door
b) Jack is too thin he doesn't have trouble getting through the door
c) The door is too wide for Jack
d) Jack is too fat to get through the door
23. a) Paul's too cheap to buy the radio
b) The radio isn't expensive enough to buy
c) Paul's not rich enough to buy the radio
d) The radio is not rich enough for Paul to buy
24. a) The woman is too heavy to push the box
b) The box is light enough for the woman to push
c) The woman is too heavy for to push the box
d) The woman is not strong enough to push the box.
25. a) George is not enough drunk to notice the pickpocket
b) The pickpocket is not fast enough to take George's wallet
c) George is too sober to notice the pickpocket.
d) George is too drunk to notice the pickpocket.







U





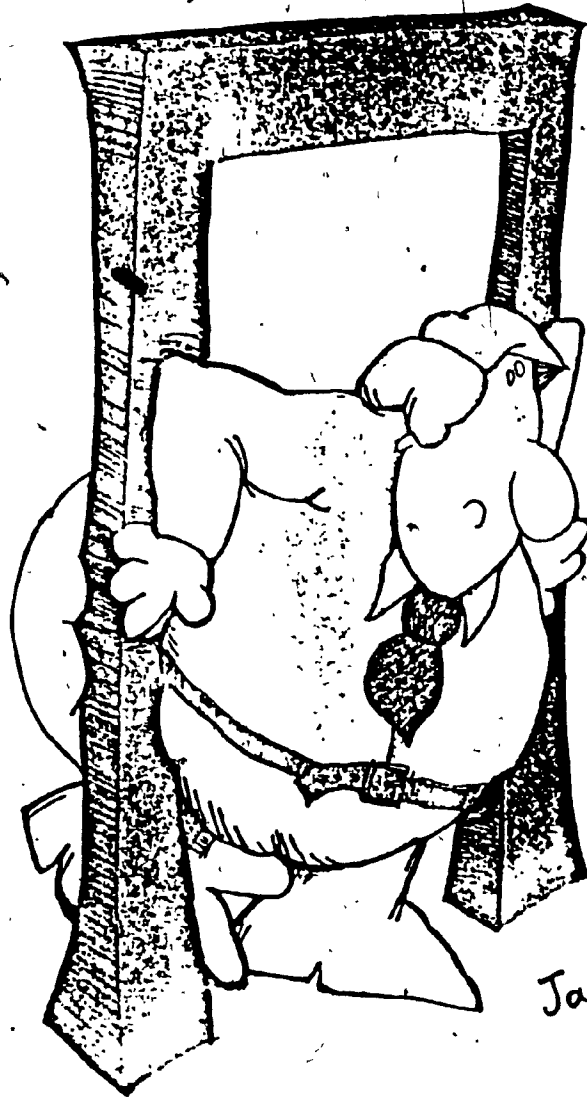


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Handwritten mark or scribble on the left side.

Handwritten mark or scribble in the bottom right corner.



Jack







APPENDIX D
Delayed Posttest

Delayed Posttest

Part IDirections:

Look at each of the following pictures and listen to the four sentences used to describe each picture. Choose the sentence that best describes the picture.

- e.g. a) The man is too poor to take out the girl
b) The girl is not happy to go out
c) The man is rich enough to take out the girl
d) The man is too rich to take out the girl

c) is the correct answer.

1. a) The thief is too afraid to steal some money
b) The woman is tired enough to call the police
c) The men are too tired to call the police
d) The men are not brave enough to call the police

2. a) The dog wants to chase the cat
b) The dog is not angry at the cat
c) The cat is too strong for the dog
d) The cat is not weak enough to chase the dog

3. a) The man is too tired to sleep
b) It is too early to go to sleep
c) It is too dangerous for the man to smoke
d) The smoke is too dangerous to inhale

4. a) The instructor is not high enough to jump over the bar
b) The student is too high to jump over the bar
c) The bar is high
d) The student is not good enough to jump over the bar

- 5. a) The coffee is too hot to drink
b) The coffee is too cool to drink
c) The stove is not hot enough to heat the coffee
d) The coffee is not hot enough

- 6. a) The car isn't new enough to drive
b) The man isn't old enough to drive
c) The man is rich enough to buy the car
d) The car is too expensive for the poor man

- 7. a) The T.V. is not too complicated to fix
b) The diagrams are easy enough to follow
c) The men are competent enough to fix the T.V.
d) The T.V. is too complicated to fix

- 8. a) The boys are too sad to cry
b) The girls are too happy to cry
c) Mary is too young to get married
d) Steve is old enough to get married

- 9. a) The boy is hungry for cookies
b) The boy's mother is too tired to eat cookies
c) The boy is not too hungry for cookies
d) The mother is not busy enough to notice her son

- 10. a) The mountain is too high to climb
b) The man on the clip is not strong enough to pull the man up
c) The rope is too thin to support the man
d) The rope is thick enough to hold the man

Part II**Directions:**

Choose the correct completion of the phrases given from the video

"The Difficult Customer". Circle the correct response.

11. The customer in the video was

- a) not rude enough
- b) too polite
- c) too rude
- d) polite

12. The shoes from Paris were

- a) too big for her
- b) big enough for her
- c) small enough for her
- d) not big enough for her

13. At the beginning of the video, the clerk in the shoe store was

- a) too polite
- b) not polite enough
- c) polite
- d) impolite

14. The heels on one pair of shoes were

- a) low
- b) high
- c) too high for her
- d) too low for her

15. At the end of the video, the clerk was

- a) too happy for the customer
- b) tired of the customer
- c) not tired of the customer
- d) not tired enough of the customer

Part IIIDirections:

Choose the sentence that is closest in meaning to the sentence you hear on tape.

e.g. The book is not interesting enough

- a) It is interesting
- b) It is too interesting
- c) It is dull
- d) It is not dull enough

The correct answer is c) It is dull.

16. "The colour is too bright"

- a) The colour is dull
- b) Bright is a nice colour
- c) The colour is light
- d) The colour is not dull enough

17. "The road is not wide enough to pass on"

- a) The road is narrow
- b) The road is wide
- c) The road is enough wide
- d) The road is enough narrow

18. "The heels of the shoes aren't high enough"

- a) The heels aren't too low
- b) The heels aren't enough high
- c) The heels are high enough
- d) The heels are too low

19. "The shoes aren't elegant enough"

- a) They're not elegant
- b) They are enough elegant
- c) They are elegant
- d) They're too elegant

20. "The skirt is too short to wear"

- a) It's long enough to wear
- b) She needs a longer skirt
- c) She needs a shorter skirt
- d) She needs a short skirt

21. "The shoes are too old fashioned"

- a) The shoes are modern
- b) The shoes aren't outdated enough
- c) The shoes are too outdated
- d) The shoes are old fashioned enough

22. "That man is not nice"

- a) He is nice enough
- b) He is not nice enough
- c) He is gentle
- d) He is gentle enough

23. "The shoes are too big"

- a) She likes big shoes
- b) They're not big enough
- c) They're the correct size
- d) They're not small enough

24. "The man is too cheap"

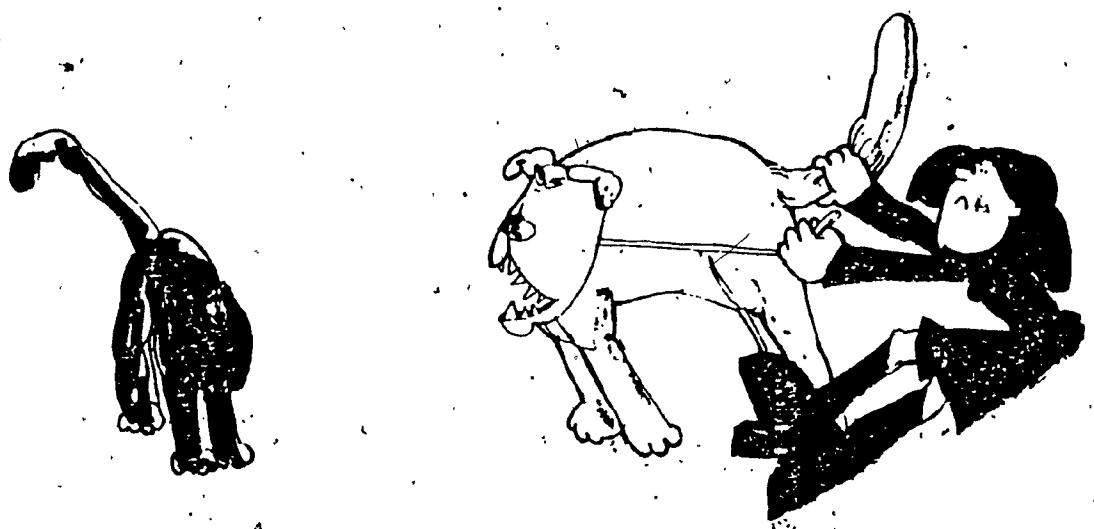
- a) The man is expensive enough
- b) The man doesn't like money
- c) The man doesn't like to spend money
- d) The man isn't expensive

25. "The shoes are too wide"

- a) The shoes are narrow
- b) The shoes aren't wide enough
- c) The shoes are very wide for her
- d) The shoes are wide enough

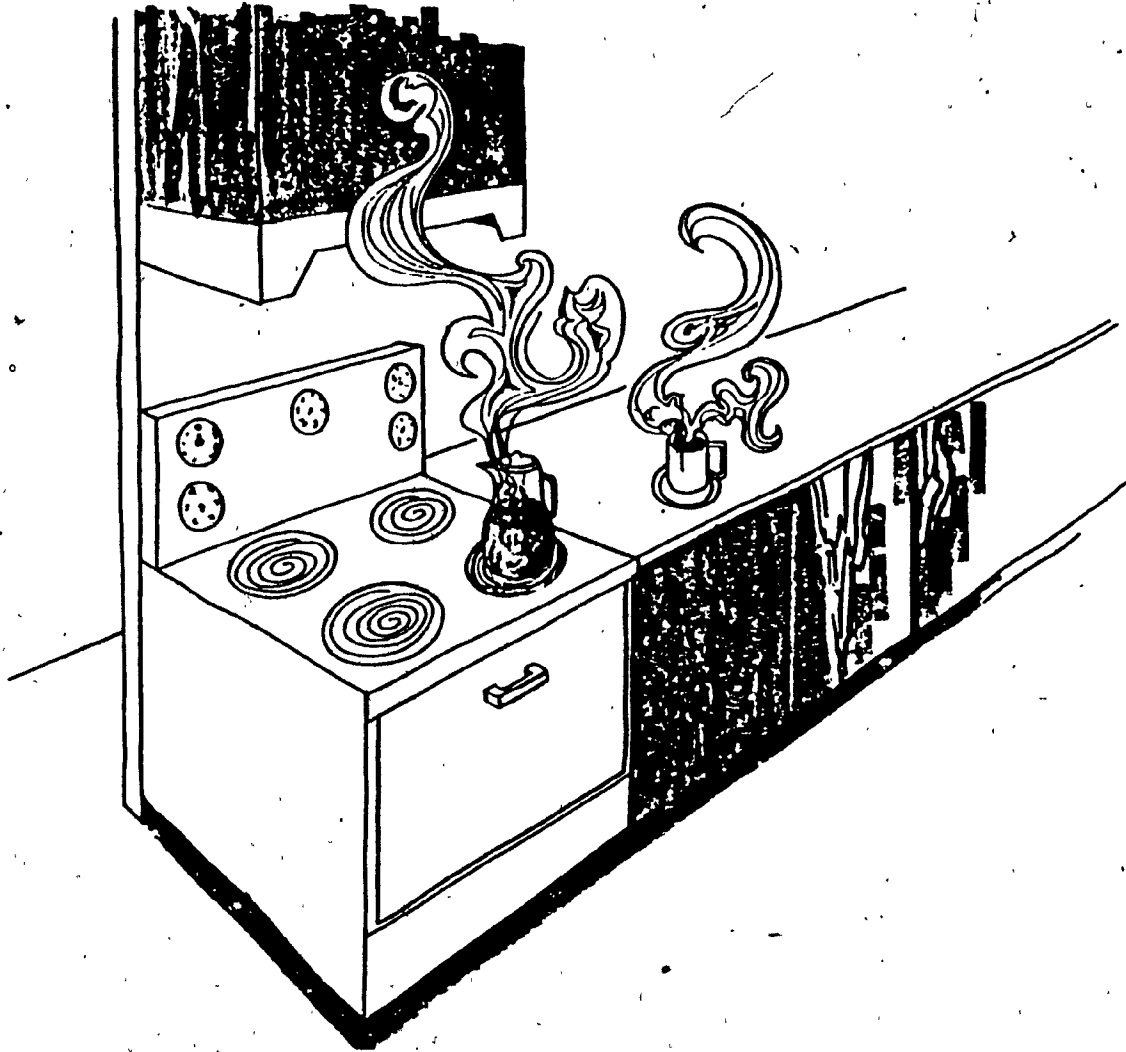


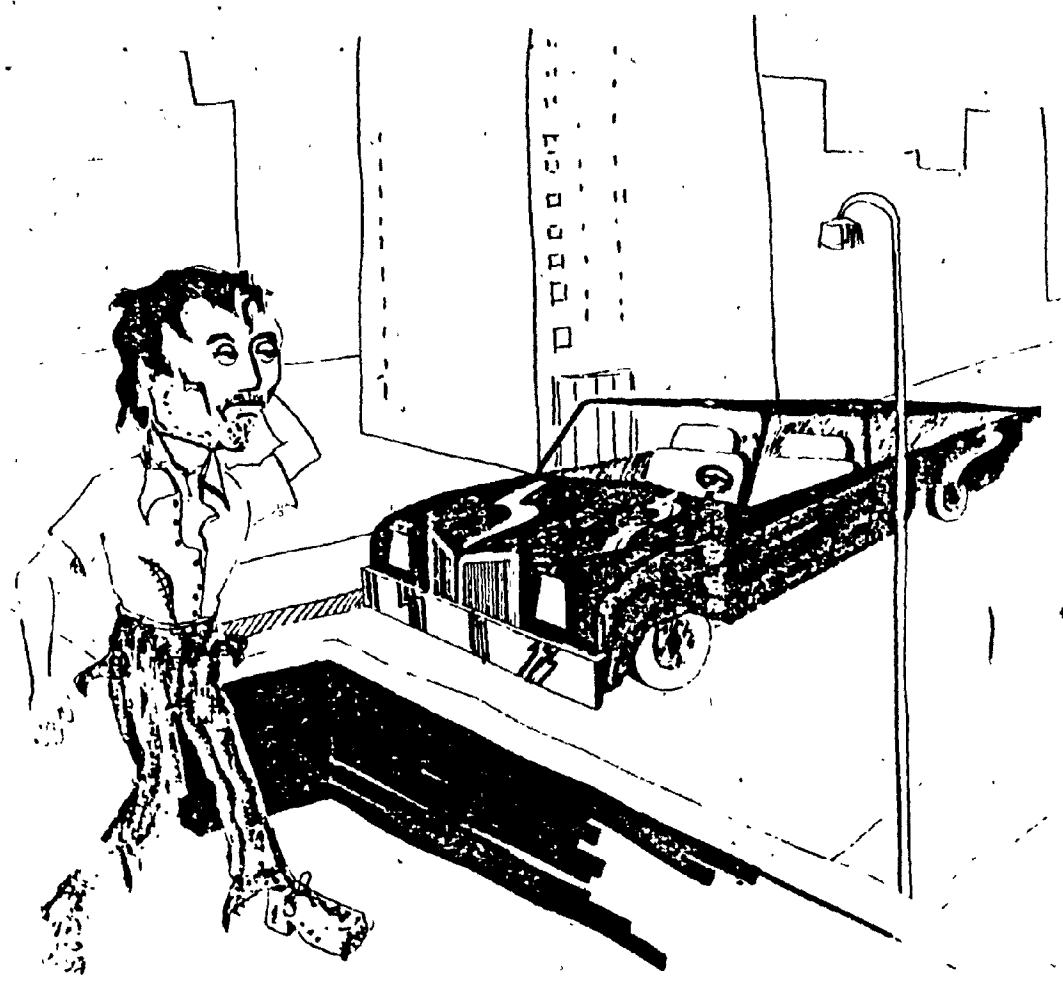


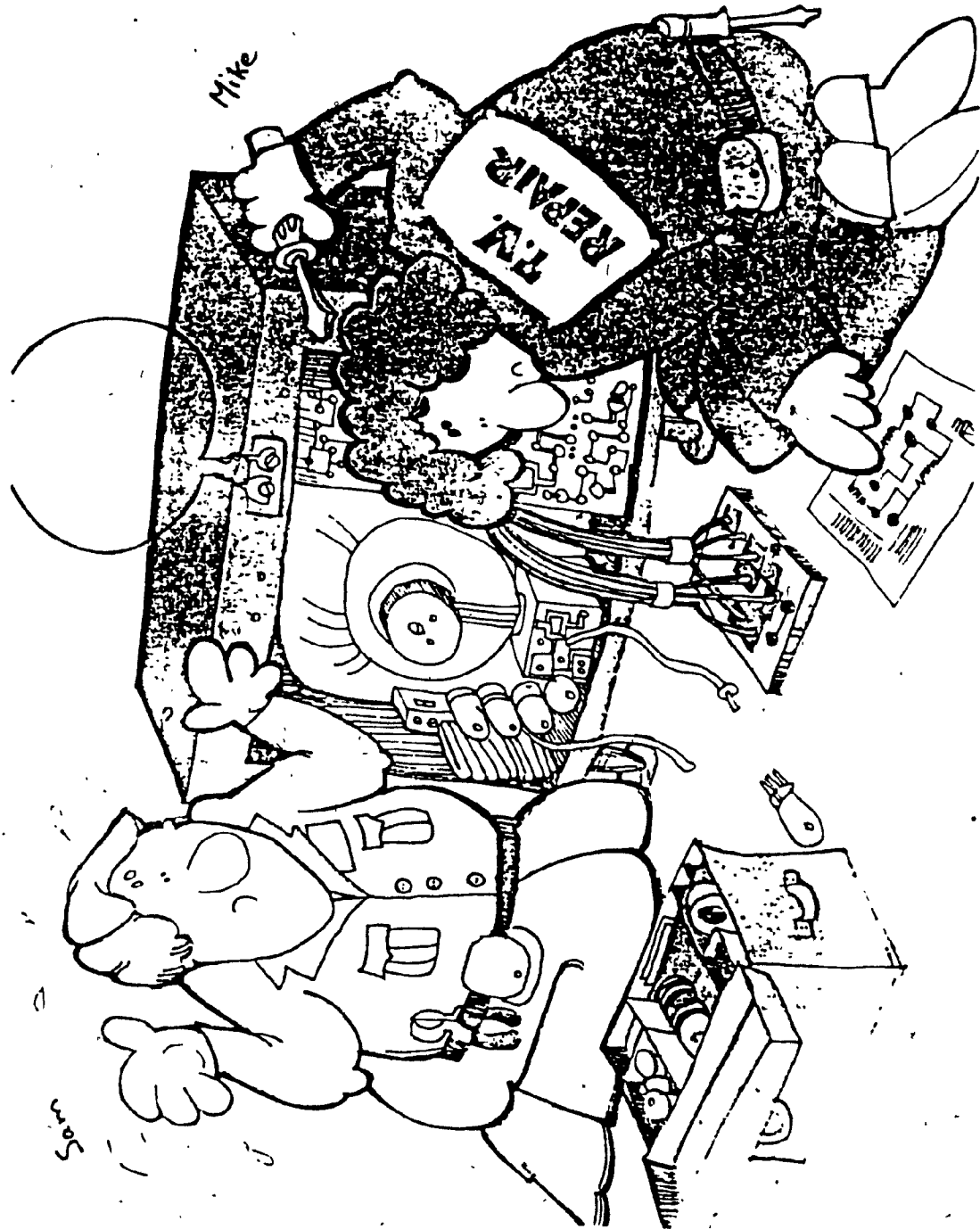






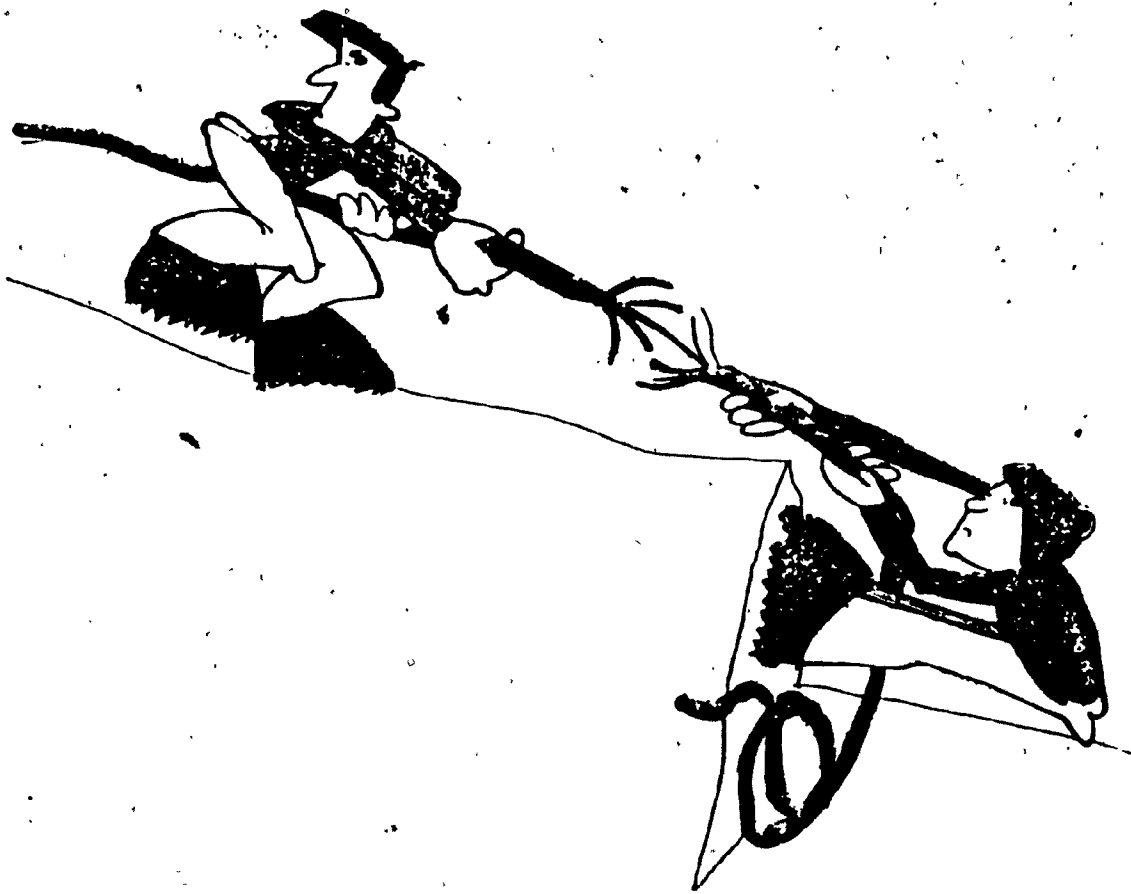












APPENDIX E
Interpolated Task
(English Version)

(Advance Organizer and Post Organizer Groups)

Shopping and the Credit Card

Today, more and more people are using credit cards instead of money to buy the things they need. Almost anyone who has a steady income and a continuous work record can apply for a credit card.

If you have a credit card, you can buy a car, eat a dinner, take a trip, and even get a haircut by charging the cost to your account. In this way you can pay for purchases a month or two later. Or you may choose to spread out your payments over several months and pay only part of the total amount each month. This is very convenient for the customer. With the credit card in your wallet or purse, you don't have to carry much cash. So you don't have to be concerned about losing your money through carelessness or theft. The card user only has to worry about paying the final bill. This of course can be a problem if you charge more than you can pay for.

(Control Group)

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Credit card companies sometimes have problems collecting overdue payments from unreliable customers. Also, the use of stolen, or counterfeit credit cards by criminals has become a big headache for the credit card company that is responsible for the goods and services illegally charged to its customers' account.

Yet, in many ways, the big loser in the credit card system is not the credit card company, the store, or the card user, but rather the general customer. The store makes up for the fees it

pays to the credit card company by increasing prices for goods and services. Stores may have more sales if they accept cards, but the added cost to the store when credit cards are accepted instead of cash is actually passed on to all consumers in higher prices. In this way the cash customer suffers for the convenience the credit card customer enjoys.