

THE UNIVERSITY OF MANITOBA
THE EFFECTS OF STRUCTURED OVERVIEWS AND PURPOSEFUL
QUESTIONS ON THE COMPREHENSION OF GRADE
EIGHT SOCIAL STUDIES MATERIAL

by

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ABSTRACT

This study was designed to investigate the effects of two forms of advance organizers on the comprehension of chronologically-organized Social Studies textual material. The two forms of advance organizers employed were Purposeful Questions and Structured Overview. Comprehension was measured in four categories, Immediate Literal, Immediate Interpretative, Delayed Literal, and Delayed Interpretative.

One hundred and sixty-five grade eight subjects were divided into high, middle, and low reading achievement groups. Each achievement group was randomly divided into two experimental groups and a control group. The basic experimental procedure, involving an immediate and a delayed testing session, was repeated three times employing three sets of testing materials. The subjects' scores on each of the three repetitions of the basic procedure were averaged to give a single score for each subject in each of the four comprehension categories.

Analyses of variance were conducted to determine whether any significant differences had occurred between the mean scores of the total testing groups or any of the three achievement sub-groups in any of the four comprehension categories. Similar analyses of variance were also conducted utilizing the results of the individual testing sessions in order to determine the consistency of results through the three repetitions of the basic procedure.

On the analysis of combined results the only significant difference

found occurred between the mean scores for the low achievement sub-groups on delayed interpretative comprehension. Post-hoc testing revealed that the Overview sub-group had achieved a significantly higher mean score than the Questions sub-group with neither experimental group achieving a mean score significantly different from that of the control sub-group. A similar significant difference occurred between the experimental sub-groups on the third criterion test in the same comprehension category.

A significant difference between the mean scores of the experimental groups also occurred for the middle achievement sub-groups on the first test of delayed literal comprehension but this difference was not reflected in the analysis of combined results.

It was concluded that, while the advance organizers were not generally effective as aids to the comprehension of the learning passages employed, there was an indication of an effect in the area of delayed comprehension, especially delayed interpretative comprehension, which warrants further investigation.

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CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS

THE PROBLEM

Statement of the Problem

This study was designed to investigate the effect of two forms of advance organizers on the comprehension of chronologically-organized Social Studies material. The two forms of advance organizers investigated were "purposeful questions" and "structured overview". Comprehension was measured at two levels, literal and interpretative.

Specifically the study was designed to answer the following questions:

1. Compared with no advance organizer, does the use of either of the two advance organizers significantly improve immediate literal and/or interpretative comprehension?
2. Compared with no advance organizer, does the use of either of the two advance organizers significantly improve delayed literal and/or interpretative comprehension?
3. Is there any differential effect of the organizers on immediate literal and/or interpretative comprehension for students of varying reading achievement?
4. Is there any differential effect of the organizers on delayed literal and/or interpretative comprehension for students of varying

reading achievement?

Significance of the Study

One of the prime aims of education is the development of concepts in specific subject areas. While much of the concept attainment and development achieved through education results from an interplay between students and teachers, the reading of content material plays an important part in subject area instruction. For maximum comprehension, the reading of such subject material requires an adequate conceptual background. At the same time, reading with comprehension can result in the further development of concepts.

Ausubel (1960, 1961, 1962, 1963) has demonstrated a role of prior or "subsuming" concepts on the understanding of new material. He has developed a theory of cognitive learning which is based on the assumption that the cognitive structure is hierarchically organized. In meaningful "reception learning," as opposed to rote learning, new knowledge is subsumed under an existing conceptual structure. Therefore, the existing cognitive structure is the main factor affecting meaningful verbal learning and the retention of that learning.

On this assumption Ausubel developed the use of advance organizers to aid the meaningful reception of new material.

Rothkopf (1965) suggested that the activity of the student during exposure to instruction will determine what learning will take place. Without some activity on the part of the student no instructional objective could be attained. He stated:

The activities in which S engages when confronted with an instructive document determine the character of the effective stimulation that results from this confrontation and so, in turn, determine what will be learned. They play such an important role in learning from written material that I have given them a special name: mathemagenic behavior, i.e., behaviors that produce learning (pp. 198-199).

While mathemagenic behaviour includes gross motor actions it also is assumed to include functional covert behaviour such as the translating and processing of the instructional material.

Rothkopf also stated that mathemagenic behaviour could be modified or altered by "environmental events". These environmental events may include Ausubel's advance organizers, and conversely, advance organizers could be viewed as environmental events. The difference is one of basic conceptual theory.

Several researchers, basing their work either on Ausubel's theory of advance organizers or Rothkopf's theory of mathemagenic behaviour, have investigated the effect of various facilitating mechanisms on learning from written subject materials. However the application of facilitating mechanisms to content reading is a complex process. The field of content reading involves many forms of structural organization and demands specific reading skills to varying degrees. Also, comprehension can be defined in a variety of ways. Add to this the possible range of reading achievement of students at any one level of instruction and the result is a large variety of situations in which possible facilitating mechanisms must be examined. However, it is important that

such examination take place. Blanton (1971) stated:

In view of the fact that learning from written materials is a major part of the education curriculum, the paucity of specific manipulations which may be imposed on the learner to facilitate learning by reading is a major educational problem (p. 1).

It is hoped that this study will contribute to the knowledge of "specific manipulations" which may be imposed on the learner to facilitate learning through reading. It is also hoped that this study will contribute to the possible evaluation of conceptual theories as any increase in the understanding of facilitating mechanisms increases the knowledge against which conceptual theories must be examined.

Procedures of the Study

The grade eight population of Acadia Junior High School, Fort Garry School Division No. 5, were divided into three groups on the basis of their reading achievement as determined by their scores on The Canadian Tests of Basic Skills, Test R: Reading. Each achievement group was randomly divided into two experimental groups (Purposeful Questions and Structured Overview) and one control group.

Each group was presented with a 2,000-word reading passage prefaced by the appropriate advance organizer or control information. On completion of the reading the subjects answered a multiple choice comprehension test based on the passage. Four days later all subjects rewrote the comprehension test. This procedure was followed three times, in three successive weeks, using a different passage each week.

Scores for literal and interpretative comprehension on each of the three immediate and three delayed tests were averaged to yield one score for each subject for a) immediate literal comprehension, b) immediate interpretative comprehension, c) delayed literal comprehension, d) delayed interpretative comprehension.

Four analyses of variance were conducted for each of these four comprehension categories to determine whether any significant differences had occurred among the total testing groups or the three achievement subgroups.

DEFINITIONS OF TERMS

The following definitions of the two levels of comprehension involved in this study were based on those provided by Herber (1970).

Literal Comprehension

Herber stated that literal comprehension, as applied to a content textbook, "Produces knowledge of what the author has said" (1970, p. 62). This does not necessarily involve understanding of what the author has said. In judging the questions used in this study the following criterion was used to identify literal questions:

If the answer was provided directly by the textual material, i.e., the essence of the stem and the correct response appeared directly in the text, the question was judged literal. The information required to answer the question could be separated over more than one sentence providing that intervening material was brief and could be deleted without

affecting the meaning of the statement being tested.

Interpretative Comprehension

Interpretative comprehension requires that the reader perceive relationships between aspects of his literal comprehension. Herber describes this level of comprehension as one in which:

The reader looks for relationships among statements within the material he has read. From these intrinsic relationships he derives various meanings. The intrinsic relationships he perceives are colored and influenced by his previous knowledge of and experience with the topic in question. However, the reader is confined by the text and determines meaning primarily as he perceives intra-text relationships (1970, p. 63).

If, in order to answer a question, the reader must have noted the relationship between two or more literal statements (which would require understanding of the literal statements) that question was judged to be interpretative.

In some cases a question could be changed from literal to interpretative by altering the wording of the stem. If the wording of the stem was different from the wording of the text to the extent that it was judged that the reader would have to perceive intra-text relationships to recognize the stem, then the question was judged interpretative. By rewording the stem of such a question to more nearly approximate, or to duplicate, the wording of the passage the question became literal.

Purposeful Questions

Purposeful questions, when provided as an advance organizer, are

questions designed to provide a reason, or purpose, for reading. They are broad questions, containing no factual information, which the reader would be able to answer on the basis of information provided in the passage. When provided prior to the reading passage they may provide the reader with a means of organizing the information received in the reading. Being broad in scope they can elicit both factual and interpretative responses.

Structured Overview

A structured overview, as an advance organizer, is designed to give the student an overview of the basic structure of the passage. The structured overviews used in this study were presented in the form of outlines. They were based on the main ideas of the passage and reflected the relationship of subsidiary ideas to main ideas but, as with the questions, did not provide any specific information that could be used to answer questions on the comprehension test.

Reading Achievement

Reading achievement, for the purposes of this study, was the achievement displayed on Test R: Reading, of The Canadian Tests of Basic Skills.

LIMITATIONS OF THIS STUDY

Generalizations from the results of this study are limited by the sample used. It was decided to use the entire population of one school

rather than a random sample of five or six grade eight classrooms from those available, which could well have produced an unrepresentative sample. The selection of an entire grade population ensured that the full range of abilities within that population was sampled. No claim, however, can be made that this is a representative sample of any larger population.

The advance organizers used in this study, while based on organizers used in prior research, are not exact replications of any other advance organizers. This must be considered before the findings of this study can be compared with the findings of any prior research. While similarities exist, a careful comparison of the advance organizers used would be necessary before the findings of this study could be said to substantiate or refute the findings of any prior study.

Findings related to the levels of comprehension, literal and interpretative, must be viewed only within the confines of the definitions of these two terms as given above and the achievement test employed. Likewise, findings related to achievement groups must be viewed only in the context of the basic measuring device employed, The Canadian Tests of Basic Skills, and the arbitrary parameters established for the grouping.

While all possible encouragement was given the subjects to make use of the advance organizer provided, there can be no assurance that all subjects made equal use of these devices. While some subjects may have conscientiously studied the advance organizers others may have treated them more casually, thereby reducing the effect they might have had on comprehension. While subjects may shut out any form of advance organizer,

presented by any means, the possibility of such behaviour is increased when the advance organizers are presented in written form and require the subject to attend to them of his own volition.

CHAPTER II

REVIEW OF RELATED LITERATURE

Advance Organizers

When Ausubel (1963) formulated his theory of meaningful reception learning he provided the first theoretical framework to support research concerning aids to the effective learning and retention of prose instructional material. Before this the investigation of aids to learning from written material had been based on intuitive feelings rather than any stated theoretical basis. Christensen (1955) prefaced his study with the comment that "Intuitively, it seems that an overview of learning material prior to its detailed consideration should aid comprehension" (p. 65). He also criticized earlier research in this area for poor design and inadequate controls and analysis of data (p. 66).

Ausubel's theory of meaningful reception learning, which grew out of research in Retroactive Inhibition (Ausubel, Robbin, and Blake 1957) and Proactive Inhibition (Ausubel and Blake 1958), is based on the assumption that the cognitive structure is hierarchically organized in that highly inclusive concepts are subsumed under less inclusive concepts. Unfamiliar material must be received or "subsumed" under concepts already present in the learner's cognitive structure. If new material can become part of the cognitive structure only in so far as it can be subsumed under relevant existing concepts, then the manipulation of the present cognitive structure offers a means to facilitate the acquisition and

retention of such new material. Ausubel suggested that this manipulation of the existing cognitive structure could be accomplished by the use of "organizers" prior to the learning task:

The strategy advocated in this treatise for deliberately manipulating cognitive structure . . . involves the use of introductory materials (i.e., organizers) prior to the presentation of the actual learning task. These advance organizers consist of introductory material at a higher level of abstraction, generality, and inclusiveness than the learning task itself. The function of the organizer is to provide ideational scaffolding for the stable incorporation and retention of the more detailed and differentiated material that follows . . . (Ausubel 1963, p. 29).

Ausubel distinguished between two types of advance organizers. For completely unfamiliar material he advocated an expository organizer to provide relevant proximate subsumers which furnish ideational anchorage in terms that are familiar to the learner. For relatively familiar material he advocated a comparative organizer to aid the integration of new concepts into similar concepts in the cognitive structure (Ausubel 1963, p. 83).

Ausubel (1960) investigated the effects of an expository organizer on the learning and retention of a passage dealing with the metallurgical properties of carbon steel. The results of a retention test administered three days after exposure to the original passage showed that the experimental group who had received the advance organizer achieved a significantly higher mean score than the control group who had received a historical introductory passage in place of the advance organizer.

To test the effect of an advance organizer when the new material

was almost completely unfamiliar to the learner Ausubel and Fitzgerald (1961) employed both a comparative organizer, pointing out the principal similarities and differences between Buddhist and Christian doctrines, and an expository organizer, presenting the principal Buddhist doctrines at a high level of abstraction, generality and inclusiveness without reference to Christianity. The results of a criterion test three days after exposure to a passage on Buddhism showed that only the group who had received the comparative organizer achieved significantly higher scores than the control group which had received a historical introduction. Subjects achieving above median scores on a pretest of Christianity scored significantly higher than those who achieved below median scores on the Christianity test and the comparative organizer was most effective for those subjects who had achieved below median scores on the Christianity test.

From these results it was concluded that the learning and retention of unfamiliar verbal material varies positively with its discriminability from related, previously learned, concepts established in the cognitive structure.

A second criterion test administered ten days after exposure to the Buddhism passage revealed that both organizers had significantly increased retention for those subjects who had achieved below median scores on the Christianity test.

In 1962 Ausubel and Fitzgerald again tested an expository organizer, this time on the retention of sequential material not related

to previously learned material. It was discovered that the advance organizer significantly enhanced the learning of an initial passage on endocrinology but did not significantly enhance the learning of a sequential passage studied two days after testing on the initial passage. (Testing was delayed two days after the initial passage and four days after the sequential passage.) The lack of effect on the sequential passage was explained by suggesting that the sequential passage on pubescence was too distantly related to the initial passage on endocrinology for the latter to provide ideational anchorage for the former.

In a fourth study (Ausubel and Youssef, 1963) tested the effect of a comparative organizer on sequential learning where there was no intrinsic sequential development. Here it was found that the advance organizer significantly aided retention of the initial learning passage (Buddhism) but, as with the former study (Ausubel and Fitzgerald 1962) it did not enhance retention of the sequential passage (Zen Buddhism). In this study, however, the effect of the organizer on the initial passage was found to be uniform over the entire range of scores on a pretest of Christianity instead of being more beneficial for those subjects who had below median scores on the Christianity test as had been the case in the study of Ausubel and Fitzgerald (1961).

In the four studies discussed the advance organizers were 500-word prose passages described as introductory material at a higher level of abstraction, generality, and inclusiveness than the learning task itself; however, the exact method of their generation was not detailed. The

subjects in all cases were senior undergraduate students in Educational Psychology.

A later study (Jerrolds 1967) using similar advance organizers but with grade nine students, did not corroborate previous findings. Jerrolds tested the effects of a 500-word prose advance organizer and modified version formulated around main idea concepts. He found that neither produced any effect on delayed retention. In this study certain experimental groups received instruction in the use of the organizers but, while those above average I.Q. subjects who received instruction in the use of the modified advance organizer achieved higher scores than the above average I.Q. students using the same advance organizer without prior instruction, none of the experimental groups using advance organizers achieved significantly higher results than the control group which had no advance organizer.

As the major difference between Jerrold's study and the previous studies was the age and educational level of the subjects, the conflicting findings raise the possibility that educational level or maturity may be a factor in the effectiveness of advance organizers.

Bauman and Glass (1969) took the investigation of prose organizers a step further by investigating the effect of the position of the organizer for university students. The experimental groups received a prose organizer either prior to, or directly after, exposure to the learning passage. While the mean for the two experimental groups was not significantly higher than the control group the post-organizer group

scored significantly higher than the pre-organizer group. While the study had been based on Ausubel's concept of advance organizers the results were explained in terms of Rothkopf's theory of mathemagenic behavior (Rothkopf 1965), a theory which forms the second main conceptual framework for the study of aids to the learning and retention of written material.

Mathemagenic Behavior

This alternative theoretical framework explaining the facilitation of reception and retention of written material was provided by Ernst Rothkopf when, from research into the role of student responses in programmed learning, he developed a conceptual model which stressed the role of student responses to learning material (Rothkopf 1965). The basic assumption made by Rothkopf was that "in most instructional situations what is learned depends largely on the activities of the student" (Rothkopf 1970, p. 325). He coined the term "mathemagenic behavior" to describe this student behavior toward learning material:

The activities in which S engages when confronted with an instructive document determine the character of the effective stimulation that results from this confrontation and so, in turn, determine what will be learned. They play such an important role in learning from written material that I have given them a special name: mathemagenic behavior, i.e., behaviors that produce learning. . . . Mathemagenic behaviors include gross postural adjustment of the head and eyes over the page. It is assumed that there are other mathemagenic activities that cannot be observed directly and which must be inferred (Rothkopf 1965, pp. 198-199).

Whereas Ausubel spoke of the manipulation of the cognitive

structure, Rothkopf suggested the manipulation of the students' responses, or "environmental controls of mathemagenic responses" (Rothkopf 1965, p. 208). It was also suggested that, based on the results of studies dealing with programmed learning, questions or "test-like events" were one of these environmental controls of mathemagenic responses. Consequently, research which has grown out of the theory of mathemagenic behavior has studied the effect of questions and the position of questions on learning from instructional material.

Rothkopf (1966) and Rothkopf and Bisbicos (1967) studied the effect of various forms of questions and the various positions of questions on the learning of paid volunteer high school students. It was found that post-questions groups achieved significantly better results on criterion tests than pre-question or control groups. This result was accepted as evidence that post questions significantly modified the inspection behavior of the subjects. It was the effectiveness of the post-questions that led Bauman and Glass (1969) to explain the effectiveness of their post-organizers in terms of the theory of mathemagenic behavior.

Studies by Rothkopf and Coke (1963, 1966) involving the repetition of sentences either verbatim (1963) or with variations in phrasing (1966) resulted in these experimental procedures producing a negative effect on learning. However, Rothkopf suggested that this negative aspect was essentially a secondary finding. In his opinion the most interesting result of the studies was the indication that mathemagenic behavior was adaptive. Therefore the shaping of mathemagenic behavior for instructional

purposes was a practical possibility (Rothkopf 1970, p. 333).

Frase (1967) reproduced the study of Rothkopf (1966) with different learning material using university rather than high school subjects and found similar results; when questions occurred after relevant passages retention was highest. In a further study, Frase (1968a) investigated two modes of questions (multiple-choice and structured response) together with other factors of question placement, location of relevant content, and the type of material retained (question relevant or incidental). The results indicated that, not only were the post questions the most beneficial, but retention of relevant information was greater than the retention of incidental information and the more frequent the questions the greater the advantage to the post treatment group.

When Frase (1968b) placed general or specific orientating questions prior to a learning passage it was found that, contrary to his predictions, retention was lowest for those subjects who had received the general questions. Consequently he suggested that:

questions can have subtle effects upon S's performance which may not be anticipated by the unwary instructor. Questions may work, in the sense that they cause Ss to pay close attention to the passage, but the phrasing of the questions might select out only a portion of the necessary stimuli. In the present study the questions were designed to get Ss to respond to a relatively small or large amount of the material, but the general questions did not work that way. Instead, several Ss concentrated upon only the response terms (Frase 1968b p. 200).

Natkin and Stahlar (1969) hypothesized that if questions lead to a reminiscence effect which aids retention, then the effect should vanish if

the subjects are overexposed to the questions since the arousal response would diminish with stimulus repetition. Their study, utilizing undergraduate students, produced evidence to support the facilitating effect of post-questions and the diminishing effect caused by overexposure to such questions. The authors, therefore, suggest the need to develop methods for maintaining stable arousal responses.

The evidence for the facilitating effect of questions is not, however, unchallenged. Gustafson and Toole (1969) conducted a study in which subjects, rather than reading the learning material in a testing atmosphere, were allowed to study it either in scheduled, supervised study time or independently at home. No time limit was imposed and subjects reported for post testing when they felt that they were ready. The findings relevant to the use of questions indicated that the questions only led to better post-test achievement on that subtest of the post-test which was comprised of the questions that had been used in the experimental procedure. There were no general facilitating effects. It was surmised that:

the general beneficial effects elicited in investigations elsewhere are attributable to the experimental requirement that the subjects read the designated instructional material only once, which would seem to make the findings of such investigations more germane to sequential reading than to the process of painstaking study. In the study process, where rereading and review are prime ingredients, it may be that adjunct questions lose their potency except as emphasizeers of the specific information with which they deal (Gustafson and Toole 1969, p. 43).

Even accepting the qualification suggested above, the findings

relevant to post-questioning are impressive. However, the use of questions following pertinent learning material requires the interjection of questions at fairly short intervals. Frase (1968a) indicated that the questions should be within ten sentences of the relevant material. This makes the procedure unworkable with prepared textual material. All learning material making use of post-questions would have to be specially prepared. This, no doubt, explains why most of the research conducted with a view to practical learning from textual materials has tended to neglect the impressive findings concerning post-questions and have been concerned with those methods that can be used prior to a reading assignment. The studies reported below, based either on both Ausubel's theory of advance organizers or Rothkopf's theory of mathemagenic behavior, can best be described as studies of general aids to learning and retention from written material and deal almost exclusively with prior or advance aids.

It should be noted that the term "advance organizer" came into common use after Ausubel's work in the early 1960's and since then has come to be applied to any procedure used prior to the learning material to facilitate learning. However, many such advance organizers are very different from those considered by Ausubel. Therefore, when comparing the results of research the specific form of advance organizer must be taken into consideration. Seldom is it the relatively long prose expository or comparative organizer which, for clarity, should be referred to as an Ausubelian advance organizer.

It should also be noted that while most of the research based on the theory of mathemagenic behavior has concerned itself with questions and most frequently post-questions, the effect of an advance organizer of any description could be explained in terms of Rothkopf's "environmental controls of mathemagenic responses".

General Aids

Scandura and Wells (1967) studied the effect of advance organizers on the reading of mathematical material. One hundred and four undergraduate students were divided into four treatment groups. These groups were assigned to combinations of two types of reading passages, namely group theory and topological theory, with two forms of advance organizers, a historical introduction and a passage related mathematical game introduction. These organizers were 1,000 words in length, the same length as the reading passages themselves. While the historical introduction was called an organizer, its description bears a marked resemblance to Ausubel's historical control introductions. The results showed that the mathematical game introduction facilitated learning in comparison to the historical introduction and that its effect was greatest for the topology group as opposed to the group therapy group. The criterion test, however, was only nine items long.

Estes (1969) reported the findings of pilot work undertaken in preparation for a major study of the effects of prepared study guide material and small group discussions on the reading of ninth grade Social Studies assignments. The results of two experimental groups,

one using study guides alone and one using study guides plus small group discussions were compared with a third group using purpose-setting questions, which was referred to as a control group. Comparisons were conducted on three criteria, a content examination, the difference in scores on a pre and post test of reading comprehension (Stanford Achievement Test, High School Reading Tests) and a measure of change in attitude toward Social Studies. The results showed that while the difference between pre and post tests of attitude and reading comprehension were adversely affected by the experimental measures, content knowledge was increased by the same measures with the combined study guide and small group discussion group achieving the highest mean score. The lack of a conventional control group in this pilot study makes it difficult to fully assess the effectiveness of the experimental measures.

Smith and Hesse (1969) used a taped comparative organizer and measured its effect as an advance organizer on the comprehension of a passage from the Science Research Associates, Reading laboratory, IV A and on the attitude of grade eleven students toward the selection. Subjects were divided into good and poor readers and it was for the poor readers only that any significant effect was found. While there was some slight improvement in attitude for good readers there was a more noticeable attitude improvement, as measured by the author's six point attitude scale, for the poor readers. The poor readers also gained in ability to determine the main idea, one of three aspects (factual recall, main idea and inference) of comprehension measured. As a good estimate of the main

ideas of the passage could be gained from the taped organizer, it is not surprising that the findings include an increased ability to determine those main ideas. The good reader, by definition, would be able to determine the main ideas from the passage itself whereas the poor reader would benefit by the repetition. The organizer may have aided the poor reader simply by its repetition, rather than by increasing his ability to draw this information from the passage itself. In any event, if the poor readers' understanding of the passage was increased it is reasonable that their attitude toward the passage would also improve. Data concerning factual recall and inference were inconclusive.

The effects of four types of advance organizers, namely sentence outline, paragraph abstracts, true-false pre-test and completion pre-test, on the reading of a passage concerning the history of Science by grade six students was investigated by Carter et al. (1970). With subjects divided into above, at, and below grade six reading ability and by sex, it was found that the only significant difference between treatments occurred for girls at or above grade six reading ability. For these subjects the combined covert response treatments (paragraph abstract and sentence outline) produced significantly higher achievement than the combined overt response treatments (true-false and completion pre-tests). No treatment was significantly different from control.

Proger et al. (1970a) used the same four types of advance organizers as Carter et al. (1970) with grade twelve subjects. The criterion test for this study was designed to measure specific facilitation, (items

specifically stressed in the advance organizers) and general facilitation, (items not stressed in the advance organizers). The results showed that while the covert groups achieved significantly higher scores on specific facilitation than the combined overt groups, none of the advance organizers showed evidence of general facilitation. The superiority of the covert measures for specific facilitation is in keeping with superiority of the same groups in the only significant finding of the Carter et al. study.

Proger et al. (1970b) investigated advance (sentence outline summary) and concurrent (underlining) structuring mechanisms with grade six students. Variables for this study were test anxiety (high-low) and reading ability (above, at and below grade six). While the results did not show that the advance organizer was an effective aid to reading it was found that the high test anxious subjects benefited most from a combination of the two organizers while the most effective organizer for the low test anxious subjects was underlining only.

A lack of significant effects was also reported by Thelen (1970). She divided three hundred and forty grade nine students into four groups; control, advance organizer only, post study guide only and advance organizer with study guide. A science film rather than a prose reading was used as the learning situation. The results of an immediate criterion test showed no significant difference between groups using advance organizers and those without advance organizers and no interaction between advance organizers and study guide. While differences were not statistically significant, the study guide group out-performed the advance

organizer group on six of seven repetitions of the experimental procedure. There were no significant differences between treatments on a delayed test of retention. This is the only study reviewed which reported a repetition of the experimental procedure. It should be noted that of the three hundred and forty subjects only one hundred and thirty-seven were retained for statistical analysis.

Allen (1970) combined post-questions with Ausubelian advance organizers to investigate the possibility of interaction effects. It was thought that questions might enhance the facilitative effects of advance organizers. The subjects were grade twelve students and the learning material was specially prepared Social Studies passages. Four experimental groups were employed: advance organizer introductions and memory level questions (Sander's taxonomy), advance organizer introductions and higher order questions, nonadvance organizer introductions and memory level questions and non-advance organizer introductions and higher order questions. Immediate and delayed post-testing was employed to assess specific and general facilitation. Results indicated that the questions facilitated specific learning that diminished over time. However, when the questions were coupled with advance organizers the specific facilitation was more resistant to forgetting for below average I.Q. subjects. The advance organizer did not prolong the specific facilitation for above average I.Q. subjects but did result in a general facilitation of learning on the delayed test administered three weeks after exposure to the learning material for that group. That is, advance organizers appeared to have a

"sleeper effect" on general facilitation for above average I.Q. subjects. The author did not attempt to explain this "sleeper effect" but, Ausubel's theory would imply that the three week time lapse allowed the information to be better absorbed into the existing cognitive structure thereby allowing better retrieval.

Barron (1971) noted that most of the research conducted with advance organizers is basic rather than applied. Consequently studies have resulted which are interesting but which do not identify the points at which advance organizers may achieve practical utility (Barron 1971, p. 1). In an effort to identify areas of practical utility Barron conducted cross-sectional research to determine the effects of "graphic" and "prose" organizers at each of seven grade levels, grades six through twelve. At each grade level two null hypotheses were stated; that there would be no significant difference between either of the advance organizers and control and that there would be no significant difference between advance organizers. The data produced no significant differences, thus none of the null hypotheses could be rejected. However, in this study there was no subdivision of subjects into ability or achievement groups so that the possibility of differential effects within each grade level was not investigated.

Bayuk, Proger and Mann (1971) investigated four variables with grade twelve students. The variables were mode of organizer, (declarative sentences and test-like items) position of the organizer, (pre- and post-) prior knowledge of the subject matter of the reading selection and

general academic ability. The only significant interaction involved mode of organizer and ability; the test-like questions being less effective than declarative sentences for low ability subjects; however neither mode of organizer appears to have produced results significantly different from the control group.

A few studies have dealt with organizers and learning material other than prose. One such study, Thelen (1970), has been noted. A second, Bertou, Clasen and Lambert (1972) investigated the effects of interspersed questions, advance organizers and post organizers on the learning and retention of a televised lecture. The organizers were described only as being written at a higher level of abstraction, inclusiveness and generality than the lesson material, which sounds very much like an Ausubelian organizer. The grade nine subjects produced results which indicated a significant facilitation of learning only for interspersed questions. This finding substantiates the findings of most studies conducted at this grade level.

Summary

Studies dealing with interspersed questions have been included in this review of related literature because many of these studies examined such questions in conjunction with advance organizers and because such studies frequently are based on the theory of mathemagenic behavior, a useful theory to explain effects attributable to advance organizers. Generally research findings concerning interspersed questions are favourable. While most studies have been conducted at the grade twelve

level and above, the results are fairly consistent. One notable exception was the study of Gustafson and Toole (1969) in which such questions were found to be of no significant aid in a normal study situation as opposed to the testing atmosphere in which most studies are conducted.

While such findings may have implications for the future preparation of learning materials they are of little help with present textual material as the insertion of questions within an existing text is not practical.

Evaluations of pre and post prose organizers, which could be used with present materials, generally favour the advance organizers. While the evidence concerning advance organizers is far from conclusive, a comparison of the findings at various grade levels forms a pattern. This pattern is evident in a table produced by Barron (1971, p. 2). Seventeen studies of advance organizers are listed under the level at which they were conducted, and it is shown that no study is clearly supportive of advance organizers at the Junior High School level or below. At the High School level there is a larger number of equivocal findings as compared to clearly negative findings but there are only two supportive studies. At the college level, however, findings are generally supportive with only one study listed as being equivocal or negative.

It is, therefore, suggested that factors associated with the higher levels of education may be a prerequisite to the effective functioning of advance organizers. Such factors could include chronological and/or mental age, general educational background, or intelligence.

This implies caution in the interpretation of results concerning interspersed questions where, as noted, most of the studies have been conducted at the grade twelve level and above.

Caution must also be exercised in this comparison of results at various levels of education due to the various forms of advance organizers employed. At the college level most of the studies used full Ausubelian style organizers while at the lower educational levels researchers tended to employ abbreviated forms of organizers. This suggests the possibility that it was the forms of organizers employed that were not effective at lower educational levels. This suggestion is not fully substantiated as the thorough research done by Jerrolds (1967) at the grade nine level did not support the beneficial effects of full Ausubelian prose organizers.

In the conclusion to his cross sectional study which found no facilitative effects for advance organizers across seven grades Barron (1971) stated that apparently "with-in grade student variability precludes large scale usage of advance organizers as instructional tools" (p. 13). He suggested that future studies should be concerned with the question:

"Who, if anyone are advance organizers appropriate for?" In the opinion of the present investigator, such studies should be restricted to consideration of personological variables which are: (a) readily identifiable by classroom teachers and (b) useful as a means of differentiating instruction (Barron, 1971, p. 13).

While "personological" variables such as reading achievement may affect the functioning of advance organizers, learning material variables may also have an effect. Such variables include the subject matter,

organizational pattern, length, and readability of the learning material. One further consideration in such studies must be the level of comprehension being measured.

CHAPTER III

DESIGN AND PROCEDURES

The Pilot Study

Purpose

A pilot study was conducted to evaluate the learning materials, procedures, and criterion tests developed for the study.

Subjects

Fifty-three students (twenty-nine boys and twenty-four girls) from Pembina Crest Junior High School, Fort Garry School Division No. 5, in Manitoba were chosen as subjects for the pilot study. These students were enrolled in two classes which were considered by the school's administration to be representative of the four grade eight classes in the school.

Learning Materials

Three Social Studies passages with chronologically organized content, approximately 2,000 running words in length were selected. The readability of the passages was between 6.5 and 6.9 on the Dale-Chall readability formula.

One passage, "The Age of Chivalry", was adapted with minor alterations from Life in the Middle Ages, by J. Williams (Random House, 1966, pp. 103-109). A second passage, "The Arrival of Man", was adapted

from The Story of Western Man, The Emergence of Europe, by Richer and Saywell (Clark Irvine and Co., 1968, pp. 6-13). The third passage, "The French Revolution", was an extensive rewriting of a passage from The Story of Man, Europe and the Modern World, by Richer and Saywell (Clark Irvine and Co., 1968, pp. 156-162).

The latter two of these passages were extracted from the authorized texts for the history portion of the grade seven and grade eight Social Studies courses respectively, but due to their very high readability levels they have not been used by the classes involved in either the pilot study or the main study.

For the pilot study each passage was presented in a slightly different format to determine which was most acceptable to the subjects. One was produced in elite type with a full sixty-five space line. One was produced in pica type with a full sixty-five space line, while one was in pica type with two thirty-five space columns per page.

For each learning passage a two part criterion test was designed. Part A of the test consisted of approximately thirty-five space columns per page.

For each learning passage a two part criterion test was designed. Part A of the test consisted of approximately thirty-five items designed to measure literal comprehension, while Part B, approximately twenty items, was designed to measure interpretative comprehension. (Literal and interpretative comprehension are defined on pages 5 and 6.) All items were five choice multiple-choice questions.

For each passage two advance organizers, one a structured overview and one a set of purposeful questions, were designed.

The structured overview was prepared first. This was done by listing, in phrases, the main ideas of each paragraph. These main ideas were then grouped under three or four main headings in outline form. Ideas of secondary importance were deleted to reduce the outline to what was felt to be a manageable length. This length was not to exceed four main headings with three or four sub-headings, with the possibility of one of those sub-headings having one or two points subordinate to it. The intent was to produce an outline long and complex enough to adequately sample the thought of the passage while being short enough to be easily read and largely retained by the student.

When the structured overview was completed a set of purposeful questions was formulated using the structured overview as a guide. This ensured that both of the organizers drew attention to the same aspects of the passage. These questions, eight in number, required that the students look for, and recognize, pertinent information if they were to formulate an answer. Looking for this information was their purpose for reading the passage. The questions were generally worded so that they required a fairly thorough reading of the passage. No question asked for a single literal fact, such as a date, which could be located by skimming.

The organizers were prefaced by directions instructing the students to read the organizer carefully and then to utilize it when reading the passage. Directions for the use of the structured overview directed

subjects to attempt to remember the arrangement of ideas in the outline and to look for details pertinent to each of those ideas. Directions for use of the purposeful questions directed subjects to attempt to remember the questions and to look for the details that could be used to support the answer to each of the questions. The preface to both of the organizers directed the subjects not to refer back to the organizers once they had begun reading the passage.

Administration

No control group was utilized in the pilot study. Subjects were assigned at random to one of the two experimental groups, Purposeful Questions group or Structured Overview group. A comparison of the two groups using the reading scores from The Canadian Test of Basic Skills, administered by the school earlier in the year, revealed that the two groups were nearly equivalent. The questions group had a mean grade score of 7.6 while the overview group had a mean grade score of 7.7.

At each of three experimental sessions the subjects were presented with an envelope containing two booklets. One booklet was the learning passage prefaced by the appropriate organizer, while the second booklet contained the criterion test prefaced by directions for answering the test. Prior to the first session it was explained to the subjects that they would be reading either an outline or a series of questions that were designed to help them understand the passage that followed, and that after reading the passage they would be answering a multiple-choice quiz based on the passage. They were directed to leave the test booklet

(with "DO NOT REMOVE UNTIL DIRECTED TO DO SO" printed across the top of the first page) in the envelope until finished with the reading passage. Then the first booklet was to be returned to the envelope and the test booklet removed.

Two days following the initial session the second passage was presented. One week after the second presentation the third passage was presented. No delayed measure of comprehension was taken during the pilot study.

No time requirements for reading any portion of the material were imposed, that is, no specified amount of time was required to be spent reading the organizers or the passage. The only time restriction imposed was that all materials were collected after thirty-five minutes, the length of a normal class period. During this thirty-five minute period subjects could work through the material at their own rate.

Prior to the experimental sessions the subjects were told that they would be taking part in an experimental program to test certain material and to see how well they could learn from that material. It was stressed that the results would not affect their marks at school but that a fair assessment of the material and their ability to learn from that material was possible only if they tried to do their best during the sessions.

Evaluation of Pilot Study Materials

Following the pilot study, the questions used in the criterion tests were submitted to a panel of three undergraduate students in

reading. This panel, working from the definitions provided on pages 5 and 6 and without knowledge of the original classification of the questions, judged each question, identifying it as literal or interpretative. The judges also offered suggestions for the possible rewording of some questions to improve clarity.

If the panel unanimously agreed with the original classification of the question it was accepted as rated. If the panel unanimously disagreed with the original classification of the question it was reconsidered by the author. If on reconsideration the panel's judgement was accepted, the question was accepted under the new classification; however, if the panel's judgement could not be accepted the question was discarded. If the panel could not reach a unanimous decision regarding the classification of a specific question, that question was discarded.

Results of the pilot study testing were submitted to item analysis. Following this item analysis the best twenty-four literal and best thirteen interpretative questions were retained for each of the three criterion tests to be used in the study.

Some minor alterations were made to a few of the questions to shorten their stems or to replace distractors shown to be ineffectual in the pilot study.

The content of the learning passages was retained in its original form. As pilot study subjects expressed an overwhelming preference for the two-column, pica-type-face presentation, reproduction in this style was chosen for all the passages for the experiment.

The original advance organizers were retained with the exception of the initial directions which were modified slightly to add clarity.

The single thirty-five minute class period was considered adequate for the completion of the required tasks. While a few of the pilot study subjects did not complete the criterion test, all progressed far enough to indicate that all subjects could likely complete the shortened version planned for the major study.

Design and Procedures of the Study

Materials

The three learning passages with the modifications described in the report of the pilot study were used for the major study.

The criterion tests for each of the learning passages consisted of the twenty-four literal and thirteen interpretative questions selected following item analysis and classification. Each test presented the literal items first followed by the interpretative items but without any physical division between the two sections. The items within each section of the test were presented in the order in which material pertinent to the answer appeared in the passage. Directions for answering the test were altered so that use could be made of I.B.M. 1230 answer sheets for machine scoring.

The advance organizers were used with their modified directions. An introductory page was devised to replace the advance organizer for the control group. This page contained the same general directions given to the two experimental groups but without any reference to the reading of

material prior to the reading of the passage. It was slightly shorter than the initial page containing the advance organizers for the experimental groups. As the difference was small, and as it was felt that the addition of extraneous material could be a distraction depressing control group achievement, the control group's introductory passage was padded to equal the length of the organizers. All other material for the control group was identical to that provided for the experimental groups.

Twelve grade eight students not involved in either the pilot study or the main study were divided into three groups in order to determine whether either of the advance organizers contained information which would directly assist subjects in responding to the criterion tests. One group was assigned to each of the treatments and answered each of the criterion tests after reading only the pertinent organizer or control introduction. For each of the criterion tests the mean scores for the three groups were nearly identical and none of the mean scores exceeded that which might have been expected by chance (mean scores for the total questions on each test ranged from 6.5 to 8.0). From these results it was assumed that the organizers did not contain information that would directly assist in answering the criterion tests.

Subjects

Subjects for the study were all the students enrolled in grade eight at Acadia Junior High School, Fort Garry School Division No. 5, Manitoba. As noted on page 8, the entire grade population of one school was selected to lessen the possibility of a skewed distribution of

reading achievement, a situation deemed possible with the random selection of streamed classes from all available schools. The grade population of this school consisted of ninety-eight boys and eighty girls, a total of 178 possible subjects. Of these, thirteen (ten boys and three girls) were dropped immediately from the study as no achievement scores were available for them. The remaining eighty-eight boys and seventy-seven girls were retained for the study. A further six students were totally lost to the study during the testing sessions. Details of those subjects lost totally, or in part, during the testing sessions are given in Chapter IV.

Procedures

Testing Groups. The subjects were divided into three reading achievement groups, High, Middle, and Low, on the basis of their scores on The Canadian Test of Basic Skills, Test R, Reading. This test had been administered by the school in October 1971, five months before this study. The parameters of the achievement groups were chosen to provide nearly equal-sized groups. High achievement was designated as grade scores of 9.2 and above (N=54, twenty-eight boys and twenty-six girls). Mean grade score achievement of the High achievement group was 9.75. Middle achievement was designated as grade scores of 7.8 to 9.1 inclusive (N=57, twenty-seven boys and thirty girls). Mean grade score achievement for this group was 8.54. Low achievement was represented by grade scores of 7.7 and below (N=54, thirty-three boys and twenty-one girls), and a

mean grade score of 6.44.

Table 3:01 graphically presents the distribution of achievement scores and their division into achievement groups.

Each achievement group was divided at random into three testing groups; Control (C), Purposeful Questions (PQ), and Structured Overview (SO). This provided eighteen low achievement, nineteen middle achievement, and eighteen high achievement subjects for a total of fifty-five subjects in each testing group.

Table 3:02 shows the mean and standard deviation of reading achievement for testing groups, achievement sub-groups, and sex within achievement sub-groups. Although the study was not designed to consider sex as a variable, the division by sex was made in order to note the random distribution of male and female subjects within the testing groups.

Testing Sessions. Testing sessions were held on Mondays (immediate testing) and Fridays (delayed testing) for three consecutive weeks. As open area construction of the school allowed administration of the material to three classes at a time, only two sessions were required on each of these days.

For the immediate testing sessions the subjects received an envelope containing two booklets. The first booklet contained the reading passage prefaced by the appropriate organizer or control information. The second booklet consisted of the criterion test with directions and answer sheet. As in the pilot study, the students were directed to leave the testing booklet in the envelope until they had completed the first

TABLE 3:01

DISTRIBUTION OF READING ACHIEVEMENT SCORES ON
THE CANADIAN TEST OF BASIC SKILLS AND
DIVISION OF ACHIEVEMENT GROUPS

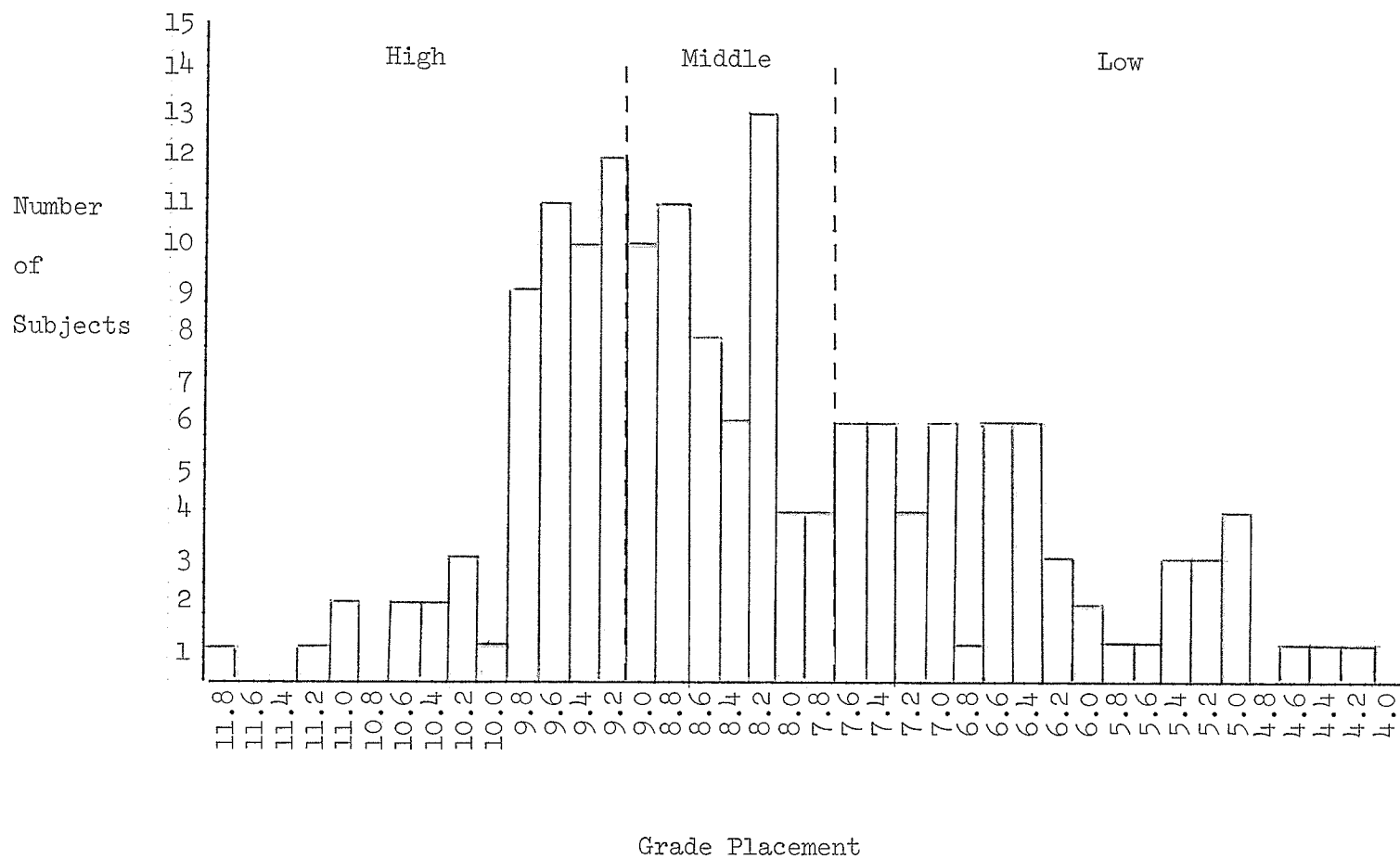


TABLE 3:02

MEAN GRADE SCORES AND STANDARD DEVIATIONS OF C.T.B.S.
 READING ACHIEVEMENT BY TESTING GROUPS,
 ACHIEVEMENT SUB-GROUPS, AND SEX

Control Group N=55 $\bar{X}=8.31$ S.D.=1.62	High N=18 $\bar{X}=9.97$ S.D.=.67	Male $\bar{X}=9.76$ N=12 S.D.=.49
		Female $\bar{X}=10.23$ N=6 S.D.=.92
	Middle N=19 $\bar{X}=8.57$ S.D.=.41	Male $\bar{X}=8.71$ N=11 S.D.=.43
		Female $\bar{X}=8.39$ N=8 S.D.=.31
	Low N=18 $\bar{X}=6.43$ S.D.=.41	Male $\bar{X}=6.05$ N=11 S.D.=1.12
		Female $\bar{X}=7.03$ N=7 S.D.=.79
Purposeful Questions Group N=55 $\bar{X}=8.22$ S.D.=1.51	High N=18 $\bar{X}=9.54$ S.D.=.89	Male $\bar{X}=9.56$ N=7 S.D.=.35
		Female $\bar{X}=9.81$ N=11 S.D.=.52
	Middle N=19 $\bar{X}=8.52$ S.D.=.37	Male $\bar{X}=8.45$ N=6 S.D.=.43
		Female $\bar{X}=8.55$ N=13 S.D.=.35
	Low N=18 $\bar{X}=6.42$ S.D.=.97	Male $\bar{X}=6.41$ N=11 S.D.=1.2
		Female $\bar{X}=6.43$ N=7 S.D.=.53
Structured Overview Group N=55 $\bar{X}=8.25$ S.D.=1.47	High N=18 $\bar{X}=9.74$ S.D.=.58	Male $\bar{X}=9.92$ N=9 S.D.=.67
		Female $\bar{X}=9.23$ N=9 S.D.=1.21
	Middle N=19 $\bar{X}=8.52$ S.D.=.42	Male $\bar{X}=8.59$ N=10 S.D.=.3
		Female $\bar{X}=8.43$ N=9 S.D.=.52
	Low N=18 $\bar{X}=6.48$ S.D.=.78	Male $\bar{X}=6.32$ N=11 S.D.=.76
		Female $\bar{X}=6.73$ N=7 S.D.=.81

booklet, at which time they were to replace the first booklet and remove the criterion test. This direction was also given in print at the end of the first booklet for the first session only.

As in the pilot procedures, no mandatory requirements were imposed for the reading of any portion of the material, that is, no stated amount of time was to be spent reading the organizer or control information. The only time restriction was the normal class period length of thirty-five minutes.

For the delayed testing sessions, the subjects received their envelopes containing only the criterion test. This was the same criterion test as the one used at the immediate testing session. No time limit was imposed for the completion of this delayed test, but it was suggested that fifteen minutes would be sufficient. All subjects completed the delayed tests within this suggested time. Students who had been absent on the previous Monday did not take part in the Friday sessions.

The regular class teachers were present during regularly scheduled Social Studies class time.

Make-up sessions were conducted three weeks after the last scheduled testing session. At the first make-up session students who had been absent one or more Mondays received the passage, or one of the passages that they had missed, and wrote the immediate criterion test. Four days later they wrote the delayed test. Procedures for these make-up sessions were the same as for the regular Monday and Friday sessions with the exception that they took place in a seminar room without the regular

class teachers being present.

Statement of Hypotheses

As this study was designed to investigate the effect of the two advance organizers on immediate and delayed literal and interpretative comprehension and to investigate reading achievement as a possible variable influencing the effect of the advance organizers, the following null hypotheses were formulated.

H₀1 There will be no significant difference among the achievement of the total experimental and control groups on the immediate test of literal comprehension.

H₀2 There will be no significant difference among the achievement of the total experimental and control groups on the immediate test of interpretative comprehension.

H₀3 There will be no significant difference among the achievement of the total experimental and control groups on the delayed test of literal comprehension.

H₀4 There will be no significant difference among the achievement of the total experimental and control groups on the delayed test of interpretative comprehension.

H₀5 There will be no significant difference among the achievement of the high reading achievement sub-groups of the testing groups on the immediate test of literal comprehension.

H₀6 There will be no significant difference among the achievement of the high reading achievement sub-groups of the testing groups on the

immediate test of interpretative comprehension.

H₀7 There will be no significant difference among the achievement of the high reading achievement sub-groups of the testing groups on the delayed test of literal comprehension.

H₀8 There will be no significant difference among the achievement of the high reading achievement sub-groups of the testing groups on the delayed test of interpretative comprehension.

H₀9 There will be no significant difference among the achievement of the middle reading achievement sub-groups of the testing groups on the immediate test of literal comprehension.

H₀10 There will be no significant difference among the achievement of the middle reading achievement sub-groups of the testing groups on the immediate test of interpretative comprehension.

H₀11 There will be no significant difference among the achievement of the middle reading achievement sub-groups of the testing groups on the delayed test of literal comprehension.

H₀12 There will be no significant difference among the achievement of the middle reading achievement sub-groups of the testing groups on the delayed test of interpretative comprehension.

H₀13 There will be no significant difference among the achievement of the low reading achievement sub-groups of the testing groups on the immediate test of literal comprehension.

H₀14 There will be no significant difference among the achievement of the low reading achievement sub-groups of the testing groups on the

immediate test of interpretative comprehension.

H₀15 There will be no significant difference among the achievement of the low reading achievement sub-groups of the testing groups on the delayed test of literal comprehension.

H₀16 There will be no significant difference among the achievement of the low reading achievement sub-groups of the testing groups on the delayed test of interpretative comprehension.

Method of Analysis

Statistical procedures employed to test each of the hypotheses was an analysis of variance among the pertinent scores for the applicable groups. Comprehension scores for each of immediate literal, delayed literal, immediate interpretative, and delayed interpretative comprehension was the average of the scores achieved in each of the three criterion tests.

Where significant differences were found the source of this significance was investigated by the Scheffé method of post-hoc comparisons. A significance level of .05 was required before differences were deemed significant.

CHAPTER IV

ANALYSIS OF DATA

Method of Analysis

Following immediate and delayed testing on each of the three criterion measures, each subject received four scores representing the total number of correct answers for Immediate Literal Comprehension (ILC), Delayed Literal Comprehension (DLC), Immediate Interpretative Comprehension (IIC), and Delayed Interpretative Comprehension (DIC). Following the administration of the three criterion tests, the three scores achieved by each subject, in each of the four comprehension categories, were averaged to give each subject a single mean score for ILC, DLC, IIC, and DIC.

If, following the make-up sessions described in Chapter III, a subject was missing more than one score in a particular comprehension category his score was dropped from that category but scores were retained in those categories where he had two or more scores. Five subjects (one from Low Ability Control, one from High Ability Purposeful Questions, two from Low Ability Purposeful Questions, and one from Middle Ability Structured Overview) were dropped from all comprehension categories since they had not been present for the testing sessions.

Subjects missing only one score in a particular comprehension category were retained in the study and an estimate was made of their missing score using the following formula:

$$X_{A_{igc}} = \bar{X}_{A_{igab}} \times \frac{\bar{X}_{A_{gc}}}{\bar{X}_{A_{gab}}}$$

Where $X_{A_{igc}}$ = missing score in comprehension category A for individual i in group g on testing session c.

$\bar{X}_{A_{igab}}$ = mean score in comprehension category A for individual i in group g on testing sessions a and b.

$\bar{X}_{A_{gc}}$ = mean score in comprehension category A for group g on testing session c.

$\bar{X}_{A_{gab}}$ = mean score in comprehension category A for group g on testing sessions a and b.

The group means used in the above formula were the means for the ability sub-group of the testing group from which the score was missing and were calculated from the scores of those who were present for all sessions.

This method of estimating single scores, used by Allen (1970), allows the retention of subjects without distorting the difference between groups. Table 4:01 details the placement within testing groups and achievement sub-groups of all dropped subjects and estimated scores.

Each null hypothesis was tested by an analysis of variance for the scores of the applicable groups or sub-groups. Analyses of variance were conducted using the Factorial Analysis of Variance Program by F. Chebib, Program 12 of the Statistical Package of the Computer Center, University of Manitoba. This program was designed to analyze multi-factorial experiments with equal or unequal subclass numbers.

Analysis of Data for Total Groups

The first four hypotheses dealt with the total testing groups

TABLE 4:01

PLACEMENT OF DROPPED SUBJECTS AND CALCULATED SCORES

Achievement Groups		High		Middle		Low	
		Imm.	Del.	Imm.	Del.	Imm.	Del.
Testing Groups		Imm.	Del.	Imm.	Del.	Imm.	Del.
C O N T R O L G R O U P	Original No. of Subjects	18	18	19	19	18	18
	No. with complete scores	14	12	18	13	17	12
	No. with one score estimated	4	5	1	5	0	3
	No. dropped from study	0	1	0	1	1	3
	Final No. of Subjects	18	17	19	18	17	15
Q U E S T I O N S G R O U P	Original No. of Subjects	18	18	19	19	18	18
	No. with complete scores	17	15	18	17	16	14
	No. with one score estimated	0	1	0	1	0	2
	No. dropped from study	1	2	1	1	2	2
	Final No. of Subjects	17	16	18	18	16	16
O V E R V I E W G R O U P	Original No. of Subjects	18	18	19	19	18	18
	No. with complete scores	16	15	18	16	16	12
	No. with one score estimated	2	3	0	2	2	4
	No. dropped from study	0	0	1	1	0	2
	Final No. of Subjects	18	18	18	18	18	16

without regard for reading achievement. They stated that there would be no significant difference between testing groups for ILC (H_{01}), IIC (H_{02}), DLC (H_{03}), and DIC (H_{04}).

Tables 4:02, 4:03, 4:04 and 4:05 present the results of the analyses of variance for these four hypotheses. An F value of 3.06 is required for these analyses of variance to be significant at the .05 level of confidence.

TABLE 4:02

ANALYSIS OF VARIANCE FOR THE TOTAL GROUPS
ON IMMEDIATE LITERAL COMPREHENSION

Source	df	SS	MS	F
Between	2	13.7345	6.8673	0.55
Within	156	1930.7815	12.3768	
Error*		-0.2211		
Total	158	1944.2949		

* Error due to approximation of means

SS adjusted for unequal groups by the use of the harmonic means of N.

TABLE 4:03

ANALYSIS OF VARIANCE FOR THE TOTAL GROUPS ON
IMMEDIATE INTERPRETATIVE COMPREHENSION

Source	df	SS	MS	F
Between	2	8.5756	4.2878	1.08
Within	156	620.4937	3.9775	
Error		-0.1115		
Total	158	628.9578		

TABLE 4:04

ANALYSIS OF VARIANCE FOR THE TOTAL GROUPS
ON DELAYED LITERAL COMPREHENSION

Source	df	SS	MS	F
Between	2	50.5318	25.2659	1.80
Within	149	2087.0679	14.0072	
Error		-0.0467		
Total	151	2137.5530		

TABLE 4:05

ANALYSIS OF VARIANCE FOR THE TOTAL GROUPS
ON DELAYED INTERPRETATIVE COMPREHENSION

Source	df	SS	MS	F
Between	2	21.0201	10.5100	2.84
Within	149	551.1318	3.6989	
Error		0.2024		
Total	151	572.3542		

As the resulting F values of .55 for ILC, 1.08 for IIC, 1.80 for DLC, and 2.84 for DIC all fell below the value required for significance at the .05 level, null hypotheses 1 through 4 were accepted. There was no evidence of significant differences among the achievement of the total experimental and control groups in any of the four comprehension categories.

To determine whether these non-significant findings were the result of consistent non-significance in the results of each of the three

criterion tests or whether they were the result of conflicting criterion test results, analyses of variance were conducted for each of the three criterion tests in order to locate any sources of variation. Table 4:06 shows the resulting F value for each of these analyses of variance, and for comparison, the F values of the combined results.

TABLE 4:06

F VALUES FOR INDIVIDUAL CRITERION TESTS AND
COMBINED RESULTS FOR THE TOTAL GROUPS

Test	IIC	IIC	DIC	DIC
One	0.39	0.14	2.48	1.08
Two	0.97	0.83	1.35	1.98
Three	0.20	2.77	1.49	1.99
Combined	0.55	1.08	1.80	2.84

Table 4:06 shows that the lack of significance was inherent in each of the criterion tests and that the F values within each comprehension category are reasonably consistent with the exception of IIC on the third criterion test where a marked increase in the F value occurs.

While none of the results in Table 4:06 were significant, a pattern was evident within mean scores. Table 4:07 gives the means scores for the three groups in the four comprehension categories.

From Table 4:07 it is evident that in all four comprehension categories the Overview group achieved the highest mean score while the Questions group achieved the lowest mean score, with none of the

differences being significant.

TABLE 4:07
MEAN SCORES FOR TOTAL GROUPS ON COMBINED SESSIONS

Group	ILC	IIC	DLC	DIC
Control	12.32	5.64	11.80	5.40
Questions	11.82	5.30	10.76	5.06
Overview	12.51	5.86	12.20	5.97

The mean scores for each group in the four comprehension categories on the three criterion tests is given in Table 4:08.

TABLE 4:08
MEAN SCORES FOR TOTAL GROUPS ON INDIVIDUAL SESSIONS

Test	Group	ILC	IIC	DLC	DIC
1	Control	12.63	6.91	11.60	6.75
1	Questions	12.02	6.65	10.63	6.12
1	Overview	12.41	6.69	11.98	6.85
2	Control	12.57	5.39	11.98	5.36
2	Questions	11.78	4.98	10.84	5.18
2	Overview	13.02	5.19	12.31	6.06
3	Control	12.09	4.56	11.92	4.43
3	Questions	11.61	4.16	10.56	3.88
3	Overview	12.37	5.19	12.04	4.94

It is apparent from Table 4:08 that, while none of the differences are significant, the Questions group consistently achieved the lowest mean score while the Overview group usually achieved the highest mean score.

Analysis of Data for High Achievement Sub-Groups

Hypotheses 5 through 8 dealt with the high achievement sub-groups. They hypothesized no significant differences for these sub-groups on ILC (H_{05}), IIC (H_{06}), DLC (H_{07}), and DIC (H_{08}).

Tables 4:09, 4:10, 4:11, and 4:12 present the results of the analyses of variance for these four hypotheses. An F value of 3.19 is required for these analyses of variance to be significant at the .05 level of confidence.

TABLE 4:09

ANALYSIS OF VARIANCE FOR THE HIGH ACHIEVEMENT SUB-GROUPS
ON IMMEDIATE LITERAL COMPREHENSION

Source	df	SS	MS	F
Between	2	6.2779	3.1389	0.48
Within	50	329.7395	6.5948	
Error		-0.0794		
Total	52	335.9380		

TABLE 4:10

ANALYSIS OF VARIANCE FOR THE HIGH ACHIEVEMENT SUB-GROUPS
ON IMMEDIATE INTERPRETATIVE COMPREHENSION

Source	df	SS	MS	F
Between	2	2.7863	1.3932	0.62
Within	50	113.2252	2.2645	
Error		-0.0242		
Total	52	115.9873		

TABLE 4:11

ANALYSIS OF VARIANCE OF THE HIGH ACHIEVEMENT SUB-GROUPS
ON DELAYED LITERAL COMPREHENSION

Source	df	SS	MS	F
Between	2	6.4389	3.2194	0.28
Within	48	544.8950	11.3520	
Error		0.0382		
Total	50	551.3721		

TABLE 4:12

ANALYSIS OF VARIANCE FOR THE HIGH ACHIEVEMENT SUB-GROUPS
ON DELAYED INTERPRETATIVE COMPREHENSION

Source	df	SS	MS	F
Between	2	4.428	2.0214	0.77
Within	48	125.9008	2.6229	
Error		0.1259		
Total	50	130.0695		

As the resulting F values of .48 for ILC, .62 for IIC, .28 for DIC, and .77 of DIC all fell below the value required for significance at the .05 level, null hypotheses 5 through 8 were accepted. There was no evidence of significant differences among the achievement of the high achievement sub-groups in any of the four comprehension categories.

Analyses of variance were also performed for the three criterion tests. Table 4:13 presents the results of these analyses of variance and the combined results given in Tables 4:09 through 4:12.

TABLE 4:13

F VALUES FOR INDIVIDUAL CRITERION TESTS AND COMBINED
RESULTS FOR THE HIGH ACHIEVEMENT SUB-GROUPS

Test	ILC	IIC	DLC	DIC
One	0.02	0.55	0.09	0.08
Two	0.55	0.62	1.22	1.37
Three	2.07	1.74	1.27	0.67
Combined	0.48	0.62	0.28	0.77

The results tabulated in Table 4:13 show that none of the analyses of variance achieved significance ($p \geq 3.19$).

Table 4:14 gives the mean scores for the three groups in each of the comprehension categories on the combined analysis while Table 4:15 gives the mean scores achieved on the individual criterion tests.

From Tables 4:14 and 4:15 it was evident that, as with the analysis of total group results, the Overview group generally achieved a higher mean score than the Control group, which in turn generally achieved a higher mean score than the Questions group but none of these differences achieved significance.

TABLE 4:14

MEAN SCORES FOR THE HIGH ACHIEVEMENT SUB-GROUPS
ON COMBINED SESSIONS

Group	ILC	IIC	DLC	DIC
Control	14.81	7.16	13.71	6.65
Questions	14.31	6.89	13.34	6.67
Overview	15.15	7.45	14.21	7.26

TABLE 4:15
 MEAN SCORES FOR THE HIGH ACHIEVEMENT SUB-GROUPS
 ON INDIVIDUAL SESSIONS

Test	Group	ILC	IIC	DLC	DIC
1	Control	14.22	8.72	13.56	8.00
1	Questions	14.18	8.29	13.18	7.94
1	Overview	14.00	8.00	13.11	8.22
2	Control	15.39	7.00	12.82	6.53
2	Questions	15.41	6.82	12.81	6.31
2	Overview	16.33	7.61	14.38	7.39
3	Control	15.39	6.55	14.53	5.41
3	Questions	13.29	5.41	12.81	5.69
3	Overview	15.39	6.83	14.67	6.33

Analysis of Data for Middle Achievement Sub-Groups

Hypotheses 9 through 12 dealt with the middle achievement sub-groups. They stated that there would be no significant difference between these sub-groups on ILC (H_{09}), IIC (H_{010}), DLC (H_{011}), and DIC (H_{012}).

Tables 4:16, 4:17, 4:18, and 4:19 present the results of the analyses of variance for these four hypotheses. An F value of 3.19 is required for these analyses of variance to be significant at the .05 level of confidence.

As the resulting F values of .34 for ILC, 1.01 for IIC, .68 for DLC, and 1.09 for DIC all fell below the value required for significance at the .05 level, null hypotheses 9 through 12 were accepted. There was no evidence of significant differences among the achievement of the

middle achievement sub-groups in any of the four comprehension categories.

TABLE 4:16

ANALYSIS OF VARIANCE FOR THE MIDDLE ACHIEVEMENT SUB-GROUPS
ON IMMEDIATE LITERAL COMPREHENSION

Source	df	SS	MS	F
Between	2	6.7981	3.3991	0.34
Within	52	514.1394	9.8873	
Error		-0.0098		
Total	54	520.9277		

TABLE 4:17

ANALYSIS OF VARIANCE FOR THE MIDDLE ACHIEVEMENT SUB-GROUPS
ON IMMEDIATE INTERPRETATIVE COMPREHENSION

Source	df	SS	MS	F
Between	2	4.7304	2.3652	1.01
Within	52	122.0417	2.3470	
Error		-0.523		
Total	54	126.7198		

TABLE 4:18

ANALYSIS OF VARIANCE FOR THE MIDDLE ACHIEVEMENT SUB-GROUPS
ON DELAYED LITERAL COMPREHENSION

Source	df	SS	MS	F
Between	2	13.9033	6.9516	0.68
Within	51	518.7893	10.1723	
Error		0.0000		
Total	53	532.6926		

TABLE 4:19

ANALYSIS OF VARIANCE FOR THE MIDDLE ACHIEVEMENT SUB-GROUPS
ON DELAYED INTERPRETATIVE COMPREHENSION

Source	df	SS	MS	F
Between	2	4.3900	2.1950	1.09
Within	51	102.9181	2.0180	
Error		0.0000		
Total	53	107.3081		

Table 4:20 gives the F values resulting from the analyses of variance for the three individual criterion tests.

TABLE 4:20

F VALUES FOR INDIVIDUAL CRITERION TESTS AND COMBINED
RESULTS FOR THE MIDDLE ACHIEVEMENT SUB-GROUP

Test	ILC	IIC	DLC	DIC
One	1.21	0.02	4.20*	0.80
Two	0.78	0.58	0.02	0.07
Three	0.39	2.03	0.31	1.16
Combined	0.34	1.01	0.68	1.09

* Significant at the .05 level.

Table 4:20 shows that a significant difference occurred for Delayed Literal Comprehension on the first criterion test. To investigate the source of this significant difference a series of three Scheffé tests were conducted in the manner described by Kerber (1967, pp. 368-374). The three comparisons made were between Control and Questions, Control

and Overview, and Questions and Overview.

The value of (F) for these comparisons was based on the value of the F-ratio at the .05 level. Due to unequal groups (Control N=19, Questions N=18, Overview N=18) two values of the standard error of the difference between means were calculated for the three comparisons. Table 4:21 gives the (F) value, the standard error of the difference between means, the resulting minimum value of significance, and the actual difference between means for each of the comparisons.

TABLE 4:21

SCHEFFE TESTS OF MIDDLE ACHIEVEMENT SUB-GROUP MEANS
FOR DELAYED LITERAL COMPREHENSION
ON THE FIRST CRITERION TEST

Comparison	Mean Score	(F)	Standard Error	Value of Min.Sig.	Diff.in Means
Control vs Questions	11.79 10.00	2.52	.933	2.35	1.79
Control vs Overview	11.79 12.67	2.52	.933	2.53	.88
Questions vs Overview	10.00 12.67	2.52	.895	2.26	2.67

Table 4:21 show that there was a significant difference between mean scores in the third comparison (Questions vs Overview). As the Overview mean score was higher than the Questions mean score it was concluded that for Delayed Literal Comprehension on the first criterion test the middle achievement sub-group of the Overview group achieved a significantly higher mean score than the middle achievement sub-group of the

Questions group.

Table 4:22 gives the mean scores for the sub-groups on all the comprehension categories for the combined analysis and Table 4:23 gives the mean scores achieved on the individual criterion tests.

TABLE 4:22

MEAN SCORES FOR THE MIDDLE ACHIEVEMENT SUB-GROUPS
ON COMBINED SESSIONS

Group	ILC	IIC	DLC	DIC
Control	11.76	5.87	12.06	5.72
Questions	11.94	5.28	11.11	5.26
Overview	12.58	5.93	12.09	5.94

TABLE 4:23

MEAN SCORES FOR THE MIDDLE ACHIEVEMENT SUB-GROUPS
ON INDIVIDUAL SESSIONS

Test	Group	ILC	IIC	DLC	DIC
1	Control	12.37	7.16	11.79	6.94
1	Questions	11.16	7.07	10.00	6.33
1	Overview	12.38	7.17	12.67	7.22
2	Control	11.58	5.58	12.39	5.72
2	Questions	11.94	5.00	12.17	5.72
2	Overview	13.17	5.72	12.39	5.94
3	Control	11.37	4.89	12.00	4.72
3	Questions	12.44	3.72	11.17	3.83
3	Overview	12.28	4.94	11.22	4.66

As in previous comparisons of mean scores the Overview group tended to achieve the highest mean score in each comprehension category while the Questions group achieved the lowest mean score. One notable exception occurred in the results for Immediate Literal Comprehension on the third criterion test where the Questions group achieved the highest mean score.

Analysis of Data for Low Achievement Sub-Groups

Hypotheses 13 through 16 dealt with the low achievement sub-groups. It was hypothesized that there would be no significant difference between these sub-groups on ILC (H_{013}), IIC (H_{014}), DLC (H_{015}), and DIC (H_{016}).

Tables 4:24, 4:25, 4:26, and 4:27 present the results of the analyses of variance for these four hypotheses. An F value of 3.19 is required for these analyses of variance to be significant at the .05 level.

TABLE 4:24

ANALYSIS OF VARIANCE FOR THE LOW ACHIEVEMENT SUB-GROUPS ON IMMEDIATE LITERAL COMPREHENSION

Source	df	SS	MS	F
Between	2	19.2062	9.6031	1.08
Within	48	426.0024	8.8751	
Error		-0.5499		
Total	50	444.6587		

TABLE 4:25

ANALYSIS OF VARIANCE FOR THE LOW ACHIEVEMENT SUB-GROUPS
ON IMMEDIATE INTERPRETATIVE COMPREHENSION

Source	df	SS	MS	F
Between	2	3.0031	1.5016	0.71
Within	48	101.0892	2.1060	
Error		0.0337		
Total	50	104.1261		

TABLE 4:26

ANALYSIS OF VARIANCE FOR THE LOW ACHIEVEMENT SUB-GROUPS
ON DELAYED LITERAL COMPREHENSION

Source	df	SS	MS	F
Between	2	28.2391	14.1196	1.50
Within	44	413.8086	9.4047	
Error		0.5646		
Total	46	442.6123		

TABLE 4:27

ANALYSIS OF VARIANCE FOR THE LOW ACHIEVEMENT SUB-GROUPS
ON DELAYED INTERPRETATIVE COMPREHENSION

Source	df	SS	MS	F
Between	2	14.1265	7.0632	3.52*
Within	44	88.2186	2.0050	
Error		0.2748		
Total	46	102.6198		

* Significant at the .05 level.

Tables 4:24, 4:25, and 4:26 show that there were no significant differences between the achievement of the low achievement sub-groups for ILC, IIC, and DLC. Therefore null hypotheses 13 through 15 were accepted.

Table 4:27 reveals that for Delayed Interpretative Comprehension there was a difference between the low achievement sub-groups that was significant at the .05 level. Therefore null hypothesis 16 was rejected.

The results of the analyses of variance conducted for the three individual criterion tests are given in Table 4:28.

TABLE 4:28

F VALUES FOR INDIVIDUAL CRITERION TESTS AND COMBINED RESULTS FOR THE LOW ACHIEVEMENT SUB-GROUPS

Test	ILC	IIC	DLC	DIC
One	0.35	0.14	1.46	1.10
Two	2.00	0.41	2.14	1.70
Three	0.15	2.55	2.21	3.37*
Combined	1.08	0.71	1.50	3.52*

* Significant at the .05 level.

Table 4:28 shows that a significant difference for Delayed Interpretative Comprehension also occurred on the third criterion test.

A series of three Scheffé tests, Control vs Questions, Control vs Overview, and Questions vs Overview, were conducted for both the combined results and the results of the third criterion test. The value of F for

these comparisons was based on the F-ratio at the .05 level.

Table 4:29 gives the results of the Scheffé tests for the combined results.

TABLE 4:29
SCHEFFÉ TESTS OF LOW ACHIEVEMENT SUB-GROUP MEANS
FOR DELAYED INTERPRETATIVE COMPREHENSION
ON THE COMBINED RESULTS

Comparison	Mean Score	(F)	Standard Error	Value of Min. Sig.	Diff. in Means
Control vs Questions	3.60 3.42	2.53	.509	1.29	.36
Control vs Overview	3.60 4.54	2.53	.509	1.29	.94
Questions vs Overview	3.42 4.54	2.53	.501	1.26	1.30

The results of the Scheffé tests given in Table 4:29 show that a significant difference between mean scores occurred in the third comparison (Questions vs Overview). As the Overview mean score was higher than the Questions mean score it was concluded that on Delayed Interpretative Comprehension the low achievement sub-group of the Overview group achieved a significantly higher mean score than the low achievement sub-group of the Questions group.

Table 4:30 gives the results of the Scheffé tests for the results of the third criterion test. Equal numbers in the three groups on the third criterion test result in the same standard error of the difference

between means and therefore the same minimum level of significance applies to all comparisons.

TABLE 4:30
SCHEFFE TESTS OF LOW ACHIEVEMENT SUB-GROUP MEANS
FOR DELAYED INTERPRETATIVE COMPREHENSION
ON THE THIRD CRITERION TEST

Comparison	Mean Score	(F)	Standard Error	Value of Min. Sig.	Diff. in Means
Control vs Questions	3.00 2.38	2.53	.632	1.60	.62
Control vs Overview	3.00 4.00	2.53	.632	1.60	1.00
Questions vs Overview	2.38 4.00	2.53	.632	1.60	1.62

Table 4:30 shows that there was a significant difference between mean scores in the third comparison (Questions vs Overview). As the Overview mean score was higher than the Questions mean score it was concluded that for Delayed Interpretative Comprehension on the third criterion test the low achievement sub-group of the Overview group achieved a significantly higher mean than the low achievement sub-group of the Questions group. As this is the same finding as occurred in the analysis of combined results it is assumed that the significant difference which occurred on the third criterion test contributed to the similar significant difference in the combined results.

The mean scores for all comprehension categories on the combined

analysis are given in Table 4:31. Table 4:32 gives the mean scores achieved on the three criterion tests.

TABLE 4:31

MEAN SCORES FOR THE LOW ACHIEVEMENT SUB-GROUPS
ON COMBINED SESSIONS

Group	ILC	IIC	DLC	DIC
Control	10.53	3.78	9.09	3.60
Questions	9.02	3.57	7.77	3.24
Overview	9.81	4.16	9.62	4.54

TABLE 4:32

MEAN SCORES FOR THE LOW ACHIEVEMENT SUB-GROUPS
ON INDIVIDUAL SESSIONS

Test	Group	ILC	IIC	DLC	DIC
1	Control	11.24	4.71	9.19	4.44
1	Questions	10.37	4.44	8.31	3.94
1	Overview	10.39	4.89	10.06	5.00
2	Control	10.71	3.47	10.53	3.60
2	Questions	7.75	3.00	7.38	3.44
2	Overview	9.39	3.50	9.25	4.69
3	Control	9.41	2.82	7.44	3.00
3	Questions	8.94	3.31	7.63	2.38
3	Overview	9.71	4.06	9.63	4.00

As with the comparison of means for the high and middle achievement groups there is a tendency, shown in Tables 4:31 and 4:32, for the

Overview group to achieve a higher mean score than the Questions group. For the low achievement sub-groups this difference achieved significance once in the individual sessions and once in the combined sessions, as discussed above.

Summary

The first fifteen of the sixteen stated null hypotheses were accepted as analyses of variance revealed that no significant differences had occurred among the testing groups. Hypothesis 16, which stated that there would be no significant difference among the low achievement sub-groups of the testing groups for Delayed Interpretative Comprehension, was rejected when analysis of variance revealed a significant difference at the .05 level. A series of Scheffé tests revealed that the Overview group achievement had been significantly higher than the Questions group achievement.

A comparison of mean scores revealed an apparent pattern in which the Overview group achieved the highest mean scores while the Questions group achieved the lowest mean scores. While the pattern achieved a significant difference in only two instances on individual criterion tests and once for the combined results, the consistency of the pattern made the trend noteworthy. Table 4:33 gives the distribution of the mean scores for the sixteen combined results comparisons and the forty-eight individual test comparisons, a total of sixty-four comparisons.

TABLE 4:33

FREQUENCY OF THE PLACEMENT OF MEAN SCORES

Group	Highest	Frequency Middle	Lowest	Total
Overview	51.0	10.0	3.0	64
Control	12.0	44.5	7.5	64
Questions	1.0	9.5	53.5	64

Two instances of a significant difference were found in the analysis of individual test results. One instance occurred in the results of the first criterion test for middle achievement sub-groups on Delayed Literal Comprehension. The significantly higher achievement of the Overview group in relation to the Questions group on that criterion test was lost in the comparable analysis of variance for the combined results. The significantly higher achievement of the low achievement sub-group of the Overview group in relation to the low achievement sub-group of the Questions group for Delayed Interpretative Comprehension on the third criterion test contributed to a comparable significant difference on the analysis of variance for the combined results, the finding that resulted in the rejection of null hypothesis 16.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study was designed to investigate the effect of two advance organizers, Purposeful Questions and Structured Overview, on the comprehension of chronologically-organized Social Studies material by grade eight students. The effect of the organizers was measured on four distinct comprehension categories--Immediate Literal, Immediate Interpretative, Delayed Literal, and Delayed Interpretative.

Specifically the study sought to determine whether, compared with no advance organizer, the use of either advance organizer significantly affected comprehension in any of the four categories for the:

- a) total testing groups;
- b) high reading achievement sub-groups;
- c) middle reading achievement sub-groups;
- d) low reading achievement sub-groups.

Analysis of the data yielded the following findings:

1. There were no significant differences found among the mean scores of the total testing groups in any of the four comprehension categories in either the analysis of the combined results or the analysis of the results of the three individual criterion tests.

2. There were no significant differences among the mean scores of the high achievement sub-groups in any of the four comprehension categories in either the analysis of the combined results or the analysis

of the results of the three individual criterion tests.

3. There were no significant differences found among the mean scores of the middle achievement sub-groups in any of the four comprehension categories in the analysis of the combined results. In the analysis of the results for the middle achievement sub-groups on the individual criterion tests a difference in means scores, significant at the .05 level, was found on the first criterion test for Delayed Literal comprehension. Post-hoc testing showed that the mean score of the Overview sub-group was significantly higher than the mean score of the Questions sub-group. The analysis of the results of the individual criterion tests was undertaken only to investigate the consistency of results through the three testing sessions. The null hypothesis stating that there would be no significant difference between the mean scores of the middle achievement sub-groups on Delayed Literal comprehension was accepted on the basis of the non-significant finding for the analysis of combined results.

4. There was a difference, significant at the .05 level, among the mean scores of the low achievement sub-groups for Delayed Interpretative Comprehension on the analysis of combined results. Post-hoc testing showed that the mean score of the low achievement sub-group of the Overview group was significantly higher than the mean score of the low achievement sub-group of the Questions group. Analysis of the results of the individual criterion tests revealed that a similar significant difference between the Overview sub-group and the Questions

sub-group occurred in the results of the third criterion test but not in the results of the first two criterion tests.

5. There was no significant difference found among the mean scores of the low achievement sub-groups for Immediate Literal, Immediate Interpretative, and Delayed Literal comprehension in either the analysis of the combined results or the analysis of the results of the individual criterion tests.

6. A pattern in the distribution of mean scores was noted in which the Overview group tended to achieve higher mean scores than the Control group while the Control group tended to achieve higher mean scores than the Questions group. These differences achieved significance only in the three instances noted above.

Conclusions and Discussion

As one significant difference among mean scores was found on the analysis of combined results, only one of the stated null hypotheses could be rejected. The acceptance of fifteen of the sixteen null hypotheses can only result in a conclusion that the advance organizers utilized in this study were not generally effective as aids to the comprehension of the learning passages employed. This is substantiated by the fact that there were only two significant findings in the forty-eight analyses of individual criterion test results.

This preponderance of non-significant findings must be taken into consideration when considering the single rejected null hypothesis. Any

conclusions regarding the significant differences obtained between the mean scores of the low achievement sub-groups of the Overview and Questions group must take into consideration the possibility of spurious significant findings. Hays (1964) states: "Given enough significance tests, you are almost bound to get at least one significant result, even though the experiment is the purest nonsense" (p. 489). While Hays was warning primarily against the indiscriminate use of multiple planned comparisons, he also extends it into a general warning against "the overinterpretation of single significant findings" (p. 489). The finding of a similar significant difference in the results of the third criterion test cannot be used as a second significant finding to corroborate the validity of the significant difference in the analysis of combined results. They are not independent analyses as the results of the combined analysis relies in part on the results of the third criterion test.

It must also be remembered that the significant difference occurred between the mean scores of the two experimental groups, not between experimental and control groups. The low achievement subjects who received the Overview advance organizer did not achieve a significantly higher mean score than the low achievement subjects who received no advance organizer.

In the light of the above comments, the most definitive conclusion that can reasonably be stated is that there is an indication that if the overview employed was in any way effective in enhancing comprehension of

the learning passage it was in the specific area of delayed interpretative comprehension for subjects of low reading achievement.

As simply an indication of a possible facilitating effect, this conclusion invites further research especially as there is little in the literature in the area of delayed retention by poor readers. Those studies reported in Chapter II which included reading achievement as a variable did not include reports of delayed testing. Of those studies which did include a measure of retained comprehension the one that this study most nearly approximates is that of Allen (1970) which investigated the effects of advance organizers and post-questions on the learning of grade twelve Social Studies material. The results indicated that for low I. Q. subjects a "specific facilitation" attributed to the post-questions was made more resistant to forgetting by the addition of a prose advance organizer. As Allen's definition of "specific facilitation" approaches that of literal comprehension rather than interpretative comprehension and as I. Q. was employed as a variable rather than reading achievement, the results of this study cannot be said to substantiate his findings. However, Allen also found that for the above average I. Q. subjects the addition of the advance organizer resulted in a "general facilitation" of learning on the delayed test but not on the immediate test of comprehension. This suggests that advance organizers may be most effective as aids to the retention of learning rather than as aids to immediate comprehension. All three significant findings of the present study occurred within the area of delayed comprehension.

Smith and Hesse (1969) also used reading achievement as a variable in an attempt to determine the effect of a taped advance organizer on the comprehension of Science material by grade eleven subjects. The only significant finding reported in this study was an improvement in the ability of poor readers to determine the main idea of the passage as measured by an immediate test of comprehension. As the single rejected null hypothesis of the present study dealt with poor readers it could be suggested that this is support for the possibility of advance organizers being most effective for students of poor reading ability. However, this cannot be substantiated by previous research. Proger et al. (1970b) found no significant advantage for advance organizers relative to reading achievement while Carter et al. (1970) found a combination of covert advance organizers to be significantly better than a combination of overt advance organizers for grade six girls at, or above, their grade level in reading achievement.

The significant difference found in the Carter (1970) study, as with this study, was a difference between experimental groups and not between experimental procedures and control. This type of equivocal finding was also noted in the studies of Jerrolds (1967) and Bayuk, Proger and Mann (1971). Since the remainder of the studies concerned with advance organizers at the level of secondary education are unresponsive of the facilitating effects of advance organizers, the acceptance of fifteen of the sixteen null hypotheses of this study must be said to be in keeping with the general lack of any consistent support for the use

of advance organizers as aids to comprehension for students at the secondary level of education.

The general failure of advance organizers to function as aids to comprehension at the secondary level of education requires that the theoretical assumptions suggesting such aids be re-examined.

The findings of studies investigating the effects of advance organizers are related more directly to Ausubel's theory of meaningful reception learning than to Rothkopf's theory of mathemagenic behavior. As detailed in Chapter II, the theory of mathemagenic behavior grew out of research into programmed learning and its supportive research had dealt primarily with test-like questions and their effect on learning. The only link between mathemagenic theory and advance organizers is the assumption that, if advance organizers contain attention-directing elements similar to test-like questions, they should affect comprehension as do test-like questions.

However, the research findings supportive of the theory of mathemagenic behavior have found a significant effect for interspersed questions and post-questions, not pre-questions. The study by Bauman and Glass (1969) which utilized prose organizers explained the findings in terms of the theory of mathemagenic behavior because it was the post prose organizers, not the advance prose organizers, that demonstrated facilitative effects on comprehension. In this sense, the present study supports previous findings that attention-directing devices, if advance organizers are so considered, are not effective when placed prior to the learning material.

If the noted trend in the distribution of mean scores is given any credence, it could be suggested that any effect of advance organizers as attention-directing devices is minimal and could possibly be adverse as well as helpful as the mean scores of Questions group tended to fall below the mean scores of the Control group. Rothkopf explained negative effects of attention-directing devices by suggesting that any such finding indicates that mathemagenic behavior is adaptive, which still allows the shaping of mathemagenic behavior to achieve positive results (Rothkopf 1970, p. 333).

As advance organizers are directly linked to Ausubel's theory of meaningful reception learning the general failure of advance organizers at the secondary level of education reflects directly on this theory. Any re-examination of the theory of meaningful reception learning in the light of research findings must consider three possibilities. First, there is the possibility that the aids employed in studies at this level of education do not meet the requirements of the theoretical assumptions on which they are based in that they do not adequately provide the inclusive concepts under which subsuming concepts can be organized. Second, there is the possibility that the learning theory itself is incomplete, inadequate, or inapplicable when applied to subjects at this level of education. The third possibility is that there may be intervening factors which prohibit the organizers from achieving the success demonstrated at a higher level of education.

As noted in Chapter II, the advance organizers employed in most

studies conducted at the secondary level of education differ from the five hundred word prose organizers used by Ausubel in that they are modifications of such organizers or are other forms of organizers deemed to have the same effect as the longer prose form. In fact, Herber (1968) lists structured overviews and purposeful questions as separate possible aids to comprehension rather than as forms of advance organizers (p.5). Therefore, it could be suggested that the shorter devices, generally categorized as advance organizers, do not qualify as advance organizers in the Ausubelian sense. Ausubel describes his advance organizers as introductory material written at a higher level of abstraction, generality, and inclusiveness than the learning task itself (Ausubel 1960, p. 268). It should be noted, however, that the study by Jerrolds (1967) did not reveal any significant effect of five hundred word prose organizers on the comprehension of grade nine subjects.

The second consideration is the possibility that the learning theory itself is incomplete or inapplicable when applied to this level of education. This possibility is neither supported nor rejected by a study like this. The apparent success of advance organizers at the University level of education and their general failure at the secondary level of education suggests that the theory, as it has been applied in the research, is not adequate to explain the reception learning of subjects at the lower educational level, but it has not been ascertained whether this is due primarily to defects in the theory or to intervening factors which may, at this level, inhibit the functioning of advance organizers

as an aid to comprehension. That is to say, Ausubel's theory of cognitive organization may be accurate, but some factor, or factors, related to age, maturity, degree of experience, ability, achievement, or the nature of the learning task may prevent the subjects from utilizing the more inclusive concepts of the organizer as an aid to the reception and retention of subsuming concepts.

The third possibility of intervening factors is closely linked with the notion that the basic underlying theory is inadequate. It is really a matter of the degree to which the theory must be modified to adequately explain the reception learning of secondary grade subjects. If any factor, or combination of factors, was found to be prerequisite to the effective use of advance organizers for subjects at the secondary level of education, it would be necessary to determine if they are factors that can be taught to the students in those grades or whether they are factors dependent on increasing maturity or educational and experiential background. The teaching of prerequisites implies the acceptance of the theory and the utilization of its ramifications to increase the learning capacity of secondary students. The need to wait for developing factors implies an inadequacy in the theory at this level of education.

Implications for Further Research

As has been suggested above, the predominance of non-significant findings in this and prior studies of advance organizers should not be regarded as a warning against the expenditure of further effort in the

area of advance organizers as aids to learning, but should rather be regarded as an indication that much has yet to be done before definitive conclusions regarding advance organizers can be reached. As has been implied in the discussion of the findings of this study, further research should concern itself with the investigation of factors that may control the effectiveness of advance organizers as aids to comprehension as such research would answer questions concerning the appropriateness of advance organizers and the adequacy of the learning theory on which they are based.

This investigation of possible controlling factors could utilize a series of specific reading and study skills or content area competencies as variables for the studies. Any significant finding should then be further investigated by studies to determine whether instruction in the skill increases the effectiveness of the advance organizer.

Further research should also be conducted to determine the effect of training in the use of the organizers on its effectiveness as an aid to comprehension. Jerrolds (1967) found that training in the use of a modified advance organizer resulted in a significant difference between high I. Q. subjects who had such training and high I. Q. subjects who did not receive training although neither group achieved results significantly different from the control group.

As this study found a significant difference between the mean achievement of the two experimental groups of low reading achievement subjects on a delayed test of interpretative comprehension, and as previous research includes findings which suggest the possibility of significant

effects for advance organizers in the areas of retained comprehension and comprehension by poor readers, further investigation into these areas is warranted.

With reference to delayed measures of comprehension, it would be of interest to measure the effect of advance organizers over several intervals of delay ranging from an immediate measure through several weeks. With regard to reading achievement, a comparison of the reading skills profiles of those subjects for whom advance organizers have demonstrated some effectiveness with those of the subjects for whom advance organizers appear ineffectual might, in turn, suggest variables for further studies aimed at identifying groups for whom advance organizers could be an effective aid to learning.

For any such future research into the effects of advance organizers on comprehension the following suggestions are made:

1. The levels of comprehension measured by criterion tests should be extended;
2. The modes of organizers employed should be further manipulated;
3. The length, readability, and internal organization of the learning passage should be further manipulated;
4. Variables utilized in the studies should be measured by a means which allows replication.

Ideal for any such series of studies would be a co-ordinating agency which could effectively assure consistency in such matters as the generation of organizers and the definition of levels of comprehension.

However, if future studies clearly describe the levels of comprehension being measured and the method of generation of the organizers employed, as has been attempted in this study, realistic comparisons between various independent studies would be facilitated.

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APPENDIX

APPENDIX A

RAW DATA

Explanation of columnar headings.

<u>Column</u>	<u>Data</u>
1	Subject identification number.
2	Reading achievement sub-group and testing group. Achievement: H = high, M = middle, L = low. Testing group: C = Control, Q = Questions, O = Overview.
3	Immediate literal comprehension on the first test.
4	Immediate literal comprehension on the second test.
5	Immediate literal comprehension on the third test.
6	Mean score for immediate literal comprehension.
7	Delayed literal comprehension on the first test.
8	Delayed literal comprehension on the second test.
9	Delayed literal comprehension on the third test.
10	Mean score for delayed literal comprehension.
11	Immediate interpretative comprehension on the first test.
12	Immediate interpretative comprehension on the second test.
13	Immediate interpretative comprehension on the third test.
14	Mean score for immediate interpretative comprehension.
15	Delayed interpretative comprehension on the first test.
16	Delayed interpretative comprehension on the second test.
17	Delayed interpretative comprehension on the third test.

18 Mean score for delayed interpretative comprehension.

Note: * indicates a calculated score.

DATA

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
198A1	HC	13	17	15	15.0	12	17	12	13.7	8	5	7	6.7	6	7	3	5.3
278A1	HC	14	14	17	15.0	12	16	14	14.0	7	6	7	6.7	8	7	6	7.0
68A2	HC	21	12	16	16.3	16	11	16	14.3	9	9	5	7.7	10	9	6	8.3
198A2	HC	19	19	18	18.7	19	18*	19	18.7	10	10	3	7.7	11	8*	6	8.3
298A2	HC	15	11	14	13.3	15	6	12	11.0	12	3	0	5.0	11	5	4	6.7
118A3	HC	14	11	13*	12.7	11	5	9*	8.3	11	3	5*	6.3	8	3	5*	5.3
28M	HC	14	16*	18	16.0	13	14*	19	15.3	9	8*	7	8.0	8	7*	7	7.3
98M	HC	13	19	10	14.0	13	13	10	12.0	7	10	6	7.3	8	8	3	6.3
208M	HC	5	13	15	11.0	7	7	8*	7.3	7	7	5	6.3	3	6	4*	4.3
328M	HC	8	15	11	11.3	7	9	10	8.7	7	7	5	6.3	3	5	4	4.0
78B1	HC	20	17	18	18.3	20	16	18	18.0	11	8	9	9.3	10	9	8	9.0
128B1	HC	20	20	17	19.0	19	16	17	17.3	8	10	10	9.3	8	8	11	9.0
228B1	HC	12	20	22	18.0	16	20	21	19.0	7	8	6	7.0	8	9	5	7.3
18B2	HC	16	19	18	17.7	16	17	20	17.7	10	9	8	9.0	11	6	5	7.3
18B2	HC	17	17*	17	17.0	15	14*	18	15.7	9	6*	4	6.3	9	6*	4	6.3
48B2	HC	13	15	13	14.0	10	12	14	12.0	8	4	3	5.0	7	7	1	5.0
78B2	HC	11	7	10	9.3	13	7	10	10.0	8	7	9	8.0	6	1	10	6.3
128B2	HC	11	15	14*	13.3	10	--	--	----	9	6	6*	7.0	9	-	-	---

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
38A1	MC	11	11	6	9.3	11	11*	12	11.3	8	6	3	5.7	5	3*	1	3.0
58A1	MC	9	15	10	11.3	14	17	12	14.3	9	9	2	6.7	5	10	4	6.3
68A1	MC	15	17	14	15.3	14	16	10	13.3	8	8	6	7.3	9	7	7	7.7
148A1	MC	9	10	9*	9.3	11	--	--	----	8	5	5*	6.0	12	-	-	---
228A2	MC	10	7	8	8.3	10	6	9	8.3	5	5	6	5.3	8	5	5	6.0
238A2	MC	15	15	15	15.0	15	10	18	14.3	10	6	7	7.7	8	7	3	6.0
48A3	MC	12	13	10	11.7	14	16	13	14.3	9	5	8	7.3	8	5	7	6.7
148A3	MC	13	13	11	12.3	10	17	15*	14.0	9	7	6	7.3	8	7	6*	7.0
168M	MC	11	12	12	11.7	6	14	13	11.0	6	7	6	6.3	5	7	6	6.0
248M	MC	7	10	5	7.3	8	9	8	8.3	5	3	2	3.3	5	1	3	3.0
258M	MC	19	12	13	14.7	15	10	12	12.3	6	6	5	5.7	7	6	3	5.3
148B1	MC	11	17	14	14.0	12	16	13	13.7	4	6	4	4.7	4	6	4	4.7
178B1	MC	16	13	13	14.0	14	13	15	14.0	7	6	2	5.0	6	8	2	5.3
198B1	MC	10	8	9	9.0	11	18	13	14.3	10	1	5	5.3	9	7	8	8.0
268B1	MC	18	13	18	16.3	18	17*	16	17.0	5	6	6	5.7	6	7*	7	6.7
118B2	MC	13	8	10	10.3	13	8	11	10.7	3	6	4	4.3	5	4	4	4.3
158B2	MC	17	14	17	16.0	14	15	13	14.0	11	9	8	9.3	10	6	8	8.0
218B2	MC	10	2	7	6.3	5	1	3*	3.0	6	0	3	3.0	7	2	3*	4.0
258B2	MC	9	10	15	11.3	9	9	10*	9.3	7	5	5	5.7	6	5	4*	5.0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
48A1	LC	9	9	11	9.7	8	--	--	----	3	3	2	2.7	-	-	-	---
168A1	LC	10	16	15	13.7	--	--	8	----	11	3	3	5.7	-	-	8	---
248A1	LC	13	16	3	10.7	12	20	7	13.0	5	7	4	5.3	7	7	1	5.0
288A1	LC	9	4	14	10.3	7*	6	8	7.0	6	2	3	3.7	4*	2	4	3.3
78A2	LC	14	13	9	12.0	13	15	6	11.3	5	2	4	3.7	4	5	3	4.0
258A2	LC	11	10	4	8.3	9	8	6	7.7	3	4	5	4.0	1	0	4	1.7
18A3	LC	16	5	10	10.3	5	7	5	5.7	6	2	3	3.7	2	5	1	2.7
258A3	LC	15	17	18	16.7	13	15	9	12.3	8	5	2	5.0	7	6	2	5.0
18M	LC	7	5	7	6.3	3	5	3*	3.7	2	1	1	1.3	3	2	2*	2.3
48M	LC	11	16	16	14.3	11	17	13	13.7	9	6	2	5.7	8	5	3	5.3
68M	LC	7	4	9	6.7	8	6	4	6.0	5	3	4	4.0	4	1	3	2.7
148M	LC	9	10	6	8.3	9	9*	7	8.3	1	3	2	2.0	3	3*	3	3.0
188M	LC	9	7	2	6.0	7	6	4	5.7	2	2	5	4.7	3	1	4	2.7
228M	LC	14	14	9	12.3	11	12	12	11.7	5	5	3	4.3	7	5	3	5.0
168B1	LC	13	13	13	13.0	10	14	15	13.0	1	4	3	2.7	5	6	1	4.0
208B1	LC	--	--	--	----	--	--	--	----	-	-	-	---	-	-	-	---
218B1	LC	12	12	5	9.7	10	9	7	8.7	2	2	1	1.7	4	4	4	4.0
248B1	LC	12	11	9	10.7	11	9	5	8.3	6	5	1	4.0	6	2	2	3.3

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
138A1	HQ	4	17	19	16.7	16	18	18	17.3	7	6	8	7.0	7	8	9	8.0
238A1	HQ	10	16	9	11.7	11	9	8	9.3	4	8	5	5.7	5	4	2	3.7
118A2	HQ	14	9	6	9.7	10	6	6	7.3	10	1	2	4.3	8	2	3	4.3
128A2	HQ	--	--	--	----	--	--	--	----	-	-	-	---	-	-	-	---
208A2	HQ	17	17	16	16.7	14	--	--	----	11	9	6	8.7	7	-	-	---
288A2	HQ	14	17	4	11.7	11	15	15	13.7	9	10	1	6.7	10	9	2	7.0
308A2	HQ	14	15	12	13.7	13	7	12	10.7	6	9	3	6.0	9	6	4	6.3
58A3	HQ	13	16	15	14.7	16	8	12	12.0	12	8	6	8.7	9	5	6	6.7
158A3	HQ	12	13	15	13.3	12	11	13*	12.0	10	7	7	8.0	9	6	5*	6.7
198A3	HQ	17	20	16	17.7	19	19	17	18.3	10	8	8	8.7	10	8	8	8.7
218A3	HQ	10	13	17	13.3	10	12	15	12.3	7	4	4	5.0	7	5	8	6.7
228A3	HQ	15	18	15	16.0	13	18	13	14.7	7	7	6	6.7	8	8	6	7.3
108M	HQ	15	12	5	10.7	13	12	5	10.0	6	9	2	6.3	5	5	2	4.0
18B1	HQ	16	19	17	17.3	14	17	15	15.3	10	7	7	8.0	9	9	9	9.0
68B1	HQ	14	12	12	12.7	13	11	11	11.7	9	7	9	8.3	9	7	9	8.3
148B2	HQ	15	14	15	14.7	14	14	14	14.0	10	7	7	8.0	10	8	7	8.3
188B2	HQ	18	20	18	18.7	13	17	17	15.7	6	6	7	6.3	7	8	6	7.0
208B2	HQ	13	14	15	14.0	12	11	14	12.3	7	3	4	4.7	6	3	5	4.7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
158A1	MQ	11	13	9	11.0	8	13	8	9.7	7	8	2	5.7	3	6	1	3.3
98A2	MQ	12	15	13	13.3	11	12	10	11.0	8	7	2	5.7	8	4	4	5.3
158A2	MQ	16	17	11	14.7	12	16	11	13.0	8	5	3	5.3	8	5	2	5.0
218A2	MQ	14	16	10	13.3	10	17	9	12.0	10	2	5	5.7	7	6	1	4.7
268A2	MQ	7	13	9	9.7	8	14	13	11.7	7	7	5	6.3	8	8	2	6.0
78A3	MQ	13	7	12	10.7	13	9	12	11.3	9	3	2	4.7	6	6	4	5.3
208A3	MQ	8	4	8	6.7	7	4	6	5.7	6	1	2	3.0	4	4	4	4.0
38M	MQ	11	8	4	7.7	8	6	8	7.3	4	3	1	2.7	8	5	3	5.3
128M	MQ	11	12	12	11.7	10	13	12	11.7	8	6	7	7.0	7	8	5	6.7
238M	MQ	13	11	13	12.3	10	16	9	11.7	9	4	4	5.7	8	6	2	5.3
288M	MQ	8	8	13	9.7	8	11	9	9.3	6	4	4	4.7	4	2	7	4.3
318M	MQ	6	3	6	5.0	6*	6	7	6.3	3	4	0	2.3	4*	2	3	3.0
38B1	MQ	16	20	19	18.0	15	21	18	18.0	10	7	8	8.3	9	7	7	7.7
138B1	MQ	10	14	17	13.7	9	13	15	12.3	7	10	5	7.3	7	10	5	7.3
188B1	MQ	6	10	17	11.0	8	8	10	8.7	5	4	4	4.3	3	5	5	3.7
68B2	MQ	16	15	16	15.7	13	14	13	13.3	9	3	2	4.7	7	5	1	4.3
198B2	MQ	6	--	--	----	13	--	--	----	6	-	-	----	5	-	-	----
238B2	MQ	12	11	15	12.7	10	9	12	10.3	6	5	3	4.7	8	4	5	5.7
248B2	MQ	16	18	20	18.0	14	17	19	16.7	6	7	8	7.0	5	10	8	7.7

1	2	3	4	5	6	6	8	9	10	11	12	13	14	15	16	17	18
78A1	LQ	16	8	14	12.7	10	7	9	8.7	4	4	1	3.0	3	4	0	2.3
98A1	LQ	14	13	6	11.0	9	7	4	6.7	3	3	3	3.0	5	4	1	3.3
228A1	LQ	14	12	8	11.3	15	11	6	10.7	6	6	7	6.3	5	7	3	5.0
268A1	LQ	12	5	17	11.3	9	7	16	10.7	5	2	5	4.0	4	5	3	4.0
38A2	LQ	11	4	5	6.7	7	7	8	7.3	6	4	3	4.3	2	2	1	1.7
188A2	LQ	6	5	6	5.7	6	6	4	5.3	5	1	1	2.3	1	2	1	1.3
68A3	LQ	9	10	8	9.0	6	2	4*	44.0	2	2	3	2.3	2	0	1*	1.0
88A3	LQ	--	--	--	----	--	--	--	----	-	-	-	---	-	-	-	---
138A3	LQ	10	18	10	12.7	8	6	11	8.3	4	5	4	4.3	3	3	1	2.3
238A3	LQ	12	5	12	9.7	8	7	7	7.3	5	3	1	3.0	5	5	2	4.0
248A3	LQ	12	12	13	12.3	9	17	18	14.7	9	5	7	7.0	8	6	8	7.3
78M	LQ	14	1	3	6.0	10	5	5	6.7	6	2	5	4.3	2	1	3	2.0
138M	LQ	5	6	7	6.0	9	6	5	6.7	0	2	1	1.0	4	4	3	3.7
178M	LQ	6	12	12	10.0	6	9	8	7.7	2	5	3	3.3	5	6	4	5.0
198M	LQ	7	3	4	4.7	7	6	3	5.3	2	0	1	1.0	4	2	2	2.7
268M	LQ	4	1	7	4.0	3	5	8	5.3	4	0	3	2.3	1	3	2	2.0
278M	LQ	--	--	--	----	--	--	--	----	-	-	-	---	-	-	-	---
28B2	LQ	14	9	11	11.3	11	10	6	9.0	8	4	5	5.7	9	1	3	4.3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
28A1	HO	14	17	15	15.3	20	19	16	18.3	11	8	8	9.0	11	7	7	8.3	
178A1	HO	13	17	12	14.0	11	14	11	12.0	10	8	4	7.3	9	7	6	7.3	
258A1	HO	18	15	18	17.0	15	16*	17	16.0	9	9	8	8.7	11	10*	8	9.7	
58A2	HO	14*	18	15	15.7	14*	18	13	15.0	6*	6	5	5.7	9*	6	9	8.0	
178A2	HO	11	13	14	12.7	9	2	9	6.7	6	1	4	3.7	6	3	4	4.3	
248A2	HO	16	20	17	17.7	13	15	16	14.7	12	9	11	10.7	9	7	11	9.0	
188A3	HO	15	15	13	14.3	18	16	16	16.7	8	9	4	7.0	9	9	6	8.0	
58M	HO	13	13	13*	13.0	11	13	12*	12.0	6	8	6*	6.7	6	7	5*	6.0	
118M	HO	20	20	20	20.0	20	18	21	19.7	10	8	8	8.7	11	9	8	9.3	
298M	HO	20	16	20	18.7	16	14	17	15.7	9	7	7	7.7	8	9	6	7.7	
308M	HO	8	15	10	11.0	8	17	13	12.7	8	9	8	8.3	6	8	5	6.3	
48B1	HO	14	20	19	17.7	17	21	20	19.3	11	10	7	9.3	12	9	6	9.0	
58B1	HO	16	15	17	16.0	12	16	18	15.3	7	9	8	8.0	7	9	7	7.7	
38B2	HO	13	17	13	14.3	12	12	12	12.0	5	6	10	7.0	5	6	6	5.7	
58B2	HO	12	15	13	13.3	10	12	12	11.3	4	6	3	4.3	4	7	2	4.3	
88B2	HO	11	19	14	14.7	9	19	12	13.3	8	9	6	8.7	7	8	5	6.7	
138B2	HO	13	16	14	14.3	11	13	13	12.3	9	8	5	7.3	12	6	6	8.0	
178B2	HO	11	13	15	13.0	10	12	16	12.7	5	7	6	6.0	6	6	4	5.3	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
108A1	MO	9	14	10	11.0	13	13	15	13.7	4	4	2	3.3	5	7	8	6.7
118A1	MO	11	13	14	12.7	13	13	13	13.0	6	7	2	5.0	5	7	7	6.3
18A2	MO	9	8	6	7.7	8	4	5	5.7	5	4	4	4.3	7	8	3	6.0
88A2	MO	--	--	--	----	--	--	--	----	-	-	-	----	-	-	-	----
108A2	MO	10	13	18	13.7	9	12	16	12.3	8	8	8	8.0	6	10	5	7.0
138A2	MO	10	14	20	14.7	10	14	11*	11.7	5	5	5	5.0	7	5	4*	5.3
278A2	MO	16	14	8	12.7	14	11	6	10.3	9	7	4	6.7	7	4	2	4.3
38A3	MO	17	19	12	16.0	17	20	12	16.3	11	9	5	8.3	12	8	6	8.7
98A3	MO	17	15	18	16.7	16	14	17	15.7	9	7	8	8.0	9	5	6	6.7
298A3	MO	10	7	9	8.7	10	5	7	7.3	6	2	9	5.7	7	3	4	4.7
158M	MO	14	15	11	13.3	14	10	6	10.0	6	7	5	6.0	6	5	5	5.3
218M	MO	10	14	12	12.0	14	15	12	13.7	6	5	5	5.3	6	5	5	5.3
88B1	MO	17	18	17	17.3	13	15	17	15.0	11	4	4	6.3	10	5	4	6.3
98B1	MO	10	13	11	11.3	12	13	10	11.7	5	5	3	4.3	4	7	5	5.3
108B1	MO	15	19	14	16.0	16	18	13	15.7	8	4	4	5.3	8	4	3	5.0
118B1	MO	10	7	7	8.0	9	7	9	8.3	7	6	4	5.7	4	3	3	3.3
158B1	MO	16	14	12	14.0	14	13	10	12.3	7	5	4	5.3	7	8	3	6.0
98B2	MO	16	9	11	12.0	12	14	13	13.0	5	8	5	6.0	8	7	5	6.7
108B2	MO	14	11	11	12.0	14	12	10	12.0	11	6	8	8.3	12	6	6	8.0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
88A1	LO	9	8	11	9.3	7	8	7*	7.3	3	2	2	2.3	2	1	1*	1.3
128A1	LO	5	8	10	7.7	7	8	10*	8.3	6	6	3	5.0	6	6	5*	5.7
188A1	LO	8	8	8	8.0	8	11	7	8.7	6	4	4	4.7	5	4	5	4.7
208A1	LO	14	15	15	14.7	12	13	12*	12.3	4	5	4	4.3	7	4	5*	5.3
218A1	LO	13	11	14	12.7	12	9	8	9.7	8	7	5	6.7	8	7	5	6.7
48A2	LO	10	8	7	8.3	--	--	5	----	9	5	4	6.0	-	-	3	----
148A2	LO	14	13	14	13.7	14	14	14	14.0	4	4	5	4.3	5	4	6	5.0
168A2	LO	12	3	2	5.7	9	2	9	6.7	6	1	4	3.7	6	3	4	4.3
28A3	LO	6	13	10	9.7	15	7	3	8.3	4	2	5	3.7	5	2	2	3.0
108A3	LO	17	8	15	13.3	11	19	18	16.0	5	5	7	5.7	4	8	8	6.7
128A3	LO	10	4	11	8.3	9	14	13	12.0	4	1	5	3.3	2	7	4	4.3
168A3	LO	4	3	5	4.0	5	3	6	4.7	1	5	2	2.7	2	5	3	3.3
178A3	LO	9	9	9	9.0	11	--	--	----	1	2	2	1.7	6	-	-	----
268A3	LO	8	15	11	11.3	9	13	12	11.3	5	4	5	4.7	6	2	4	4.0
258B1	LO	7	9	2	6.0	4	2	3	3.0	2	2	6	3.3	3	5	2	3.3
168B2	LO	13	11	13	12.3	11	9	15	11.7	6	2	4	4.0	5	6	3	4.7
228B2	LO	15	10	7	10.7	15	5	10*	10.0	7	1	3	3.7	7	5	5*	5.7
268B2	LO	13	13	11	12.3	12	11	7	10.0	7	5	3	5.0	6	6	2	4.7

APPENDIX B

MATERIALS FOR THE FIRST IMMEDIATE AND DELAYED
TESTING SESSION

1. Control group introduction.
2. Purposeful Questions group advance organizer.
3. Structured Overview group advance organizer.
4. Learning passage.
5. Criterion test.

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. Read the passage beginning on the next page carefully and then follow the directions for the answering of the quiz.

When you have read this page turn it over and do not look at it again.

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. The questions below are given to help you to understand and remember the passage. Read these questions carefully. You will not be able to remember them all but try to remember as much as you can. As you read the passage look for information that answers each of the questions.

When you have finished reading the questions carefully, turn this page over and do not look at it again, then read the passage beginning on the next page.

Questions

1. What is meant by the "age of chivalry"?
2. What were the weapons of war during this age?
3. In what order did these weapons come into use?
4. What were the advantages of each weapon?
5. In what way did armor change as weapons changed?
6. What other changes occurred as weapons changed?
7. How did these changes affect the knights?

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. The outline below is given to help you to understand and remember the passage. Read this outline carefully. You will not be able to remember it all but try to remember the order of the ideas. As you read the passage look for information that goes with each of these ideas.

When you have finished reading the outline carefully, turn this page over and do not look at it again, then read the passage beginning on the next page.

Outline

- A. Introduction
 - 1. definition of the "age of chivalry"
- B. Changes in Warfare
 - 1. early methods and weapons
 - 2. changes in weapons
 - a. types
 - b. advantages of each type
 - c. further changes caused by the use of each type.
 - 3. changes in armor
 - a. types of construction
 - b. advantages of each type
- C. Results of the changes
 - 1. on the method of warfare
 - 2, on knights

THE AGE OF CHIVALRY

The word chivalry comes from an old french word for knight. Therefore the name "age of chivalry" actually means the age of knights and refers to the time in history when these men were central figures in society. As a knight's profession was battle, the story of this age is the story of the warfare of the time.

At the beginning of the age of chivalry knights formed the most important part of an army. The outcome of a battle was usually decided by the hand to hand combat of mounted knights. The mounted knights were supported by common footsoldiers who were not considered as important as the knights.

During most of the 13th century and into the 14th century footsoldiers had been armed with short bows, spears, or crossbows. The crossbows were heavy to handle but fairly accurate and the Italians were famous for their ability with them. Many military leaders hired men from Genoa or Pisa who, stationed on the wings of an army, did considerable damage with bolts from their powerful weapons. Richard the Lion-Heart in particular made excellent use of crossbowmen in his campaigns in the Holy Land. On one occasion he put to flight an army much larger than his own by forming his crossbowmen in two ranks and having the first rank fire while the second loaded and cocked their bows.

But in the 14th century the English commanders began to employ archers from Wales who used a powerful six-foot bow made of yew or elm. They could send a broad-headed shaft through a shirt of chain mail as if the shirt were cloth. These men were wild and savage and spoke a language which few could understand but they

could put three arrows into the air while a crossbowman was cocking the string of his weapon and they could nail a man's thigh to his saddle at a hundred yards. When they were put into battle against the mounted chivalry of France, at Crecy, in 1346, they brought down so many horses and men that the dead formed a great wall before the English lines. The French had several thousand crossbowmen from Genoa whom they sent out in advance of their troops. The Genoese shouted three times to frighten the foe, and then raised their crossbows to begin shooting. But the English archers "advanced one pace forward and shot their arrows with such force and speed that it seemed to be snowing. When the Genoese felt these arrows, which pierced through their armor, some of them cut the strings of their crossbows, others threw their weapons to the ground, and they all turned about and fled".

This deadly storm of arrows won one battle after another for the English. The use of the long-bow was encouraged in every village and town, and soon replaced the older short bow of both Normans and Saxons. For a hundred years the English were supreme with a new tactic. Knights and squires would dismount and stand flanked by archers whose arrows broke the most furious cavalry attacks. Then the knights would come to grips on foot with what was left of the enemy, or ride out to smash them. In vain armor was made thicker and stronger. The clothyard shaft (so called because the ell, or measure of a yard of cloth, was thirty-one inches) found its way into every chink - for example, the spot under a man's arm which was covered only by chain mail, or the eye-slit of a helmet. Plate

2.

armor grew still heavier and was made with rounded surfaces from which arrows would glance off. But the horses were shot down and the knights in their cumbersome steel plates could not get on their feet again. In some cases men died of suffocation and exhaustion inside their armor without being touched by a weapon.

During this period, the armorer's craft, always highly specialized, became even more important. The cost of armor rose until it became the most expensive part of a knight's equipment. The mail coat, which in earlier days was the basic defense of a horseman, would fit many different men and could be passed from hand to hand. But a suit of plate armor had to be made to the exact measure of one particular man. Before anyone else could wear it it might have to have elaborate alterations. Furthermore, a coat of mail could be made by a deft smith with patience and a little training, but the pieces of armor that went into a suit of plate could only be made by a highly skilled armorer with years of practice behind him.

Chain mail was made by winding steel wire around an iron bar and snipping off the circular pieces. The ends of each bit were flattened and holes were bored in them through which rivets could be put. The links were hooked together with other links, making a strong, light meshwork. By keeping each link small a first-rate smith could make a shirt of mail as flexible as cloth. By doubling the thickness of the mail the points of swords and arrows could be warded off, particularly since under the mail shirt a padded cloth or leather jacket formed a secondary protection.

Plate, however, was shaped out of pieces of solid steel of varying thickness. Because of the many curves in any one piece, designed for beauty as well as to make points glance harmlessly away from the body, the armorer could not draw out patterns or diagrams but had to judge his work by eye alone. The steel was heated to just the right temperature and then hammered slowly and carefully into shape over curved iron bars set into sockets in the anvil. The armor had to be tempered, and then often handsomely decorated with gold or silver inlay, or with flutings and ridges. All this had to be planned so that it would not catch a spear-head or weaken the plate. Armor was sometimes lined with cloth, and each separate piece had straps or thongs, called "arming points", with which it was buckled or tied to the body as well as to other pieces.

The process of putting on a suit of armor was a long, slow one. No man could do it for himself but had to rely on his squires. Before a battle several hours were spent in getting dressed. The best armor came from northern Italy, especially Milan, and when the high cost of steel and labor were added to transportation the price soared. Still, it was worth it, for nothing else would bring the knight through the storm of clothyard arrows and let him come to handstrokes with enemy knights.

But both plate armor and its foe, the longbow, were doomed. Gunpowder, used only occasionally in the early years of the 14th century, and by the end of it come into regular use in the field. The craftsmen who made bells and other large castings had become skilled makers of cannon.

Guns at first were made not only of iron but of brass, copper,

3.

or even a metal called latten which was mostly lead. The early cannon were formed out of long bars of iron welded together and then bound with hoops. This type of construction, however, made for weak spots in the welding between bars. The best cannon were of bronze, like the metal used for church bells, and were founded in one piece by pouring molten metal into a special double mould. Sometimes the core of a gun would be cast iron and its outer shell wrought iron. Guns of all sizes were used, from "handgonnes" mounted on wooden stocks, which shot either lead balls or short arrows like those used in a cross-bow, to monsters like the two ton "Messenger" made at the Tower of London in 1408. There were also cannon with several barrels. One, made by a bell-founder named William Wodeward in 1386, had a large barrel for firing stone balls and ten small barrels for shooting lead pellets.

Even the best of cannon were uncertain devices. Since their barrels were short for the size of the bore, their "gunstones" were far from perfect spheres, and since the art of gauging the amount and type of powder had not yet been developed, their range and accuracy were relatively limited. Many had a habit of blowing up in the faces of their gunners. King James II of Scotland was killed by just such an accident, and it was not until the 16th century that really fine cast-iron cannon were made, and good quality gunpowder was used in the proper quantities.

Nevertheless, few gates or walls could stand against the battering of cannon. When artillery trains appeared, most cities did not bother to fight but surrendered at once. Cannon, both large and small, swept away

armored knights. No matter how thick and heavy armor was made it was not proof against gunpowder. In 1453, the gallant English commander, Lord John Talbot, made an attack with his knights and men at arms on the French town of Castillon. His troops were mowed down by guns. His horse was hit by a cannonball and the earl himself was slain. From this moment on the pattern of warfare began to change.

By the end of the 16th century the hand-gun had been perfected. It was a cumbersome thing, but it meant that troops of infantrymen could be moved from place to place quickly with their guns, and could bring large volleys of shot to bear where they were needed to break a charge. This was far more effective than even the best company of archers. The hand-gun was adopted in most places as the main infantry weapon. The longbow became a thing of the past, used only for the sport of hunting. Similarly plate armor vanished from war and came to be used only for the sport of the tournament.

Along with the rise of the infantryman, whether as an archer or a gunner, came the ever increasing use of paid soldiers. The noble warrior who fought because he was brought up to believe that it was the right, natural, and most pleasant thing to do, or because it was part of his feudal obligation, was part of an almost unimportant minority in battle. He might still lead his men, but the real fate of the battle rested on the pikemen, the archers, and finally the gunners. Regular pay and plenty of it was more important than duty or honor. Well paid soldiers could be kept in the field as long as money could be found for them. Knighthood itself no longer

4.

carried the requirement of coming out to fight for one's lord, but allowed all sorts of substitutions. Knights began hiring themselves out, wandering from the pay of one master to that of another. In the 16th century the Chevalier Bayard was besieging a city for his lord, King Francis I of France. He had in his army some German knights whom he ordered to lead an attack against the walls. The knights refused to do so, for, said they, "we were hired only to do ordinary fighting at ordinary wages, not to lead assaults, and if we go in advance we must have double pay". At this point, the age of chivalry had just about come to an end.

PLACE THIS BOOKLET BACK IN THE
ENVELOPE AND REMOVE THE QUESTION
BOOKLET. FOLLOW THE DIRECTIONS
ON THE FIRST PAGE OF THE QUESTION
BOOKLET.

DO NOT REMOVE THIS BOOKLET UNTIL DIRECTED TO DO SO.

Directions

Read each question and its lettered answers. When you have decided which answer is correct, blacken the space for that answer beside the correct question number using the pencil provided. Make your mark as long as the pair of lines and completely fill the area between the lines. If you change your mind, erase your first mark completely. Do not make any other marks on the answer sheet or on the question sheet.

Do not spend too much time on any one question. Wrong answers will not count against you.

When you have finished, return this booklet to the envelope and remain quiet as others may still be working.

THE AGE OF CHIVALRY

1. The word chivalry comes from an old french word for;
A courage.
B knight.
C cavalry.
D nobility.
E honour.
2. The crossbow was a weapon used by footsoldiers during the;
A 12th century.
B 12th and 13th centuries.
C 13th century.
D 13th and 14th centuries.
E 14th century.
3. The most famous crossbowmen came from,
A Italy.
B England.
C Germany.
D France.
E Wales.
4. The first longbowmen came from;
A Scotland.
B Northern France.
C Northern Italy.
D Wales.
E England.
5. The length of the longbow was,
A $4\frac{1}{2}$ feet.
B 5 feet.
C $5\frac{1}{2}$ feet.
D 6 feet.
E $6\frac{1}{2}$ feet.
6. The English fought the French at Crecy in;
A 1246.
B 1274.
C 1346.
D 1374.
E 1464.
7. A longbow could be made from;
A oak.
B ash.
C pine.
D spruce.
E elm.

- 2.
8. Chain mail was made from pieces of:
A copper wire.
B bronze wire.
C lead wire.
D iron wire.
E steel wire.
9. Each link in chain mail was held closed by;
A welding the ends together.
B the spring quality of each link.
C riveting the ends together.
D placing the ends through leather.
E tying the ends with wire.
10. Arming points were the,
A ends of lances.
B ends of longbow arrows.
C hooks on armor to support lances.
D straps for tying on armor.
E places where knights dressed for battle.
11. The curves in plate armor were designed for beauty and to;
A prevent suffocation.
B increase the armor's strength.
C help the knight to get up when knocked down.
D prevent exhaustion.
E deflect swords and arrows.
12. The best plate armor was made in;
A Crecy.
B Genoa.
C Milan.
D Pisa.
E Castillon.
13. Gunpowder came into use in the;
A 12th century.
B 13th century.
C 14th century.
D 15th century.
E 16th century.
14. Latten was a metal used in the construction of;
A armor.
B cannons.
C swords.
D arrow heads.
E lances.
15. Latten was made chiefly of;
A lead.
B brass.
C copper.
D tin.
E iron.

3.

16. The "Messenger" was a;
A huge crossbow.
B suit of plate armor.
C handgun.
D large English cannon.
E cannon with several barrels.
17. The first cannon balls were made of;
A lead.
B iron.
C copper.
D brass.
E stone.
18. The first handgun bullets were made of;
A lead.
B iron.
C copper.
D brass.
E stone.
19. The best cannon were made of;
A copper.
B lead.
C bronze.
D brass.
E wrought iron.
20. King James II, killed when a cannon exploded, was king of;
A England.
B Scotland.
C Wales.
D France.
E Germany.
21. Heavy armor became obsolete after the common use of;
A cannon.
B crossbows.
C longbows.
D infantry.
E handguns.
22. Cities surrendered without a fight when cannons came against them because;
A they were afraid of the unknown weapon.
B armor was no defence against cannon fire.
C they knew how to fight men but not how to fight cannons.
D one cannon ball could kill several men.
E city walls could not withstand cannon fire.
23. The knights who demanded double pay to lead an attack were;
A German.
B French.
C English.
D Italian.
E Spanish.

4.

24. The first skilled cannon makers had previously made;
A armor.
B bells.
C swords.
D handguns.
E catapults.
25. When a commander hired soldiers from another country, he did it mainly to;
A save the lives of men from his own country.
B increase the number of men in his army.
C get men with fighting skills that his own men did not have.
D frighten the other army with strange soldiers.
E prevent those soldiers from fighting for the enemy.
26. A crossbowman fired fewer arrows than a longbowman because a crossbow;
A was heavier.
B took longer to cock.
C used a heavier arrow.
D was more difficult to aim.
E used a longer arrow.
27. The longbow was feared mainly because of the;
A strange look of the longbowmen.
B distance its arrows could travel.
C piercing ability of its arrows.
D length of its arrows.
E accuracy with which it could be fired.
28. The longbow became the main infantry weapon of the;
A Turks,
B English.
C French.
D Italians.
E Germans.
29. The longbow arrow was called;
A a bolt.
B an ell.
C a long bolt.
D a shaft.
E a clothyard shaft.
30. Eventually armor became so heavy that;
A it was good protection from the longbow.
B the horses could not carry the weight.
C only the strongest men could become knights.
D it could cause the death of the man wearing it.
E knights demanded higher pay.
31. Molded cannons were better than welded cannons because they were;
A more accurate.
B longer.
C less expensive.
D heavier.
E stronger.

- 5.
32. Early cannons sometimes exploded because;
A cannon balls were not perfectly round.
B barrels were too short.
C cannon balls were too heavy.
D barrels were too long.
E gunpowder was unreliable.
33. Plate armor was developed as a direct result of the use of;
A chain mail.
B crossbows.
C longbows.
D handguns.
E foot soldiers.
34. Knights became less important in battle because;
A they refused to change with the times.
B foot soldiers were cheaper to hire.
C new methods of warfare did not need them.
D their armor became too expensive.
E they lost their love of battle.
35. Fighting for honour and love of battle lost its appeal for knights when,
A war was no longer a test of man to man fighting skill.
B good soldiers were no longer considered heroes.
C they found they could pay other men to fight for them.
D foot soldiers did all the fighting.
E too many knights got killed in battle.
36. A knight would fear having his horse shot because he;
A was not allowed to fight on foot.
B could not fight on foot.
C could not get up if he fell.
D needed the horses speed to avoid arrows.
E could not replace a trained war horse.
37. Knights fighting for Chevalier Bayard refused to lead an attack unless paid more because,
A they were no longer unafraid of death.
B they no longer considered it part of their duty.
C gunfire was killing too many men.
D they were expected to fight without armor.
E they were so important to the battle they could get all they asked.
- - - - -

APPENDIX C

MATERIALS FOR THE SECOND IMMEDIATE AND DELAYED
TESTING SESSION

1. Control group introduction.
2. Purposeful Questions group advance organizer.
3. Structured Overview group advance organizer.
4. Learning passage.
5. Criterion test.

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. Read the passage beginning on the next page carefully and then follow the directions for the answering of the quiz.

When you have read this page turn it over and do not look at it again.

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. The questions below are given to help you to understand and remember the passage. Read these questions carefully. You will not be able to remember them all but try to remember as much as you can. As you read the passage look for information that answer each of the questions.

When you have finished reading the questions carefully, turn this page over and do not look at it again, then read the passage beginning on the next page.

Questions

1. What is the present belief about the origin of men?
2. What do we know about early man-like creatures?
3. What do we know about early men? Why did he survive?
4. What are the stages of development of early man?
5. What are the names given to men or man-like creatures at different stages of their development?
6. What were the important changes during each stage of man's development?

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. The outline below is given to help you to understand and remember the passage. Read this outline carefully. You will not be able to remember it all but try to remember the order of the ideas. As you read the passage look for information that goes with each of these ideas.

When you have finished reading the outline carefully, turn this page over and do not look at it again, then read the passage beginning on the next page.

Outline

- A. Introduction
 - 1. evolution
- B. Man-like Creatures
 - 1. name
 - 2. when and where they lived
 - 3. appearance
- C. Early Men
 - 1. names
 - 2. when and where they lived
 - 3. appearance
 - 4. reason for survival
- D. Stages of Early Man
 - 1. names of stages
 - 2. way of life during each stage
 - 3. discoveries of each age

THE ARRIVAL OF MAN

No one can say for sure just when or how human beings began. Most scholars agree that homo sapiens, modern man, was not the first man-like creature on the earth. Most agree, too, although they are not sure about the details, that men evolved gradually from lower forms of life. Scientists no longer believe that man descended directly from apes, as has sometimes been claimed. They think that both men and apes had a common ancestor. Perhaps we shall never discover the complete answer.

We do know, however, that long before men like us appeared on earth there were different kinds of man-like creatures known as "hominids". Where or when the first hominids developed is still a mystery. Fossil skeletons have been discovered in Asia, Europe and Africa. Recent research suggests that man-like creatures possibly existed on earth 2,000,000 years ago. Not all hominids were the same in appearance or cultural development. Among the most advanced was the type known as Neanderthal man, named after a gorge in Germany where skeletal remains were first discovered. Neanderthal men have been portrayed in comic strips and television programmes as delightful if rather odd looking cavemen. They wander about in animal skins and even play with pet dinosaurs although these had been extinct for millions of years before they arrived.

We really cannot do much more than guess about their actual appearance, for fossils do not tell anything about hair, skin, or colouring. However, the skeletons suggest that Neanderthal man was little more than five feet tall and had a slouching

posture, a low, sloping forehead, deep-set eyes and a chinless jaw. Although he looked more like a modern man than an ape, he would certainly attract more than normal attention were he to stroll about in a modern town or city.

It is impossible to state when our own species of man, homo sapiens, appeared on earth. Estimates generally range from 20,000 to 50,000 years ago. The best known type of modern man is Cro-Magnon man, so called from the cave in southern France where skeletons were found. He was a European, fairly tall and long-headed. Although there are probably no Cro-Magnons in the world today, they would not look very different from modern Europeans. At any rate, they and other races of homo sapiens spread rapidly over the earth and displaced all other species of men.

In a way, the very fact that man could survive and flourish is remarkable. At first sight he seems less well equipped to deal with his enemies than was a saber-toothed tiger and less able to withstand cold than was a woolly mammoth. But, in fact, even primitive man had a number of definite advantages over all other creatures. The fact that he could walk erectly on his hind limbs meant that his hands and arms were freed for other activities than just moving himself from place to place. He was also more successful than other animals in coordinating the movements of his hands and eyes. His most important asset was a superior brain which greatly increased his ability to learn. This superior brain enabled man to remember and to develop language by which he could pass on the knowledge he had gained.

2.

to his children. Some higher apes could invent an occasional tool, such as a stick used as a lever. But they lacked a language to pass on to others what they knew, and their inventions did not last. Since man alone has the ability to develop a language, he alone is able continually to invent and use tools. For all these reasons man was able to compete successfully against his enemies and to adjust to a changing world.

Even the most primitive man soon began to develop cultures. There are great gaps in our knowledge of man's cultural development. We know, however, that for the greatest part of human history, ninety-nine per cent of it, man lived in much the same way all over the earth. This early common culture has been given the name Paleolithic, which means Old Stone Age. The term arose because the tools and weapons which have survived from this period were made of stone. Actually, the term is somewhat misleading, for early man undoubtedly fashioned many things from wood and bones, but these no longer remain. At any rate, the most important feature of Paleolithic culture was not the fact that man's most important implements were made of stone. It is rather that man, during this very long period, lived as a food gatherer. He did not live as a farmer in a settled community producing his food, but constantly roamed about, hunting and gathering his food wherever it could be found.

Although man's progress seems to have been slow during the Old Stone Age, it was really remarkable. Remains of ash and charcoal show that sometime during this period he had learned

how to use fire. By the end of the period he could produce fire when he wanted to by rubbing dry sticks together. This was a revolutionary achievement, for the discovery of fire was the basis for all later technological advance. Man's first tools of stone and quartz were designed to be held in the hand. They were shaped like a flattened pear with the larger end chipped so that it could be used for chopping or scraping. In time, man produced much improved tools for special tasks. One of the greatest accomplishments of this age was man's gaining of the knowledge and skills to manufacture weapons from stone and wood, an achievement that made him an effective killer of animals.

About 10,000 years ago there occurred one of the most important advances in human history. For the first time man began to control his world by producing instead of gathering food. Two discoveries made this advance possible; men learned how to grow grain and how to domesticate animals. These two developments began a new era in man's cultural development, which is known as the Neolithic or New Stone Age.

Scholars still dispute where and when these changes came about. The world's first agricultural settlements appear, however, to have been those at Jericho in Palestine and Jarmo in Iraq. The first farmer was probably a woman who became interested in the fact that seeds she had dropped on the ground started to grow, for in early societies the woman usually gathered the grain. We can only guess, too, about how animals were first domesticated, but we do know that the earliest

3.

farm animals were cattle, goats, pigs and sheep, followed by donkeys, camels and horses. Early farmers gradually learned that raising grain and animals at the same time could be beneficial because the livestock could be fed on the stubble and grain husks and, at the same time, help to cultivate the fields. Evidence shows that early farmers had both fields and flocks.

More important than when and how it all came about were the revolutionary effects of the discovery of agriculture. Food producing made possible much greater economic and cultural growth. With an assured food supply, man could cease wandering and settle in much larger numbers in permanent villages. This greater security and leisure enabled food producing man to increase the number, variety and quality of his material possessions. He produced new tools of ground and polished stone such as axes, chisels, hoes and sickles. With the more efficient tools, carpenters built more comfortable houses of timber. Such domestic arts as weaving, basketwork and pottery-making developed rapidly.

The invention of the plow and the use of oxen to pull it enabled farmers to cultivate more land and thus raise more grain. This increased supply of food led to a great increase in population. Homo sapiens became one of the most numerous mammals on earth. The surplus of food also made it possible for some men to specialize, to spend all of their time making special goods or providing special services for the community. And out of this specialization came the development of trade, for the new farmers often bartered or exchanged their

food surpluses for other goods.

Other inventions appeared. Perhaps the most momentous was the discovery of the wheel, which not only caused a revolution in transportation but also greatly improved the making of pottery. In these days of rapid technological change, it is interesting to remember that man's most revolutionary achievements--the discovery of fire and the invention of the wheel--occurred very early in his development. Another discovery which quickened man's material progress was the discovery of the use of metals. The first use of metals began as men found and hammered, in their natural state, lumps of gold, silver and copper which lay about on the ground. Between 3,000 and 2,000 B.C. man learned how to smelt, and how to extract pure copper from crude ore. He later discovered that by combining tin with copper he could produce bronze, an alloy that was much harder than copper. Bronze could also take a razor-sharp cutting edge. So valuable was it for the making of weapons and tools of all kinds that the name Bronze Age is sometimes given to this stage of man's cultural development.

The growth of population in village communities made possible by the new agriculture had great social and political effects. Since the problems of farmers were more complex than those of hunters, there was need for a more highly developed organization of society and government. The basic social unit appears to have been the family, usually combined into larger groups or clans to deal with the problems of the whole community. Cooperation was necessary to make common decisions about fields and crops, to settle legal

disputes and to provide for the defence of the community. As society developed, clans united into larger family groups known as tribes. The centre of government during Neolithic times was probably the tribal chieftain. It is reasonable to suppose that he obtained his position because of his wealth or strength, his prowess as a fighter, or his ability to organize and direct the activities of the community. In time the position of chief often became hereditary, descending from father to son.

The settled life of Neolithic times also stimulated intellectual life. In the village communities legends grew up to explain the origin of the earth and man, to tell the story of man's history and to relate the deeds of great heroes. Although the legends were usually not true, men believed them and based their actions upon them. This folklore became an important part of village life and helped to create a heritage of common ideas. These ideas, along with common economic and political ties, helped to bind the community together.

Another unifying force was religion, which was a form of magic designed to explain and influence the forces of nature. Since spirits were thought to control everything from the weather and the fertility of the soil, to life and death itself, man developed elaborate ceremonies to appease them. Increasingly, the religion of Neolithic man centred around the forces of nature concerned with fertility. These were the forces that made a tiny seed spring from the earth and that added new animals to his herds. Thus, he came to place more and more faith in

religious experts or priests who could see to it that the ceremonies to keep the gods and spirits happy were carried out properly. Often the priests became a special caste whose wealth and power made them the most influential group in the community. More than anyone else the priests bound the communities together by intellectual bonds as well as by economic and political ones.

The Neolithic peoples who developed the systems of agriculture, government, social institutions and religion that we have described laid the foundations for the first great civilizations. We must now turn to a study of why and how they developed in certain great river valleys. For it was in these valleys that history, the record and interpretation of civilization, was about to begin.

DO NOT REMOVE THIS BOOKLET UNTIL DIRECTED TO DO SO.

Directions

Read each question and its lettered answers. When you have decided which answer is correct, blacken the space for that answer beside the correct question number using the pencil provided. Make your mark as long as the pair of lines and completely fill the area between the lines. If you change your mind, erase your first mark completely. Do not make any other marks on the answer sheet or on the question sheet.

Do not spend too much time on any one question. Wrong answers will not count against you.

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THE ARRIVAL OF MAN

1. That man gradually evolved from lower forms of life;
A is no longer believed.
B has been proved false.
C has been proved true.
D is accepted by most scientists.
E is one of many unproved theories.
2. That man descended directly from apes;
A is no longer believed.
B has been proved false.
C has been proved true.
D is accepted by most scientists.
E is one of many unproved theories.
3. The name Hominids refers to;
A all types of men ever to exist.
B the first ape-like creatures.
C the first man-like creatures.
D all present day apes.
E all present day men.
4. Man-like creatures were on earth as far back as;
A 100,000 years ago.
B 500,000 years ago.
C 1,000,000 years ago.
D 2,000,000 years ago.
E 10,000,000 years ago.
5. The name Neanderthal come from the;
A age in which they lived.
B way in which they lived.
C shape of their heads.
D man who discovered their remains.
E place where remains were found.
6. The height of a Neanderthal man was,
A about 4 feet.
B about 5 feet.
C about 6 feet.
D over 6 feet.
E under 4 feet.
7. Cro-Magnon man is named after a cave in;
A Africa.
B Germany.
C England.
D France.
E Asia.
8. The appearance of Cro-Magnon men is described as;
A much like modern apes.
B much like Neanderthal man.
C much like modern Europeans.
D more like an ape than a man.
E more like a man than an ape.

- 2.
9. Early man was able to develop a language because he had;
- A free use of his hands.
 - B superior vocal cords.
 - C better coordination.
 - D more need to talk.
 - E a superior brain.
10. The most revolutionary achievement of the Old Stone Age culture was that men
- A lived in settlements.
 - B lived as wandering food gatherers.
 - C discovered fire.
 - D left drawings showing their culture.
 - E learned to make tools.
11. Neolithic means;
- A New Stone Age.
 - B Old Stone Age.
 - C The Settled Age.
 - D The Fire Age.
 - E Bronze Age.
12. Fire was probably discovered by;
- A early hominids.
 - B Bronze Age man.
 - C Old Stone Age man.
 - D New Stone Age man.
 - E Neanderthal man.
13. Learning to use fire was important because;
- A it provided a good defense against animals.
 - B cooked food was better for men.
 - C it provided warmth.
 - D it allowed men to travel at night.
 - E later developments depended on it.
14. Settled communities are believed to have begun about;
- A 5,000 years ago.
 - B 8,000 years ago.
 - C 10,000 years ago.
 - D 14,000 years ago.
 - E 20,000 years ago.
15. Perhaps the greatest discovery of the New Stone Age was the;
- A wheel
 - B plow.
 - C making of pottery.
 - D tanning of hides.
 - E knowledge of smelting.
16. The first agricultural settlements appear to have been in;
- A France.
 - B Germany.
 - C Italy.
 - D Iraq.
 - E China.

- 3.
17. Food surpluses led to;
- A community living.
 - B the start of religion.
 - C increased tribal warfare.
 - D the keeping of herds.
 - E population growth.
18. Men learned to smelt about;
- A 1,000 to 2,000 years B.C.
 - B 2,000 to 3,000 years B.C.
 - C 5,000 to 8,000 years B.C.
 - D 8,000 to 10,000 years B.C.
 - E before 10,000 years B.C.
19. Bronze is a combination of;
- A iron and lead.
 - B copper and lead.
 - C tin and silver.
 - D copper and tin.
 - E copper and silver.
20. Bronze was better than other metals because it was;
- A harder.
 - B softer
 - C more easily produced.
 - D more rustproof.
 - E lighter.
21. The center of government in Neolithic times was probably the;
- A chieftain.
 - B group of elders.
 - C leading family.
 - D priest.
 - E elected council.
22. The basic unit of early society was the;
- A clan.
 - B hunting male.
 - C tribe.
 - D village.
 - E family.
23. The legends that developed in early communities;
- A were completely untrue.
 - B helped bind the people together.
 - C led to disagreement and war.
 - D show how unintelligent they were.
 - E were used by priests to hold power.
24. Neolithic man worshipped;
- A nature.
 - B animals.
 - C dead spirits.
 - D idols.
 - E fire.

- 4.
25. When scientists describe early man and his way of life they;
A state only proven facts.
B can only make unproven guesses.
C repeat what earlier scientists have said.
D try to make up interesting new theories.
E make guesses based on facts.
26. Early man-like creatures developed;
A only in one area of the world.
B in one area and then spread out.
C the same way in different parts of the world.
D differently in many different parts of the world.
E differently in small areas of the world.
27. Neanderthal man is believed to have been the;
A only man-like creature.
B most advanced man-like creature.
C first man-like creature.
D next step after man-like creatures.
E link between apes and men.
28. Homo sapiens include;
A Cro-Magnons and all men to come after them.
B Neanderthals and all men to come after them.
C all men and man-like creatures who have ever existed.
D all men, man-like creatures, and the lower forms from which they developed.
E most humans living today.
29. Neanderthal and Cro-Magnon men looked;
A very much alike.
B different in posture only.
C different in height only.
D different in facial features only.
E considerably different in all ways.
30. Any inventions by apes do not last because apes do not;
A walk completely upright.
B have hand-eye coordination.
C feel the need to invent.
D have a language.
E live in settled communities.
31. Man's first living pattern or culture is called;
A Homidithic
B Paleolithic.
C Neolithic.
D The Bronze Age
E Stonolithic.
32. Man's first tools are believed to have been made of;
A stone.
B wood.
C bone.
D all of the above.
E none of the above.

5.

33. Weaving and basket work developed rapidly only when men;
A needed these products.
B had time to spend at these activities.
C needed trade goods.
D learned to be creative.
E learned to love ornamental objects.
34. Each new discovery or invention was important mainly because it;
A proved that man's intelligence was increasing.
B increased man's superiority over other animals.
C provided the basis for further discoveries.
D allowed men to do more work.
E made life easier.
35. Forms of government developed because of;
A increased trade.
B tribal warfare.
C problems in community living.
D the creation of money.
E the start of religion.
36. Men did not specialize before there were food surpluses because;
A no one wanted special services.
B no one had developed the skills to specialize.
C there was no food to trade for the services.
D there were not enough people to support specialists.
E there was no need for specialists.
37. Religion grew out of man's need to;
A have a power to look up to.
B have power over other men's lives.
C explain the origin of legends.
D explain things he did not understand.
E bind the community together.
- - - - -

APPENDIX D

MATERIALS FOR THE THIRD IMMEDIATE AND DELAYED
TESTING SESSION

1. Control group introduction.
2. Purposeful Questions group advance organizer.
3. Structured Overview group advance organizer.
4. Learning passage.
5. Criterion test.

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. Read the passage beginning on the next page carefully and then follow the directions for the answering of the quiz.

When you have read this page turn it over and do not look at it again.

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. The questions below are given to help you to understand and remember the passage. Read these questions carefully. You will not be able to remember them all but try to remember as much as you can. As you read the passage look for information that answers each of the questions.

When you have finished reading the questions carefully, turn this page over and do not look at it again, then read the passage beginning on the next page.

Questions

1. What were the conditions in France at the beginning of the time described in this passage?
2. What were the three Estates?
3. How had the Estates-General originally been organized and what changes were demanded?
4. How was the National Assembly formed?
5. What actions did the citizens take and why?
6. What is meant by the "August Days" and the "Declaration of Rights"?
7. How did the National Assembly try to handle their money problems?
8. Through all of this, how did the King behave?

READ THIS PAGE CAREFULLY

You are going to read a passage and then answer a multiple-choice quiz to see how much of the passage you can remember. The outline below is given to help you to understand and remember the passage. Read this outline carefully. You will not be able to remember it all but try to remember the order of the ideas. As you read the passage look for information that goes with each of these ideas.

When you have finished reading the outline carefully, turn this page over and do not look at it again, then read the passage beginning on the next page.

Outline

- A. Background
 - 1. time
 - 2. conditions in France
- B. Estates-General
 - 1. the three estates
 - 2. original organization
 - 3. proposed changes
 - 4. formation of the National Assembly
- C. Citizens
 - 1. riots and demonstrations
 - a. reasons for riots
 - b. results of the riots
- D. National Assembly
 - 1. "August Days"
 - 2. "Declaration of Rights"
 - 3. financial problems
 - 4. King's behaviour

THE START OF THE FRENCH REVOLUTION

In the spring of 1789 there was great unrest in France. The winter had been very cold. Many men did not have jobs. Food was in short supply and high in price. Even a story that the price of bread was to be increased caused the workers in a suburb of Paris to riot in the streets for two days in April.

To make matters worse the government had run out of money. French kings had spent so carelessly and had borrowed so often to cover their debts that no one was willing to lend the government any more money. When the King tried to collect new taxes the clergy and the nobles would not cooperate. Instead they tried to make the King call together a form of French parliament which had not met for centuries. This form of French parliament was called the "Estates-General".

The Estates-General was made up of three "Estates". These were called the "First Estate", the "Second Estate", and the "Third Estate". The First Estate was the clergy. The Second Estate was the nobles. The Third Estate was all the middle and lower class people.

In past meetings of the Estates-General the representatives, or deputies, of each estate had met in separate rooms. Then each of the estates had one vote when a decision had to be made.

When the members of the First and Second Estate tried to get the King to call a meeting of the Estates-General

the Third Estate supported the demand as they had complaints of their own that they wished to discuss. The First and Second Estates were not too worried about the Third Estate as they were sure that with their two votes they could control the meetings and prevent any changes in the system of taxation.

In May of 1789, with his people starving and the government collapsing, the King, Louis XVI, gave in and called a meeting of the Estates-General.

When the Estates-General met there was a feeling of goodwill. Nobody was thinking about starting a revolution that would change the course of history. But the mood changed quickly.

The Third Estate demanded that they have as many members as the First and Second Estates put together. As each Estate only had one vote the King agreed to the change. As soon as the Third Estate had won that demand they asked that the three estates meet together in one room and that every deputy have one vote.

The First and Second Estates realized that this would allow the Third Estate to overrule them. So, although they had disagreements with the King, they joined with him to turn down this demand by the Third Estate.

For five weeks the Estates-General fought over the voting issue. With hungry people lined up in front of empty bread shops in Paris, the representatives

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of the Third Estate took a revolutionary step. On June 17th they proclaimed themselves the National Assembly of France. Claiming that the Assembly alone represented the people of France they invited the members of the other two estates to join them in the work of reforming the country.

The King, upset by this move by the Third Estate, foolishly closed the hall in which the Third Estate had been meeting. When they returned to their room they found the doors locked and guarded by royal troops. Angrily they gathered on a nearby tennis court and swore not to leave until they had established a new constitution.

Finally the King backed down. There was really little else that he could do. Some of the members of the first two estates had already joined the commoners. Also the King had heard rumors that 30,000 people were preparing to march on Versailles, his palace just outside Paris. On June 27th the King ordered that the three estates meet together and that each deputy would have one vote. A majority vote would decide all issues.

The Third Estate had won the first round.

But soon there was news that the King was gathering troops around Paris and Versailles. Stories spread that he planned to stop the National Assembly, as they now called themselves, by force. Angry, hungry, and fearful of the soldiers, the people of Paris went into action. On the night of July 12th they took to the streets looting food

stores and gun shops. The rioting and looting went on through the night but by the next day order had been restored. Two days later, however, on July 14th the masses again took to the streets and moved toward the working class district of Paris.

The object of their fury was the Bastille, an ancient prison which to them stood for the old way of life. The cannon on its walls pointed threateningly over the homes of the workers. There were stories that hundreds of the King's enemies lay rotting in its dungeons. Actually there were only seven prisoners in the Bastille. Four counterfeiterers, two lunatics, and an aristocrate who had been put there at the request of his own family.

Defending the Bastille were 80 old men and a handful of soldiers. After a short battle the governor of the fortress surrendered it to the mob when he was promised that, if he did, he and his soldiers could go free. But the promise was not kept. The mob killed the troops and the governor and marched through the streets of Paris with their heads on the ends of poles. The Bastille was soon torn to the ground and its stones scattered throughout France.

The fall of the Bastille became a symbol of the struggle of the people against the absolute rule of the King. The date of its fall, July 14th, is still a French national holiday.

What was really important about the fall of the Bastille was that it showed the power of the people. It was not the last time that their actions

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would serve as fuel to drive the revolution further and faster.

After the fall of the Bastille the people of Paris set up their own government and established their own army called the National Guard. Other towns throughout France did the same. In the countryside the peasants armed with pitchforks, scythes, or anything that might serve as a weapon, attacked manor houses. They destroyed the records of their feudal duties and stole whatever grain they could find. Their hatred of the nobles had been increased by stories that royal troops and others hired by the aristocrats were about to attack them and burn their homes and crops.

In both the city and the country the French government had collapsed.

As news of the violence reached Paris many members of the National Assembly felt that the only means of ending the disorders was to meet the peasants' demands. On the night of August 4th one of the nobles urged the aristocrats to abolish all feudal rights. In an atmosphere of wild enthusiasm, deputy after deputy proposed reforms which would end all special rights and privileges. When the session ended at two o'clock in the morning the old order had passed away. Within a week all of these reforms were brought together in a decree ending the feudal system. Thus in these few "August Days" the old class structure was destroyed. All Frenchmen were declared to be of equal standing in the eyes of the law and to be a single nation.

The National Assembly next wrote the "Declaration of the Rights of Man and the Citizen". This was approved by the Assembly on August 26th, 1789. Inspired by English and American ideas it began with the ringing words, "Men are born, and remain, free and equal in rights". The natural rights of man were declared to be liberty, property, security, and resistance to oppression. All men were to enjoy such rights as freedom of speech. All men were to be given equal treatment in the courts, and no one was to be imprisoned or punished except by due process of law. There was to be equal taxation with all citizens paying according to their means. All citizens had the right, "in person or by their representatives", to take part in the making of laws.

However, they soon learned that it was easier to write the document than to put its ideas into practice.

There were problems almost at once. The King hesitated over accepting the end of feudal privileges and the Declaration of Rights. Secretly he ordered troops to Versailles. This threat of force and the lack of food again angered the people of Paris. On October 5th a large crowd made up largely of tough women from the markets and working class districts marched in the pouring rain from Paris to Versailles. They invaded the National Assembly demanding bread. They also upset the proceedings of the Assembly by hanging out their skirts and stockings to dry and by shouting down the speakers.

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The next day the mob broke into the royal palace, killed members of the King's bodyguard and threatened the royal family. To restore order and to save lives, the King agreed to move his home to the Tuileries Palace in Paris. As the royal family in their carriage moved slowly towards the city, the citizens held up the heads of the guards they had killed and shouted, "We have the baker, the baker's wife, and the little cook, (meaning the King, Queen and Prince). Now we shall have bread".

Ten days later the National Assembly followed the King to Paris. From that time on, both the King and the Assembly, were controlled by the citizens of Paris.

The National Assembly, however, began work on a new constitution, or system of government, for France. While the new constitution was being written the Assembly turned to the country's money problems. It placed a single tax on land and income to replace the old taxes which favoured the rich. Then, in a desperate move to get more money, the Assembly seized the property of the Church. Using the Church property as security they then issued paper money known as "assignats". Although the assignats eventually became almost worthless France was saved from ruin for the moment and the new government was strengthened.

To bind the Church more closely to the state, the Assembly then passed a law under which the Church became almost a department of the government.

The clergy were paid like civil servants from national funds. Then the Assembly ordered the clergy to take an oath of allegiance to the Constitution. Most of them refused to do this. Many Frenchmen supported their stand and the country became seriously divided on this matter at a time when there were enough troubles already.

One of those most disturbed by the new relationship with the church was the King. He accepted government control over the Church only after promising himself that he would change it as soon as possible. Urged on by his wife, Marie Antoinette, a beautiful Austrian princess hated by the French people, he finally decided to leave France. In June 1791 after much planning the royal family fled from Paris in disguise. Their plan was to travel to the northeastern part of France, gather royal supporters, and cross the border into Austria. Their hope was to form an army to reconquer the country.

Good luck, however, did not follow the King when it came time to escape. The National Assembly heard of the plans. Alarmed by the news they sent fast riders across the country to spread the news of the King's flight. The Queen was late making her escape. The relays of horses were not always ready. Finally, at one stop the King was recognized even though he was wearing a disguise. The news moved ahead of the carriage in which the royal family was travelling. At a place called Varennes citizens and National Guardsmen blocked the bridge across the river. The King's plea that he was only a humble

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servant fooled no one. A squadron of royal cavalry waiting for the King on the other side of the river was driven off.

After only twenty-four hours of freedom the King was once again a prisoner in his own country.

DO NOT REMOVE THIS BOOKLET UNTIL DIRECTED TO DO SO.

Directions

Read each question and its lettered answers. When you have decided which answer is correct, blacken the space for that answer beside the correct question number using the pencil provided. Make your mark as long as the pair of lines and completely fill the area between the lines. If you change your mind, erase your first mark completely. Do not make any other marks on the answer sheet or on the question sheet.

Do not spend too much time on any one question. Wrong answers will not count against you.

When you have finished, return this booklet to the envelope and remain quiet as others may still be working.

THE START OF THE FRENCH REVOLUTION

1. The events recorded in this passage begin in the spring of:
 - A 1689.
 - B 1768.
 - C 1789.
 - D 1798.
 - E 1879.

2. The government's lack of money was due to careless spending by the:
 - A government.
 - B nobles.
 - C clergy.
 - D Queens.
 - E Kings.

3. The King was asked to call a meeting of the Estates-General when he tried to:
 - A dismiss the government.
 - B stop the riots.
 - C increase food supplies.
 - D lower food prices.
 - E collect new taxes.

4. The Estates-General had not met for:
 - A days.
 - B weeks.
 - C months.
 - D years.
 - E centuries.

5. The First Estate represented the:
 - A aristocrates.
 - B clergy.
 - C nobles.
 - D middle class.
 - E commoners.

6. Past meeting of the Estates-General always had one vote for each:
 - A deputy.
 - B estate.
 - C member of the First Estate.
 - D member of the Second Estate.
 - E member of the Third Estate.

7. The King at this time was Louis:
 - A XIV.
 - B XV.
 - C XVI.
 - D XVII.
 - E XVIII.

8. When the Estates-General met, the first demand made by the First Estate was for changes in the:
- A number of deputies.
 - B system of taxation.
 - C method of voting.
 - D feudal responsibilities.
 - E control of the Church.
9. The Paris mob attacked the Bastille on:
- A June 14th.
 - B June 21st.
 - C July 1st.
 - D July 14th.
 - E July 21st.
10. In the Bastille were:
- A no prisoners.
 - B a few prisoners.
 - C about 50 prisoners.
 - D about 100 prisoners.
 - E hundreds of prisoners.
11. The fall of the Bastille was important because it:
- A freed political prisoners.
 - B ended fear of imprisonment.
 - C caused the King to act.
 - D caused the Assembly to act.
 - E showed the people's power.
12. The people of Paris formed an army called the:
- A National Guard.
 - B People's Guard.
 - C Paris Guard.
 - D Royal Guard.
 - E Assembly Guard.
13. In the country peasants attacked manor houses to:
- A find money.
 - B find the King.
 - C burn crops.
 - D cause disorder.
 - E destroy records.
14. The National Assembly felt that the only way to stop the violence was to:
- A send out the troops.
 - B meet the people's demands.
 - C imprison the King.
 - D stop assembly meetings.
 - E provide more food.

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15. The National Assembly wrote the Declaration of Rights in the month of:
A June.
B July.
C August.
D September.
E October.
16. The Declaration of Rights was inspired by ideas from:
A America and Austria.
B England and Austria.
C Austria and Germany.
D England and America.
E England and Germany.
17. A large crowd of women marched to the National Assembly demanding:
A money.
B freedom.
C equality.
D justice.
E bread.
18. The King moved back to Paris to:
A restore order and save lives.
B regain control over the people.
C plan his escape.
D please the National Assembly.
E please the Queen.
19. After the King and the Assembly had moved to Paris the Assembly was actually controlled by the:
A citizens.
B King.
C nobles.
D clergy.
E deputies.
20. The National Assembly seized church property to get:
A power over the people.
B security for money.
C control over the clergy.
D control over the King.
E law and order in Paris.
21. The "assignats" issued by the National Assembly were:
A coins.
B paper money.
C bread tickets.
D job tickets.
E fuel tickets.
22. The Assembly ordered the clergy to take an oath of allegiance to the:
A King.
B Assembly
C people
D Church.
E Constitution.

23. The King was urged to leave France by:
A the citizens.
B the nobles.
C his wife.
D his guard.
E the Assembly.
24. The King planned to escape to:
A England.
B Spain.
C Austria.
D Germany.
E America.
25. In its original form, the Estates-General was designed to benefit the:
A nobles.
B clergy.
C nobles and clergy.
D middle class.
E commoners.
26. The changes demanded by the Third Estate were designed to benefit the:
A nobles.
B clergy.
C nobles and clergy.
D middle class.
E commoners.
27. The main concern of the commoners all through this time was:
A taxes.
B laws.
C freedom.
D food.
E fuel.
28. The King's troops:
A did not take sides.
B remained loyal.
C helped the Assembly.
D helped the people.
E betrayed the King.
29. The stories told about what was happening in the Bastille were:
A completely false.
B mostly false.
C mostly true.
D completely true.
E not as bad as the truth.
30. The Bastille was:
A poorly defended.
B well defended by troops.
C well defended by citizens.
D well defended by troops and citizens.
E not defended at all.

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31. The main driving force behind the revolution was actually the:
- A Assembly.
 - B Third Estate.
 - C Paris mobs.
 - D First Estate.
 - E people's army.
32. Stories that Royal troops were going to burn peasant homes and crops:
- A were shown to be true.
 - B were shown to be true only in some places.
 - C were shown to be completely false.
 - D were shown to be only an excuse for looting.
 - E were not proved true or false in this passage.
33. The term "August Days" refers to the time when the:
- A Bastille was destroyed.
 - B feudal obligations were wiped out.
 - C Third Estate met on a tennis court.
 - D three estates fought for control.
 - E King tried to regain control with troops.
34. The main idea of the Declaration of Rights was that all men should be:
- A equal
 - B wealthy
 - C educated
 - D well fed.
 - E employed.
35. The revolution appears to have been:
- A carefully planned from the very beginning.
 - B carefully planned at first but allowed to get out of control.
 - C unplanned at first but later carefully planned by the people.
 - D unplanned at first but later planned by the Assembly.
 - E completely unplanned and without any control.
36. When they attacked the Bastille and marched to Versailles, the Paris mob was acting;
- A with the permission of the Third Estate.
 - B on orders from the Third Estate.
 - C with the permission of the National Assembly.
 - D entirely on its own.
 - E with the permission of the First Estate.
37. The Bastille was attacked:
- A after the National Assembly seized church property.
 - B before the Declaration of Rights was written.
 - C after the peasants attacked the manor houses.
 - D before the Third Estate called itself the National Assembly.
 - E after the Paris mob marched to Versailles.
- - - - -