

**NEWFOUNDLAND'S FIRST PEOPLE: THE MARITIME ARCHAIC INDIANS:
A CURRICULUM AND INSTRUCTIONAL UNIT BASED ON THE THEORIES OF
MAURITZ JOHNSON, JR.**

CENTRE FOR NEWFOUNDLAND STUDIES

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NEWFOUNDLAND'S FIRST PEOPLE; THE MARITIME ARCHAIC

INDIANS: A CURRICULUM AND INSTRUCTIONAL

UNIT BASED ON THE THEORIES OF

MAURITZ JOHNSON, JR.

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ABSTRACT

The purpose of this study was to develop a unit of curriculum and instruction based on the theories of Mauritz Johnson Jr. This unit is intended to supplement the existing elementary social studies program in Newfoundland schools.

The content was derived from original scientific documents prepared by Dr. James A. Tuck, archaeologist in charge of the excavation at Port au Choix, Newfoundland which took place in 1968. This excavation led to the identification of Newfoundland's earliest inhabitants, the Maritime Archaic Indians, who lived in Newfoundland and surrounding areas four thousand years ago.

When the unit was developed, specialists from social studies, archaeology-anthropology, and audio-visual education assessed it for content validity, structure, presentation, and representation. Following this, the unit was submitted to the classroom for student-teacher assessment for its learnability, teachability, credibility and potential. Three elementary school classes consisting of 115 students and their teachers, under the Avalon Consolidated School Board, participated in these classroom trials which took place between June 1 and June 22, 1973. Revisions were made following both assessments. An overall evaluation was provided by "guiding questions" designed by Anderson and Aoki and based

on Johnson's theories. These questions guided the development of the unit from its inception to the implementation in the classroom.

The following conclusions were drawn from this study:

1. Substantive content of a highly cognitive nature can be studied by children in early grades if the content is properly selected, transposed, and structured.
2. The unit approach would seem to enable the insertion of new information--a continuous problem in the fields--into existing programs.
3. The theories of Mauritz Johnson, Jr. provide a viable rationale for developing units of curriculum and instruction. Johnson's theories enabled the researcher to adequately develop and implement the unit Newfoundland's First People: The Maritime Archaic Indians.
4. The assessment by the participating students and teachers convinced the developer that the unit could greatly supplement the existing social studies program in Newfoundland's elementary schools.

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CHAPTER I

INTRODUCTION

THE PURPOSE OF THE STUDY

The purpose of this study was to develop a unit of curriculum and instruction based on the theories of Mauritz Johnson Jr. This unit can supplement the existing social studies program in Newfoundland schools. The unit content deals with Newfoundland's earliest known inhabitants, the Maritime Archaic Indians, who lived in the province some four thousand years ago. Consequently, the unit has been entitled Newfoundland's First People: The Maritime Archaic Indians.

THE PROBLEMS ENCOUNTERED

In dealing with the development of the unit Newfoundland's First People: The Maritime Archaic Indians, the developer encountered several problems. They are as follows:

1. Would the theories of Mauritz Johnson, Jr. provide an adequate theoretical rationale for the development of the unit? This was an important problem as no known unit had been developed prior to Newfoundland's

First People: The Maritime Archaic Indians, which incorporated the theories propounded by Johnson.

2. A problem concerning the readability of the unit was also encountered during its development. Would the readings presented in the unit be suitable for elementary school students? Often, most available reading materials that contain sufficient data for studies of this nature cannot be read by elementary school children; the prose of the presentation is far too sophisticated. For example, the material available on the Maritime Archaic Indians consisted of scientific archaeological research findings. Translating these archaeological concepts and methods into forms that could be readily taught to and learned by elementary school children presented a challenge which required several revisions before the appropriate reading level was attained. To determine the proper reading level of the unit, the developer employed the Readability Formula, designed by Edward Fry. A comprehensive discussion of this formula will be found in the section covering the procedures of development.

3. The problem of evaluation was also considered. Formative evaluation as conceived by Michael Scriven was used for this study. It is the view of Scriven that formative evaluation occurs during the formative stages of curriculum and instructional development and in the

related field testing. To facilitate the formative evaluation of the unit, a series of guiding questions, designed by Anderson and Aoki (1972) and based on Johnson's theories were utilized. The application of these guiding questions occurred throughout the total development of the unit--from its very inception to its completed field testing session in the classroom. These questions can be viewed in Appendix A.

Formative evaluation also employed several specialists in the disciplines related to the unit. These specialists critically assessed the unit's structure, presentation and representation of their particular disciplines.

Another problem encountered during the formative stages of the unit was--would the unit be teachable and learnable and would the required field testing of the formative evaluation determine its teachability and learnability? To solve this problem, the developer found it necessary to solicit the opinions and criticisms of elementary school students and teachers. After a three week period of field testing, involving two grade five classes and one grade six class--115 pupils--and their teachers, all participants were asked to complete an informal questionnaire which would help ascertain whether the unit was teachable and learnable at the elementary school level. The students' questionnaire

can be viewed in Appendix D and the teacher's questionnaire in Appendix C.

Several observations were also made by the developer during the field testing of the unit. The guide list used by the developer is contained in Appendix B. This will be discussed more fully in the section dealing with the evaluation of the unit.

THE SIGNIFICANCE OF THE STUDY

To the writer's knowledge no studies prior to the present one have applied the theories of Johnson in order to ascertain their utility. Johnson's theories were subjected to rigorous investigation during the course of this study. As well, the unit Newfoundland's First People: The Maritime Archaic Indians was developed as an attempt to fulfil two basic needs in the field of elementary social studies education.

First, the need for the study arose out of recommendations made by social studies educators, recommendations which were made as a result of surveys and observations in social studies education in recent times. These surveys and observations gave educators an insight into the many weaknesses in their field and initiated many recommendations which, if implemented, could greatly improve our social studies programs.

One of the most effective studies of this nature

was begun in 1965 by A. B. Hodgetts and others involved in the National History Project. It reached into 951 elementary and secondary classes in the ten provinces of Canada. The main task of the study was to describe and hold the mirror up so that we could see ourselves for ourselves (Hodgetts, 1968).

This study produced several thoughtprovoking findings which have implications for the present study:

Included were the following:

1. The most serious deficiency was the almost complete lack of realism. There was little attempt to relate the events of the past to the problems and concerns of today.
2. History was the central discipline of all the social studies. This was defined as a dead subject because it involved so much rote memorization of facts, data, and the like.
3. Most classes concentrated on purely descriptive details.
4. There was too much rote memorization of unrelated, discrete, and undigested facts.
5. A great deal of the materials provided in the textbooks was outdated and inaccurate.
6. Over 50% of the social studies teachers observed had nothing to work with but blackboards, chalk, and textbooks.

7. Audio-visual equipment was found to be used very little. The technological revolution in education appeared to have little impact on the teachers teaching social studies; the great majority appeared to rely entirely on the textbook version of the print media.

8. Only 7% of the 951 classes surveyed met most of the requirements of the so called discovery or inquiry method. This left a great number of students without the incentive and opportunity provided by this method whereby children can improve their reading ability; where they can think for themselves; and make the factual evidence work for them.

These revelations of the National History Project provoked much serious thought in the social studies curriculum area in Canada. Consequently, early in 1971, the Curriculum Committee, made up of the heads of curriculum in the ten provinces, set out to find the direction of change that might improve conditions in the field of social studies, especially in things related to Canada. The study also sought to define the materials that might be most useful to teachers and students.

Like the National History Project, this was a nationwide investigation. Eighty institutions were visited and more than 450 persons were interviewed:

students, teachers, administrators, and curriculum experts from all across Canada. In addition, others were interviewed who gave some points of view: parents, publishers, recent school graduates, research officers, and officers of national organizations (Massey, 1971).

This survey tended to serve two purposes. First, it verified the findings of the National History Project, and second, it initiated many recommendations which could help improve the present social studies programs. Some of the recommendations evolving out of this study which had significant influence on the development of Newfoundland's First People: The Maritime Archaic Indians were as follows:

1. Social studies are and should turn to interdisciplinary approaches. This recommendation is not unique to this study. The current Curriculum Guidelines for Social Studies put forward by the National Council for the Social Studies (1971, p. 18) also recommend that social studies programs should draw upon all of the social sciences such as anthropology, economics, geography, political science, sociology, and history.

Other social studies educators are in complete agreement with this and indeed have been anticipating this for many years. Clements, Fielder and Tabachnick (1966) stated that a single social science is a limited conversation about a narrow range of social residue.

Human problems come whole; the study of human problems is interdisciplinary. "No one perspective and no one dialect can exhaust the ways in which men can regard and talk about their own circumstances" (p. 27).

Through the years, the two subjects of history and geography have been the prime contributors of content to elementary social studies programs. Recently, increasing use is being made of concepts from a broader range of social sciences incorporating concepts of history, geography, anthropology, sociology, economics, and social psychology. These disciplines are not replacing the traditional subjects in the social studies,

nor are they reducing the importance of them. The attention given the newer disciplines simply indicates that there is a growing awareness that they have an important contribution to make in the quest for a better understanding of man, society, and human institutions.

Other educators supporting this recommendation are Taba (1962); Drummond (1963); Arnoff (1966); Hanna (1963); Jarolimek (1967); Michaelis et al. (1967); Kaltsounis (1969); McLendon (1967); Anderson (1972).

2. A second recommendation emerging from the Massey Report was that "units" of work are needed for the current programs. Units of work are needed to give flexibility to the programs. It is not always convenient for teachers to develop materials on specific topics. Massey

quoted a Quebec principal who stated, "It is not up to the teachers to fashion their own tools. They expect to have some working tools ready. It is not up to the carpenter to make his hammers" (p. 30). This is very significant especially when new materials and knowledge need to be added to an existing program without the delay and formality usually associated with it.

In the past decade, the need for "units" of work in social studies education has become a very basic one and has been expressed by many social studies educators in current education literature.

The unit Newfoundland's First People: The Maritime Archaic Indians has been developed with the weaknesses of the above research findings in mind. The unit is based on archaeology, therefore adding an anthropological aspect to the existing program. This aspect of the unit is also updating the program as it evolved out of recent developments in the prehistory of the province. The unit provides not only a student textbook but also teacher background materials whereby a teacher unexperienced in anthropology may successfully teach the unit. The unit also provides teacher and students with audio-visual materials thereby bringing into the child's experience that which otherwise would remain distant and remote. The discovery or inquiry method has been incorporated into the unit thereby giving the students the opportunity

of discovering for themselves.

A second basic need which the unit Newfoundland's First People: The Maritime Archaic Indians attempts to fulfil is related to recent archaeological finds in the province. In the summer of 1968, a prehistoric cemetery was excavated at Port au Choix, a small fishing settlement on the west coast of the Newfoundland island. This excavation revealed that people inhabited the province 4,000 years ago, centuries before the Beothuck Indians, Eskimos, or Vikings lived here. Apart from the unit, there is nothing available for the elementary school children--what is available consists of scientific papers published in several scientific journals. Indeed, in the Geography of Newfoundland (Summers and Summers) which was revised in 1972, a bare mention is made of a people living here before the Beothucks or Eskimos. Newfoundland's earliest inhabitants are not identified and one sentence relates generally to this very rich and well adapted culture of so long ago. The unit Newfoundland's First People: The Maritime Archaic Indians proposes to fill this void in our present social studies program.

In summary, this study was undertaken as a result of recommendations evolving out of contemporary educational research and thought, and to provide our teachers and students with materials on our most primitive people, the Maritime Archaic Indians, thereby fulfilling the current

needs of the school.

DEFINITION OF TERMS

For the purpose of this study, the following definitions were adopted:

Unit. An organized collection of intended learning outcomes, instructional practices, learning activities, materials, ideas, and suggestions from which a teacher may select when working with a group of students on one topic of significance is termed a unit.

Social Studies. This is the study of man's social relationships in all their variations, both past and present, a study which draws its substance from the disciplines of history, geography, anthropology, sociology, and social psychology. In this study, man's physical environment and his physical makeup are considered to the extent that they help explain these relationships.

Curriculum. A structured series of intended learning outcomes which are the output of the curriculum development system and the input of the instructional system is defined as the curriculum.

Curricular content. The cultural content explicitly intended to be learned is the curricular content.

Instruction. Instruction is the interactional processes which take place in the classroom.

Instrumental content. The optional cultural content introduced into the instructional situation, not to be learned but to facilitate the intended learning outcomes, and which can be displayed through readings, audio-visuals, lectures, discussion, or any means with which the students transact is known as instrumental content.

Instructional content. This term refers to the curricular content and instrumental content taken together.

Teaching strategies. Teaching strategies involve the implementation of teaching techniques. For example, inductive and deductive strategies, or inquiry and expository strategies.

Formative evaluation. This evaluation takes place during the development of curriculum and instruction. It involves the collection of appropriate evidence during the development and trying out of new curriculum and instruction in such a way that revisions of the same can be based on this evidence.

Elementary school students. Those students engaged in studies in grades from four to eight are

classed as elementary school students.

LIMITATIONS OF THE STUDY

This study, being strictly developmental, was limited in the following ways:

1. The unit Newfoundland's First People: The Maritime Archaic Indians was developed to meet the needs of grades five and six only in the elementary school education area. No attempt has been made to accommodate students outside grades five and six. However, it could easily be adapted to meet needs above and below this level.
2. The study was limited to the development of a unit of curriculum and instruction about one culture--the Maritime Archaic Indians who lived in Newfoundland and other eastern maritime areas of North America some 4,000 years ago.
3. This study was limited to formative evaluation. No summative evaluation has been undertaken.
4. The pilot-testing of the unit was limited to three elementary school classes--two grade five and one grade six--in a largely urban area.

In conclusion, this chapter has included the purpose of the study, the problems encountered, the significance of the study, definition of terms, and its limitations. In Chapter 2, the literature as related to

the unit concept, the theoretical rationale, and the content of the unit will be discussed. In Chapter 3 the developmental procedures undertaken by the developer will be presented; Chapter 4 will deal extensively with the formative evaluation and its relevance to this study; and Chapter 5 a summary with some conclusions and recommendations will be presented.

CHAPTER 2.

REVIEW OF RELATED LITERATURE

Development of the unit Newfoundland's First People: The Maritime Archaic Indians required that literature be reviewed in several areas. The "unit" concept was researched. The Johnson theory for curriculum and instructional development was studied and analyzed and the content area for the unit was researched. To discuss these areas adequately the chapter is divided into three sections. These entail: (1) units in curriculum and instruction, (2) Johnson's theories for curriculum and instructional development, and (3) the content.

UNITS IN CURRICULUM AND INSTRUCTION

The term "unit" is one of many education terms that has taken on various shades of meaning. "Unit teaching" means many things to many people. Consequently, there is great confusion regarding it. Some use the term synonymous with a given block of subject matter, and many textbooks are no longer made up of chapters but contain a list of units. Units have also been categorized as resource units, integrated units, subject matter units, experience units, activity units, in depth units, and

teaching units. These categories have grown up in an attempt to call attention to matters of emphasis or degree, rather than in kind (Sowards and Scobey, 1962). Where this center of emphasis lies depends on the needs of the children, their school and community, and the philosophy held by the developer. The unit can be seen as an organized body of information and materials built around a topic of significance. It serves as a storehouse of curriculum and instructional content, and teaching strategies from which a teacher may select when working with a group of children for the purpose of achieving certain intended learnings.

The use of the unit method in curriculum and instruction is by no means a recent phenomena. Historically, the idea may be traced from the writings of Herbert and his followers through McMurry, Dewey, Kilpartick, Morrison, and others (Wilson, 1963). The schools operated by Dewey at the University of Chicago and by Merriam at the University of Missouri in the opening years of the twentieth century were the forerunners of many new views in curriculum planning. This period is known as the Progressive Era in Education and it brought with it many controversial and exciting changes. Among these was the reversal of priorities in the educational process--now learners rather than subject matter became the center of

the educational process (Sowards and Scobey, 1962). As this concern in education shifted from the learning of subject matter to the development of the child, the unit method developed (Goldmark, 1968).

The primary purpose of the unit is as Joyce (1965) stated:

. . . to limit the range of a topic and hence permit a thoroughgoing cooperative inquiry by the teachers and children, to enable the children to acquire factual control, and to develop well-grounded answers to significant questions (p. 165).

Today, the primary purpose of the unit is no less significant than it was initially. Recently, the practice of organizing social studies on a unit basis has won general acceptance in the elementary school. Many educators (Taba, 1962; Darrow, 1964; Meussig, 1963; Hanna et al., 1964; Jarolimek, 1967; Michaelis, 1967; Hill, 1970; Bloom et al., 1971) have attested to this and have acknowledged the importance of units in social studies education.

The unit method has several contributions to make to curriculum and instruction especially in the field of social studies education. The unit can provide inclusiveness, flexibility, and elasticity for teachers and learners. It can also provide a means whereby old materials can be deleted or minimized and where new materials can be added without delay or formality (Wesley and Adams, 1952).

Goldmark (1968) stated that many objectives can be

achieved through the implementation of the unit. The variety of materials and activities provided by the unit relieves the teacher and students from being restricted to the textbook, therefore making children more motivated and learning more meaningful.

Joyce (1965) considered the unit virtually identical to the depth study which develops in the child a fairly thorough understanding of any human group under examination. Joyce also saw the unit as an opportunity for children to get involved in problem solving instead of having them merely learn by memorization and recitation. Darrow (1964) was of the same opinion a year earlier when she wrote "the unit method can also offer children the challenge and excitement of thinking about problems, making decisions and being able to act upon them" (p. 91).

Of course, the unit method is not without some disadvantages. The widespread acceptance of the unit method in elementary schools, particularly in the social studies, has resulted in abuses as well as effective use. Often the theories propounded by unit advocates do not work out in practice.

Wilson (1963) advised teachers to be on the lookout for dangers and difficulties of unit teaching. He stated that a teacher should state declaratively the objectives she is trying to develop, choose the appropriate content, activities, learning materials, and evaluation

procedures if she wants to adequately teach by the unit method. He also stated:

Unit teaching is more complex than many people realise and there are many misconceptions prevalent. If success in unit teaching is to be achieved there must be careful planning and execution. Its effectiveness is probably no greater than the understanding the teacher has of the procedure (p. 94).

Sowards and Scobey (1962) warned of overusing the unit method. The unit method lends itself to comprehensiveness, where some would contend that the unit, properly conceived, can encompass the full day of teaching and learning at school. Sowards and Scobey expressed doubt as to the wisdom of attaching so much comprehensiveness to the unit. They stated:

A part of the teacher's responsibility, as we see it, is to protect the integrity of the unit experience, by not trying to make it a carrier of all learnings that are vital and important for children at school. . . . For the teacher to decide to teach all of his language and arithmetic within the unit of work is too often to destroy the setting that provides the dynamics of good unit teaching. The unit becomes strained and artificial as attempts to get this or that into it, and many of the values of unit teaching are lost. In fact, the teacher will have his hands full keeping the unit focused as it is. . . . The teacher will do well to keep the class from being led down too many byways in the process (p. 503).

In other words, regardless of where the emphasis is, only materials which relate to and support the central purpose of the unit should be included. In this way, the unit method can complement any social studies program.

The developer of the unit Newfoundland's First People: The Maritime Archaic Indians attempted to incorporate the positive attributes of the unit method as stated above.

JOHNSON'S THEORIES FOR CURRICULUM AND INSTRUCTIONAL DEVELOPMENT

Increasing numbers of educators are becoming interested in curriculum theory, and many have initiated models for curriculum development. Certain of these educators such as Tyler (1950) and Taba (1962) have designed curriculum development models which have been used and proven successful. The model which was chosen as the theoretical framework for the unit Newfoundland's First People: The Maritime Archaic Indians is based on the theories of Mauritz Johnson, Jr. (1967, 1968).

According to Johnson (1968) there is general agreement concerning the centrality of curriculum and instruction in the total educational enterprise, but there is little agreement as to what curriculum and instruction really are and how they relate to each other. Johnson (1967) analyzed many curriculum development models and found that their designers often disagreed on the relationship of curriculum to instruction. He found, for example, that the models designed by Macdonald and Maccia were two such models. To Macdonald, curriculum and instruction are separate concepts that overlap to some extent. Maccia,

on the other hand, held that curriculum is a component of instruction and she saw curriculum not as a system but as instructional content. Johnson saw others identifying curriculum with planned learning experiences. Johnson (1967) concluded that "a concept of curriculum that limits it to a post hoc account of instruction is of little value" (p. 4). In view of the shortcomings of these definitions, Johnson concisely defined curriculum as "a structured series of intended learning outcomes" (p. 4). This concept of curriculum implying such structuring or ordering is, according to Johnson, the assumption underlying the current emphasis on the structure of knowledge, especially of that knowledge derived from inquiry and which is known as the disciplines.

Johnson views the curriculum as an output of a curriculum development system and an input of an instructional system. Johnson's curriculum development occurs in two phases. The first entails a process of selection from the cultural reservoir, followed by an ordering or structuring of these selected elements. This is the master curriculum. The second phase involves a further selection from this master curriculum, without violating its structural imperatives, of a curriculum or "a structured series of intended learning outcomes" for a specific program or unit. This selection of curriculum is done according to specific criteria. Johnson (1967)

stated that a crucial aspect of this selection is "that whatever criteria are used be made explicit" (p. 6).

Even after this second phase, the curriculum still consists of intended learning outcomes, selected for a specific purpose. The curriculum is not a component of instruction as Maccia saw it but according to Johnson it guides instruction. The curriculum prescribes the results of instruction. It does not prescribe the means, for example, it does not stipulate the activities, materials, or even the instructional content, to be used in achieving the results. "Curriculum indicates what is to be learned, not why it should be learned" (p. 4). The curriculum, therefore, has as its main purpose the guiding of instructional planning.

Johnson's instructional system (1967) has three components. These include (1) the instructional plan, (2) the execution (instruction), and (3) evaluation.

The Instructional Plan

The instructional planning occurs at various levels, varying in their temporal proximity to the actual instruction. Most remote is that strategic planning which results in the design of certain courses and units within courses. At this point an appropriate number of curricular items (intended learning outcomes) are selected and organized for instruction. Course and unit developers

have considerable freedom in their selection and organization of curriculum items so long as they do not violate hierarchy and order among the curriculum clusters. Following the selection and ordering of the curriculum items, the instructional planner is faced with the task of selecting instrumental content to be displayed, choosing or creating media for displaying it, and deciding the general strategy by which the instructees' responses to it are to be controlled.

This instrumental content in Johnson's theoretical framework for curriculum and instructional development includes "the optional cultural content introduced into the instructional situation, not to be learned but to facilitate the intended learning" (1967, p. 13). This can be displayed through readings, slides, films, tapes, lectures, discussions, or any other means with which the student transacts, in order to achieve the intended learning outcomes. Anderson (1972) concisely defined instrumental content as "the display with which students transact. During the transaction the instructor is a mediator or a director. He is not a participant or an actor" (p. 4).

The teaching strategies make up an important element in the instructional plan. This is highly related to the curricular and instrumental content and is no less significant than either. Johnson (1968) stated that all

too often the tactics rather than the strategy in the instructional plan is the focus of attention in most analysis of instructional discourse.

Teaching strategies can range from those which are completely open to those which are completely closed.

Feldman and Seifman (1969) referred to the Broudy, Smith, and Burnett theory whereby completely open teaching strategies are unstructured and call for adventurous thinking--this applies where there is very little information available in the situation and the individual is uncertain how to proceed. By contrast, the completely closed teaching strategy calls for a response implicitly indicated in the situation itself, as contained in specifically designed questions.

Bruner (1963) distinguished two kinds of teaching: that which takes place in the expository mode and that in the hypothetical mode. In the former, the teacher is the expositor or teller and the student is the listener. In the hypothetical mode, the teacher and student are in a more cooperative position. Here the student is no longer the listener, but is taking part in the process of acquiring information, formulating hypothesis about it, and evaluating the information. This mode characterizes the teaching that encourages discovery. Fenton (1967) observed that curriculum reforms in the past decade have brought the discovery method to science, mathematics, and

social studies, thus allowing the students to engage in the process of finding out things for themselves.

Between the discovery and the expository teaching strategies, there are strategies which have characteristics of both. For example, a student can be given a certain amount of data and be required to fill in the missing evidence that explains the outcome or result. In another instance certain conditions are established and the student is asked to predict the result. Whatever variant of teaching strategy is used, according to Johnson (1968) it is through the strategy that the instructee's responses to the displayed instrumental content are controlled (p. 12).

This instructional plan is developed along the guidelines provided by the curriculum and it is through this plan that the curriculum is translated into instruction.

The Execution (Instruction)

The above instructional plan of Johnson's is activated or executed through instruction. Johnson's concept of instruction consists of two sets of interaction. First, is the transaction between the student and the environment manipulated by the teacher--the display. Both the content of the environment and the activities of the student are governed by the curriculum. Second, there is the interpersonal or social interaction between the teacher and the student. Both sets of interaction

are necessary for effective instruction to occur. When instruction does occur it is related to one or several of the curriculum items.

Evaluation

The final component in Johnson's instructional plan is evaluation. Johnson (1967) stated that the curriculum does not specify the means of evaluation, though it does furnish the criteria for the evaluation of instructional outcomes--involving a comparison of actual learning outcomes with the intended learning outcomes. Many educators see evaluation in this light. Jarolimek, (1967), stated that "evaluation is made in terms of the objective established at the outset of the unit and in terms of changes in behaviour of children in the direction of these goals" (p. 92). Likewise, Ebel, an evaluation specialist stated (1960) that "good evaluation can only be made in relation to the goals of instruction" (p. 6). Ebel recognized the weakness that all too often when teachers make tests they forget their goals and remember only the subject matter they used in trying to achieve their goals.

This then is a resume of Johnson's theory for translating curriculum into instruction. The Johnson theory was chosen by this developer for its conciseness and comprehensiveness. It provides a well defined theory

for the understanding of curricular and instructional phenomena. This theoretical framework has gone a step further than that of most educators as it distinguishes between curriculum and instruction and explicates the relationships between the two. It is also comprehensive enough to guide a developer through the whole developmental process, from the criteria for selecting curriculum to the implementation of the instructional plan, yet allowing freedom to choose subject matter, instrumental content, and teaching strategies for the achievement of the specific intended learnings of a specific unit of work. It was for these reasons that the writer believed that Johnson's theories could provide an adequate theoretical framework with which to develop a unit of curriculum and instruction.

THE CONTENT

The content of the unit Newfoundland's First People: The Maritime Archaic Indians was derived from two sources.

They are as follows:

1. Original scientific documents prepared by the archaeologist in charge of the excavation at Port au Choix, Newfoundland in 1968, Dr. James A. Tuck.
2. Personal communication between the developer and Dr. James A. Tuck.

This excavation referred to above led to the

identification of Newfoundland's first known inhabitants, the Maritime Archaic Indians. A summary of this information follows.

In the summer of 1968, a prehistoric cemetery, was excavated at Port au Choix, a small fishing settlement on the western coast of the Great Northern Peninsula, Newfoundland. The director of the excavation was Dr. James A. Tuck from the Department of Sociology and Anthropology, Memorial University. This burial place (preserved because of the extreme alkalinity of its soil--pH around 8.0) yielded the remains of over one hundred humans, a small number of dog skeletons, and thousands of excellently preserved artifacts. Carbon dating told that this was a preferred burial place for several hundred years between 2000-1200 B.C. (Tuck, 1970, 1971).

Analysis of the skeletal and artifactual remains showed that these people were American Indians of the Archaic tradition. Tuck named these people the "Maritime Archaic" Indians. This name was chosen by him because it most appropriately describes their way of life. The term Maritime was applied, first because people of this same cultural tradition had inhabited the Maritime areas of North Eastern North America--the Canadian Maritime Provinces with extensions northward into Quebec, Labrador, and Newfoundland, and southward extensions into Northern

New England, especially in the state of Maine. Secondly, Tuck applied the name Maritime because in every geographical area of its expression there seems to have been some part, in most places a major part, of the culture oriented towards the sea. The term Archaic of course, refers to an ancient or very old culture.

Of the Maritime Archaic people, Tuck (1971) wrote:

The Maritime Archaic is a full cultural tradition which was well adapted to life in the Maritimes by 4000 years ago and whose participating cultures divided their time between the shore and the easily accessible interior where they exploited the distinctive species found in each area. Their technology was well suited to cope with the environment with which they interacted, both in this world and the next (p. 354).

The many artifacts uncovered at Port au Choix reveal the way of life or the culture of the Maritime Archaic Indians. They subsisted on an economy based upon the distinctive resources found in the area in which they lived. These resources for the most part were common to the whole Maritime area. These included sea mammals (seals, walrus, whales); fish; sea birds such as ducks, murres, the now extinct great auk; and other animals, especially in Newfoundland the caribou, beaver, black bear, otter, and pine marten. Evidence of this economy can be seen in the collection from Port au Choix (Tuck, 1970, 1971).

This economy required a specific technology for its pursuit and preparation. Caribou spears and lances

of slate and bone; barbed and toggle-type harpoons all aided in the hunting and fishing activities. Other hunting and fishing tools included bone daggers and foreshafts.

Besides the hunting and fishing implements, several tools were found which suggest that woodworking industry was well developed. These artifacts include axes, adzes, and gouges of stone and occasionally of bone or walrus ivory. Beaver incisor teeth which were sharpened in various ways were also found. No doubt, these tools were used to make wooden bowls, wooden spears, and possibly dugout canoes.

Skin and hide working was also an important aspect in the life of these ancient people. The tools used for this purpose included bone scrapers and beaming tools, awls, and several sewing needles (with eyes), some made from bird bones and formed by carving and grinding. These bone needles suggest to us that tailored skin clothing was sewn by our earliest people. Specific artifacts also attest to the ornamentation of this clothing. For example, small shell beads were often sewn on parka hoods.

Pendants of the same materials were often found in the graves of infants and small children. Other decorative objects, found in such a way to suggest that they were sewn on garments, probably served as magical or religious charms and as such tell us quite a bit about the beliefs of our early inhabitants. Again these beliefs were well

suited to the type of life led by these early hunters and gatherers. Carved bone, stone, and antler charms were common, and also feet, claws, heads, bills, teeth of various birds and mammals were also carried on the person to ensure a good hunt or good fishing. Quartz pebbles and crystals, concretions and water worn stones, carved stone objects, bone and antler pendants, combs and pins, often carved to resemble birds or animals also served as fetishes or charms. Other goods found in most graves were bone whistles and bone tubes. Tuck concluded that this elaborate burial practice indicates that mortuary ceremonialism was very well developed.

The demise of the Maritime Archaic Indians is unknown and by about 1000 B.C. they seem to have disappeared from the entire Canadian east coast. Tuck suggested that this disappearance may have occurred because of environmental factors or because of the southward advance of new Eskimo people along the Labrador Coast. Until archaeologists find clues related to this, their disappearance from Newfoundland and other areas where they lived will remain a mystery.

This information on Newfoundland's earliest inhabitants has not been made available to Newfoundland's school population. In the grades five and six social studies program, where the emphasis is on Newfoundland and the Maritime Provinces, this information has been

completely ignored. The transformation of this information for the use of the elementary student has been the main concern of this study, resulting in the unit Newfoundland's First People: The Maritime Archaic Indians.

In summary, this chapter has dealt extensively with three themes pertinent to the present study. First, since the study was concerned with the development of a unit of curriculum and instruction, the unit concept was reviewed, and the advantages and disadvantages associated with it were examined. Second, the theoretical framework employed for the unit development was examined and presented. Third, the content on which the unit was based was researched and presented. Chapter 3 will deal with the procedures used by the developer for integrating the above three themes.

CHAPTER 3

PROCEDURES

Developing the unit Newfoundland's First People: The Maritime Archaic Indians was the major objective of this study. The development of the unit can be classified as the development of curriculum and instruction. However, the curriculum development aspect was restricted to the selection of those intended learning outcomes which were used for guiding the instructional plan for the unit.

Johnson (1967) views the disciplines as man's systematic efforts to interpret his experiences. He stated:

An educational curriculum is developed by selecting among and within these disciplines those elements which analysis identifies as having the greatest potential interpretive value. Once the disciplines considered most relevant in the interpretation of experience have been identified, internal selection criteria become dominant. Which specific curriculum items are selected depends on how fundamental and crucial they are to the discipline, how well they explicate its structure, how powerful they are in furthering its characteristics thought processes and modes of inquiry (p. 7).

This passage provides much guidance for any developer. Because the unit was intended for social studies education, the developer utilized the social sciences for those elements which held the greatest interpretive value for its development. By definition,

social studies education deals with man's social relationships in all their variations both past and present and it draws from all of the social sciences in its attempt to explain these relationships. The social science disciplines selected by this developer were anthropology and archaeology. They were selected on their basis of having the greatest possible potential interpretive value for the study of Newfoundland's earliest people and their relationships with the world around them and with each other.

After this decision was made, internal selection of the intended learning outcomes or the curriculum occurred. This curriculum, in turn, guided in the development of the instructional plan, which consists of the instrumental content and teaching strategies. To discuss the procedures involved in this development, the chapter is divided into three sections. These entail: (1) the intended learning outcomes, (2) the instrumental content, and (3) the teaching strategies.

THE INTENDED LEARNING OUTCOMES

The intended learning outcomes (ILO^s) or curriculum for the unit are vital elements as they refer to what it is intended that students learn, not what it is intended they do, or why they do it. These curricular elements also guide instruction and furnish criteria for evaluation. The ILO^s for the unit are as follows:

The primary intended learning outcome of the unit is to help students acquire a knowledge, understanding, and appreciation of the way of life and the problems of Newfoundland's first known people, the Maritime Archaic Indians.

To achieve this outcome the unit deals with the following aspects of the life of these ancient people:

1. their identity
2. their origin or affiliation
3. their location
4. their place in time
5. their physical environment
6. their cultural materials
7. their magico-religious system
8. their values
9. their education
10. their decline and disappearance.

A secondary intended learning outcome is to introduce the discipline of archaeology as the scientific means of finding evidence of extinct cultures without the written records. This does not propose to make professionals out of the students, but it does propose to help them gain some insight into the ways and methods of the archaeologist and the contribution of his work to the knowledge and understanding of prehistoric people. This ILO should help to answer the students' persistent

question "How do you know?"

Besides these two basic intended learning outcomes of the unit, there are several opportunities where the following skills may be promoted:

1. accurate spelling
2. keeping records
3. vocabulary building
4. co-operation
5. discussion
6. dramatization
7. group planning
8. comparing and relating information
9. drawing inferences
10. giving explanations
11. noting main ideas
12. thoughtful listening
13. appreciating other cultures
14. arranging events in sequence
15. displaying materials
16. asking thoughtful questions
17. making decisions
18. judging importance of information
19. summarizing information.

These intended learning outcomes were selected for the unit on the basis of the significance, applicability, and relevance they provided it. Since social

studies education is the study of man's social relationships in all their variations, both past and present, the primary ILO has significance, applicability and relevancy for this unit. The same criteria were used for the selection of the secondary ILO. Rationale for this criteria evolves out of contemporary social education's effort to expose children to the ways of thinking and the modes of inquiry of the social scientists. Contemporary social studies educators are also utilizing other social sciences rather than just the traditional disciplines of history and geography. The ILO^s encompassing the skills provide the opportunity for students to develop certain skills so that they may be better able to cope with their social environment.

Following the selection and formulation of the ILO^s, they were organized for the unit both logically and psychologically.

This selected curricular content required that specific instrumental content be available for the implementation of the instructional plan.

THE INSTRUMENTAL CONTENT

The instrumental content is that content chosen to facilitate the intended learnings. This can be displayed through readings, films, tapes, slides, lectures, activities, pictures, or any means with

which the students transact in order to achieve the intended learnings.

The instrumental content developed for the unit Newfoundland's First People: The Maritime Archaic Indians include both reading and non-reading materials. Both are necessary, for by definition, a unit should provide the teacher with more than one avenue to choose from when working with a group of students.

The instrumental content for the unit can best be discussed under three headings. These are: (1) reading materials, (2) audio-visual materials, and (3) activities.

Reading Materials

Since the beginning of the last decade, so much emphasis has been placed upon some of the newer and perhaps more spectacular aids to learning that laymen may be misled into believing that reading materials have been replaced in the classroom by films, television and other media. While these latter media are very valuable aids to learning, they do not constitute the basis of the social studies program. Our schools and educational systems still depend, and will continue to depend, primarily on reading. Many educators attest that books are the most important single learning tool of the social studies and that books form the best established of all instructional materials (Tiegs and Adams, 1959; Rogers and Muessig, 1963; Brown and Brown, 1967; Kaltsounis,

1969). The reading materials developed for the unit consist of reading materials for the student and reading materials for the teacher. The reading materials, therefore, will be discussed under these headings.

Reading materials for the students. One of the greatest challenges for the developer of the unit Newfoundland's First People: The Maritime Archaic Indians was preparing reading materials which would match the reading abilities of elementary school students, especially grade five and grade six students, the population selected for the study. One of the real difficulties of teaching is that scholarly knowledge is not created in the language of the child, or created for his particular use. For example, an archaeologist invents concepts that he and other archaeologists can use to explain things. Therefore, one of the greatest tasks facing the educator is to translate those concepts and methods into forms that can be readily taught to children.

The importance of selecting or developing reading materials which match the reading abilities of a group of children has led to many attempts to measure readability, or reading difficulty of textbooks and other materials through the use of readability formulas. Dechant (1964) stated:

Readability is not an easily defined concept. It involves an interaction between reader and

writer. Because communication between the writer and reader seldom is perfect, readability rarely can be absolute. It usually is a matter of degree. . . . the concept of readability generally refers to the success that the average individual has with a book (p. 464).

Dechant (1964) has reckoned that since 1923, more than thirty readability formulas have been developed. Among the large number who have worked on readability formulas are Dale-Chall, Flesch, Lewerenz, Botel, and S.R.A. Most of these formulas take into account four or five aspects of writing in attempting to determine readability. Among these aspects are vocabulary, sentence structure, the quality of concepts, the number of Latin derivatives, the length of sentences, and the interest element (Tregs and Adams, 1959).

Dechant (1964) observed that most educators state that the goal in developing readability formulas is to get the highest prediction while having to deal with the smallest number of factors. After researching the available literature on reading formulas and readability, and after personal communications with reading specialists at the University, the Readability Graph as designed by Edward Fry (1972) was selected by this developer to help in the determination of the readability level of the unit.

One of the criteria used by Fry in the development of the Readability Graph was simplicity. After examining several of the most popular formulas, he found

that often they were far too complex to be functional.

He found the Dale-Chall formula to be loaded with fussy rules, a tedious vocabulary, decimal figures carried to the fourth place, and about eighteen pages in length. He found that the SRA was relatively simple, but it required a plastic gadget costing several dollars and had only four difficulty designations (Fry, 1972).

The Readability Graph was first developed by Fry when he was in Uganda and here simplicity was a prerequisite. Initially, the graph was geared to African children. However, Fry adapted his graph for the American education scene. Again simplicity played a vital part in this adaptation.

Data obtained by Fry from the master's thesis of Andrew Kistulentz, at Rutgers University Graduate School of Education, revealed that his Readability Graph correlated quite highly with most of the more complex formulas. For example, correlation with the Dale-Chall formula was at .94, with the Flesch formula at .96 and with the SRA .98 (Fry, 1972).

The directions for using the Readability Graph are precise and simple. It was designed so that teachers, librarians, and publishers could apply it without the fussy rules and tedious vocabulary associated with the majority of readability formulas. The procedure for applying the Fry Readability Formula follows.

1. Select three 100-word passages near the beginning, middle, and end of the book. Skip all proper nouns.
2. Count the total number of sentences in each 100-word passage. Average these three numbers.
3. Count the total number of syllables in each 100-word passage. Average these three numbers.
4. Plot on the graph the average number of sentences per 100 words and the average number of syllables per 100 words. This point tells the approximate grade level of the reading materials.

The data obtained from the student readings, following the above procedure are presented in Table 1.

TABLE 1

100 Word Sample	Sentences per Sample	Syllables per Sample
Page 1	6.2	126
Page 23	8.0	125
Page 44	8.0	128
Totals	22.2	379
Average all Samples	7.4	126.3

When plotted on the Fry Readability Graph the result appeared at a Grade 5.5 level of difficulty.

Figure 1 shows this point. The student readings were therefore considered suitable for the purposes of this study.

Other problems associated with the pupils' readings presented themselves during the unit development. These were concerned with the legibility of the reading materials. Since legibility greatly influences the speed with which the reader can digest materials, legibility becomes an important factor in reading. Legibility relates to the type size, type kind, line width, leading--space between lines, color, and contrast of print. To solve the above problems, the developer gleaned much of the elementary social studies literature, solicited the suggestions of several elementary school students, and followed suggestions made by Emerald V. Dechant in Improving the Teaching of Reading (1964). These suggestions by Dechant were made as a result of research in the area of legibility. All three sources helped in the development of the students' reading materials. The students' reading can be viewed in Appendix E.

Reading materials for the teacher. The development of the teacher's manual proved to be a task much more complicated than the developer anticipated. How can one design materials for the teacher which are not too

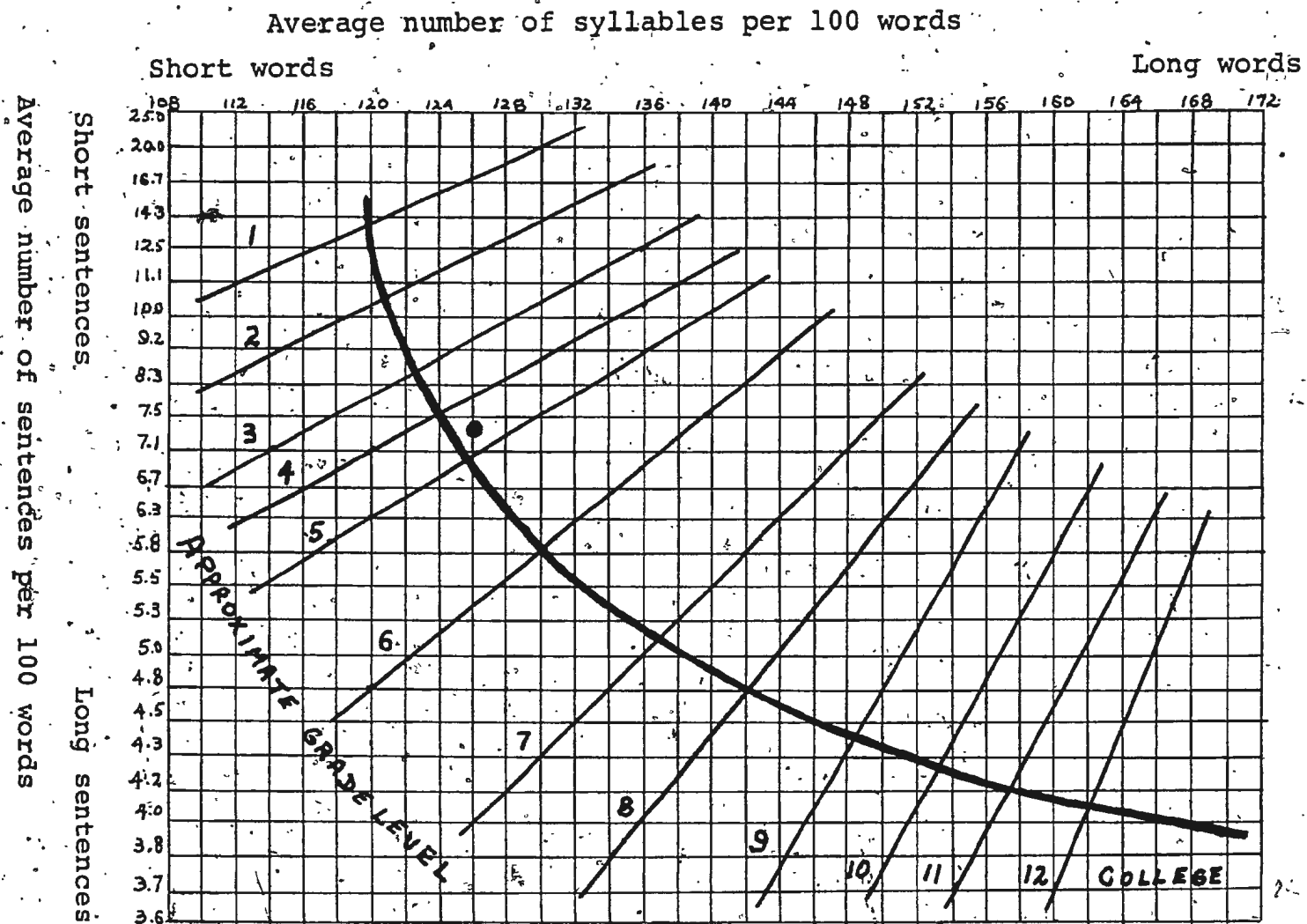


FIGURE 1
FRY'S READABILITY GRAPH

broad or general in nature? With this type of manual, the teacher is often left with just the unit text as a guide. . . On the other hand, how can one design teacher materials without restricting or binding the teacher by them? Teacher materials which are highly structured and inflexible often deprive the teacher of the opportunity of projecting himself into his teachings. Jarolimiek (1967b) asserted that not much teaching can take place if teachers are expected to use "teacher proof materials" (p. 26). The overly complicated teacher's manual overwhelms the teacher with the task of fitting all the components together into a teachable program. . In some cases, teachers' readings have become so complicated that only those possessing a high degree of social studies education can possibly understand them. Often teachers are required to engage in in-service training before implementing curriculum materials, for example, the Taba Curriculum materials.

This developer has attempted to strike a median between these two extremes. Consequently, the teacher's manual was designed to present the teacher with the main emphasis of the unit; the intended learning outcomes; the teaching strategies; and suggested activities for the achievement of possible skills depending on the needs of the particular class and teacher involved. There are also several test items, designed in relation to the

intended learning outcomes, which the teacher may use, adapt, or substitute, again depending on the immediate needs of the teacher and class. The actual teaching and working with students is left entirely up to the individual teacher. If we acknowledge that individual differences in people exist, then we must allow the individual teacher to make his or her own contribution to the education of our youth.

The teacher's manual for the unit Newfoundland's First People: The Maritime Archaic Indians also provides the teacher with background materials so that the unit can be taught without hesitation or confusion. An informal survey conducted by the developer among twenty-five teachers revealed that none was familiar with recent contributions to the prehistory of our province and none had any background in the field of archaeology, the unit source of content. By providing adequate background materials, the developer tried to eliminate these deficiencies.

The teacher's manual was developed, not to bind the teacher or to provide a blueprint for everything the teacher and pupils are expected to do to, but to serve as a guide so that the intended learnings put forward by the unit may be achieved. Teacher materials appear in Appendix F.

Audio-Visual Materials

Audio-visual materials provide many essential curriculum and instructional experiences which help the child in the learning process. Regardless of the potentialities with which a child is born, his development depends greatly upon his ability to interact with his environment; and very important in this interaction is his ability to perceive or to gain information through his senses. Both visual and auditory experiences are basic to the child in his overall development as the nervous system of the average child integrates the impressions which he receives from his environment through his senses. Common knowledge shows that the more senses a child uses in acquiring learnings, the more he learns and the more permanent his learnings are. Audio-visual materials are instrumental in bringing about the use of the senses, thereby, increasing the learning possibilities.

Audio-visual materials are used to do what the written word alone cannot do. One is frequently exposed to the old adage that a good picture is worth a thousand words. How true this must be for a child who has had a limited number of experiences and who has developed a limited number of concepts. Audio-visual materials are capable of breaking the barriers of time and space, by bringing into the classroom the sphere of the child's experience that would otherwise remain lost and distant.

Products of past eras, even prehistoric eras, can be gleaned through the means of audio-visual materials.

Among the most popular audio-visual materials we find films, filmstrips, slides, pictures, maps, photographs, illustrations, radio, tape-recordings, realia of all kinds and many more. Even though most visual materials depend on reading to some extent--maps have titles and legends, slides often contain some print, for the most part, however, these materials use symbols other than print as the primary source of conveying meaning to the students.

Audio-visual materials, according to Kaltsounis (1969) tend to serve three basic instructional purposes:

1. They are used to motivate the students to the study of a new area, new concept or new generalization.
2. They are used as sources of specific knowledge or as means for demonstrating relationships in the formation of concepts and generalizations.
3. They are used to summarize a unit or to assist pupils in evaluating what they have learned from other sources (p. 146).

Audio-visual materials developed for the unit consist of illustrations, photographs, artists' portrayals, map, colored slides, and audio-tapes. These materials are discussed under the following headings: (1) illustrations, photographs, and artist's portrayals, (2) slides and audio-tape, and (3) map.

Illustrations, photographs and artists' portrayals.

Probably the most widely used of all visual materials are illustrations, photographs, and artists' portrayals. The students' booklet is well furnished with those visuals and they are blended into the reading materials at appropriate places. The visual materials were obtained from private collections, and original photography and art-work done specifically for the unit. The selection procedures were based on several criteria. They were authenticity, accuracy, appropriateness, significance, and quality.

Visual materials may be used by the teacher and students to achieve a number of purposes in the unit. For example, they are an avenue open to the child who does not have well-developed reading skills. They are not, however, limited to the children who have difficulty in reading. Often these resources present information that is difficult to obtain through reading. Pictures, illustrations, and photographs can be used to motivate, to clarify ideas, and to recall or represent the real object. They can also be used for summarization. Pictorials bring the child a step closer to reality.

Edgar Dale (1954) stated:

if we want a true picture, verbal descriptions are not enough. Unless we have pictorial experiences, with which we may combine the verbal description, we are likely to see something quite different from what was intended (p. 33).

The abstractness of the written word and the concreteness of the pictorial interact to make learning more meaningful for the child. Both can be viewed in Appendix E.

Slides and audio-tape. Slides can be regarded as attention-focusing still pictures which are viewed and studied by being projected unto a screen. Slides have been used in schools for several years and they are continually becoming more popular as a means for bringing distant places and people into the classroom. They have the same instructional significance as the illustrations, photographs and pictures referred to above. They are very effective in showing processes, such as how to use a tool, how people live, and how they produce clothing and food.

Slides can be used successfully to perform many uses in the classroom. They can be used for informal pupil reports and class discussions. They can be easily manipulated and adapted for use in all areas of the social studies program, they can be easily stored, and they are very effective in their ability to reproduce realia. An additional asset of slides is that they can be viewed by the entire class at one time or by any one individual at a time.

The slides produced for the unit Newfoundland's

First People: The Maritime Archaic Indians are supported by two additional sense appeal mechanisms--color and sound. The slides and the accompanying sound tape were developed using the same criteria as the pictorials: authenticity, accuracy, appropriateness, significance and quality. The sound tape gives an additional sense thereby allowing the child to gain experiences through both sight and sound. The slides and tape as instrumental content, provide the opportunity for bringing information and interest into the classroom in a colorful and inexpensive way. Both the slides and audio-tape hold the potential for supporting the written word and for helping to achieve the intended learning outcomes of the unit. The pictures and readings in the student booklet found in Appendix E are similar to the slides and audio-tape. The slides and audio-tape, therefore, were not appended.

Map. Another significant item of the instrumental content with which the students transact is the map associated with the unit. Maps are an integral part of the social studies education. Children study maps in order to understand relations about the earth, or specific parts of the earth, and its inhabitants. Maps also provide the child with a means whereby he can decode information from symbolic form. Joyce (1965) stated that "maps in fact, are actually mathematical representations of reality" (p. 104).

The unit map was designed to illustrate the location and distribution of the Maritime Archaic Indians four thousand years ago. The criteria used for this procedure were simplicity, relativity and accuracy. Besides the provisions for the child to locate the areas inhabited by the Archaic Indians, the map can be used by the teacher to promote such map-reading skills as the knowledge and understanding of symbols, scale, distance, and direction. The unit map contains all the necessary information required to aid in the fulfilling of the intended learning outcomes of the unit. The unit map may be viewed on page 123 in Appendix E.

Activities

The developer has provided the child with several activities under the caption "Something To Do" which are blended in with the readings and visuals at appropriate places. These were developed for the unit as a result of suggestions from several elementary school students. These students expressed a need for "something different--like puzzles or games." They were developed for the unit on the basis of their relativity, appropriateness, and the need they fulfilled.

The activities were designed to give each pupil an opportunity to "learn by doing", a very important precept of the Gestalt theory of learning. Children do not have

to be actively engaged in activity with their hands and bodies in order to learn--a child can be sitting quietly at a desk and yet be vigorously engaged in any one of a number of mental activities. These activities give the child an opportunity to interact with a part of his environment in an enjoyable learning experience, where he is an active participant rather than a passive receptacle. These activities may be seen on pages 129, 141, 158 and 168.

THE TEACHING STRATEGIES

Teaching strategies for the achievement of the intended learnings of the unit are both expository and inquiry oriented.

Readings, illustrations, photographs, artists' portrayals, map, slides and audio-tape are provided to accommodate the expository teaching strategies.

The inquiry strategies consist of a series of questions designed to give students the opportunities to exercise the total range of thinking skills.

Questions have always been an important part of a teacher's technique but usually they were used for testing a pupil's knowledge instead of stimulating him to think. Questions in the classroom and instructional materials are significant in the guidance of the teaching-learning situation toward the achievement of

intended learnings. Questions can substantiate stated learning outcomes and reveal many un verbalized aims.

In certain new curriculum projects, such as the Taba Curriculum, the inquiry strategy is guided through skillful questioning on the part of the teacher. The basis of this strategy is to use questions in a sequence that raises thinking to higher and higher levels. Questions and problems have long been used to motivate interest, to instruct, and to evaluate. Sanders (1966) used the word question "to refer to any intellectual exercise calling for a response; this would include both problems and projects" (p. 2).

This developer found that a useful guide for the formulation and development of questions that range from the knowledge level to evaluation level is Bloom's

Taxonomy of Educational Objectives: Cognitive Domain

(1956). Indeed, Sanders (1966) carried the Taxonomy of Educational Objectives in a new direction when he developed his "taxonomy of questions" (p. 3). It is anticipated that through a systematic consideration of questions, students will use ideas, rather than just remember them. Students can be led into all kinds of thinking through the careful use of questions.

The unit Newfoundland's First People: The Maritime Archaic Indians provides the students with two series of questions. One series comes under "Something To Discover"

and consists of certain questions designed to motivate the student into discovering for himself, the solutions to the problems posed. This helps the student discover the pleasure of discovering for himself.

The second series of questions is listed under "Something To Think About" and was designed to lead the student through various levels of thinking. The questions were devised on each level and fitted into the unit in a sequence that provides for the intake and comprehension of ideas and moves to the application and evaluation of ideas as shown in the following examples:

Translation--Changing information into another form.

--On the picture of the band, find clues which tell you that the early people of Newfoundland were hunters and fishermen.

Interpretation--discovering relationships.

--Study your map. How many Maritime Archaic sites are there? How many are located by the sea? What does this tell you about the importance of the sea to them?

Extrapolation--going beyond given information to determine implications, consequences and effects.

--When the fish and animals did not come, what

did it mean to the Maritime Archaic Indians?

Does it mean the same to us? Why or why not?

Application--applying known information to a new situation.

--You are a Maritime Archaic Indian and you have to find a good place to set up camp. What things would you look for in choosing a good camp site?

Analysis--identifying main factors in a problem.

--You are an archaeologist in charge of excavating a site. Write up your plan for carrying out the dig.

Synthesis--imaginative thinking.

--Think about all the things that are left at the city dump. Make up a story about an archaeologist who would dig in this dump four thousand years from now? What do you think he might find? Could he tell how you and your friends lived?

Evaluation--the student makes a judgment of good or bad, according to standards he designates.

--A statement on page 43 says that archaeology is man's discovery of his past. Does the author give enough information to support this statement?

--You have discovered that the first people to

live in Newfoundland were given their name because they were an ancient culture who depended greatly on the sea for their livelihood. Do your readings and map given enough information to show that this was so?

The unit does not ignore questions on the knowledge level. Several are included but the principle to keep in mind is the utilization of questions on increasing levels of complexity. All too often, teachers use questions on the knowledge level only, failing to move to higher levels. However, it should be remembered that higher levels cannot be reached if students do not have sufficient knowledge with which to think. Questions preplanned on all levels is a safeguard that can be used to guide the inquiry strategy in the most profitable direction.

The "Something To Discover" series of questions may be seen on pages 124, 130, 142, 159 and 161 of Appendix E. The "Something To Think About" questions appear on pages 129, 141, 158 and 168 and Appendix E.

In summary, this chapter dealt with the procedures employed for the development of the curriculum and instructional plan, as conceived by Johnson. The following steps were taken. First the unit curriculum items--the ILO^s--were selected and formulated on the criteria of their significance, applicability, relevance, comprehensibility, and usefulness. Second, these ILO^s were

organized both logically and psychologically. Third the appropriate content was selected to facilitate in the attainment of the ILO^s of the unit. Fourth, the content was transposed to the reading level of elementary school students. Fry's Readability Graph was utilized in this procedure. Fifth, the instrument content was developed in the form of readings, audio-visual materials, and activities. These were developed on the criteria of authenticity, accuracy, appropriateness, and significance. Sixth, the teaching strategies were developed for the unit. These teaching strategies were designed to interact with the instrumental content for the achievement of the unit ILO^s.

At this point, the ILO^s, the instrumental content, and the teaching strategies were collated into a workable form resulting in the unit Newfoundland's First People: The Maritime Archaic Indians. Just how workable this unit was would be determined by formative evaluation. This will be discussed in the following chapter.

CHAPTER 4

FORMATIVE EVALUATION

For the purpose of this study, formative evaluation as propounded by Scriven (1967) was employed. According to Scriven, evaluation can play several roles. One role that has often been assigned to evaluation is as an important part of the process of curriculum development. Formative evaluation in this sense involves the collection of appropriate evidence during the development and trying out of new curriculum materials in such a way that revisions of the same can be based on this evidence.

Formative evaluation then occurs during the development and implementation period of curriculum and instructional materials. Scriven (1967) stated:

Any curriculum builder is almost automatically engaged in formative evaluation. . . . So, as he proceeds to construct the new material, he is constantly evaluating his own material as better than that which is already current. Unless entirely ignorant of one's shortcomings as a judge of one's own work, he is also presumably engaged in field-testing the work while it is being developed, and in so doing he gets feedback on the basis of which he again produces revisions; this is of course formative evaluation (p. 43).

The role of formative evaluation then, is not to compare one technique of teaching with another. Rather, the role of formative evaluation is "to discover deficiencies and successes in the intermediate versions"

(p. 51) of new curricular and instructional materials.

It was for this purpose that formative evaluation was undertaken during the development of the unit Newfoundland's First People: The Maritime Archaic Indians. The formative evaluation will be discussed under three headings. These are: (1) assessment by specialists, (2) classroom trials, and (3) application of "guiding questions."

ASSESSMENT BY SPECIALISTS

When the ILO^s, instrumental content, and teaching strategies were collated into a workable unit of work, several specialists were employed to assess its content validity, structure, and presentation. This was a very necessary part in the formative evaluation of the unit.

Johnson (1968) stated:

Only a specialist in a discipline can assess the internal significance of its substantive content. One is not free to extract at will isolated elements whose practical utility is most obvious with regard to the disciplinary structure. The integrity of clusters of concepts and skills must be respected and preserved (p. 6).

Only specialists in the disciplines related to the unit could do this. Before the unit could be field tested by students and teachers, it had to be determined whether it would be of any use to them. Specialists employed for this phase of the formative evaluation process were experts in the disciplines of archaeology-

anthropology, social studies education, and audio-visual education. These specialists included two from archaeology and anthropology--both prehistoric archaeologists and professors at Memorial University; three from social studies education--two professors at Memorial University and one a graduate student in social studies; two from audio-visual education--one a professor and the other a technician at Memorial University.

Scriven (1967) recognized the significance of this aspect of the evaluation. He stated:

We must certainly weigh seriously the opinions of the subject matter expert as to the flavor and quality of the curriculum content. Sometimes it will be almost all we have to go on, and sometimes it will even be enough for some decisions. It should in any event be seriously considered and sometimes heavily weighted in the evaluation process, for the absence of supporting professional consensus of this kind is often adequate grounds for the complete rejection of the material (pp. 47-48).

After a detailed examination of the unit by the discipline specialists, the following observations and revisions were made:

1. The archaeology and anthropology experts attested to the validity of the content, structure, presentation, and representation in their area.
2. The social studies experts also attested to the validity of the content, structure, presentation, and representation in their field. However, a minor defect was detected in part of the

instrumental content--the teacher's manual. Certain of the suggested ILO^s for the unit were misplaced. This was corrected. A minor change was also made in one of the suggested activities in the manual. This change was made for the convenience of both teachers and pupils.

3. The audio-visual materials as part of the display function of the unit were developed and selected on explicitly stated criteria; one of them being "quality." To meet this criteria, this phase in the evaluation revealed that certain revisions were necessary. Experts in the audio-visual field detected some inferior productions in both the audio and visual materials.

The poor quality of the voice production on the audio-tape necessitated in having to re-develop this aspect of the display materials. This was not a technical problem but one where an inexperienced reader was the cause of the dilemma. A more professional reader was engaged for this revision, a revision which was necessary to satisfy the criteria of "quality."

In the visual area, several of the pictorials were of inferior quality and had to be revised.

When the revisions evolving out of this phase of evaluation were complete, the unit was prepared for further assessment by teachers and students. Students' readings,

teachers' readings, and audio-visual materials were duplicated for these classroom trials. The results of this stage of evaluation is discussed in the following section.

CLASSROOM TRIALS

The developer of the unit Newfoundland's First People: The Maritime Archaic Indians believed that this aspect of the formative evaluation--the classroom trials--was vital and important. The unit had been assessed by specialists and the necessary revisions were made.

Theoretically the unit was sound, but the question remained as to whether it would be functional. Only the test in the classroom could determine this.

Three elementary school classes consisting of two grade five classes and one grade six class--115 pupils--were involved in the classroom trials of the unit. These three classes were selected at random by personnel at the Avalon Consolidated School Board in St. John's. Most of the children lived in the urban area of St. John's but a small number came from surrounding rural areas. All three classes were considered to contain average fifth and sixth graders by their teachers. The unit field testing occurred during the last three weeks of the school year from June 1 to June 22, 1973.

The developer of the unit refrained from official

participation in the field-testing as it was necessary to determine if the teachers and students could use the unit effectively without the subjectivity and familiarity of one who works with one's own tools. The developer also wished to avoid any change in the teacher and student discipline which usually occurs as a result of an observer being placed in the classroom.

However, the developer found it necessary to make some observations during the field-testing of the unit. Four visits were made at random to each of the participating classes on June 1, June 8, June 18, and June 22. These visits were made to determine whether the unit was being implemented in a way anticipated by the developer and whether the pupils and teachers had encountered any problems not anticipated by the developer. During these visits certain observations were made. The guidelines used by the developer during these observations can be viewed in Appendix B. Some of the observations are discussed below.

1. All classrooms were equipped with the audio-visual devices required for certain of the display materials of the unit and they were used for this purpose.
2. Social studies education did not receive priority in either of the classes observed. They were overshadowed by reading, mathematics, and in one

case, religious education.

3. All teachers and pupils transacted with the display in a way considered desirable by the developer. The pupils were given the opportunity to work on their own and to help in sharing the responsibility of selecting activities and strategies. The teachers guided and assisted the pupils in all cases when required to do so.
4. The readings and activities were satisfactory for most pupils.
5. All teachers taught the unit with the unit ILO^s in mind and all pupils were aware of these ILO^s.
6. All teachers used the teacher's manual in a way considered desirable by the developer. However, they were not bound or restricted by it.
7. The teachers prepared themselves for the display function of the unit by pre-viewing the slides and listening to the audio-tape.
8. The observations also revealed that the unit led to outside inquiry. A resource person was used by all three classes for the purpose of expanding what the unit provided.
9. Both teachers and pupils were vastly motivated by and interested in all aspects of the unit and the bombardment and quality of the questions raised by the students clearly indicated that the ILO^s

were understood and were being effectively realized.

To substantiate these findings the developer solicited the opinions and suggestions of the participating teachers. This is an important part of the evaluation of curriculum and instruction development because it is the teacher who has to use prepared materials.

At the completion of the unit, the teachers were asked to complete an informal questionnaire designed specifically to determine the units' credibility and potential. This questionnaire can be viewed in Appendix C. The findings of this questionnaire are discussed below.

1. None of the participating teachers were aware of the Maritime Archaic culture prior to exposure to the unit and only one of the three had any experience with the disciplines of archaeology and anthropology and this experience was very minimal.
2. All teachers found the teacher's manual to be extremely useful in the following ways:
 - (i) It provided the basic emphasis of the unit.
 - (ii) It provided the required background materials for effective teaching of the unit.
 - (iii) It presented adequate suggestions for activities and strategies.

- (iv) It provided them with an adequate description of the temporal and geographical boundaries of the unit.
3. All the teachers assessed the unit ILO^s as being consistent with the existing curriculum and instruction, and with the needs and activities of today's students as members of society.
 4. All agreed that the learning activities and opportunities provided in the unit helped greatly in achieving the ILO^s.
 5. All teachers understood and enjoyed the instructional content and teaching strategies of the unit and found them very effective in realizing the ILO^s.
 6. All teachers found that the colored slides and audio-tape contributed greatly to making the unit learnings more meaningful.
 7. All teachers expressed great interest in the archaeological and anthropological aspect of the unit and they stated that they found similar interest among the children.
 8. All teachers found the test provided by the unit was relevant and that the test items concentrated on what they considered to be the most valuable aspects of the unit.
 9. All agreed that the unit led to outside inquiry

and indeed all teachers employed a resource person during the implementation of the unit.

10. Only one of the three participating teachers had ever participated in curriculum and instructional development prior to this phase in the unit evaluation.
11. All three teachers agreed that pupils and teachers should be very much involved in the evaluation of curriculum and instructional materials.
12. All teachers stated very positively that the unit Newfoundland's First People: The Maritime Archaic Indians could contribute greatly to the existing social studies program in Newfoundland schools.

The students also played a vital part in the evaluation of the unit. An informal questionnaire was also completed by the students at the end of the field-testing session. This questionnaire can be seen in Appendix D. Some of the results were very interesting and are discussed below.

1. Only six of the 115 students who participated in the classroom trial of the unit had any knowledge of the Maritime Archaic Culture prior to their exposure to the unit.
2. All the students enjoyed studying about the Maritime Archaic Indians.

3. The readings were appropriate for most of the students.
4. All students found the instructional content and teaching strategies greatly contributed to their achievement of the ILO^s.
5. All students found the colored slides and audio-tape very helpful in their learnings.
6. Many students expressed a need for more puzzles and games to be included in the booklet. All students enjoyed the activities provided in the unit.
7. Many students expressed in written suggestions that color be used in the students' booklets. This makes one realize the contribution "color" could make to the learning-teaching situation by brining the child closer to reality.

Several of the children detected flaws in the students' readings. They found several misplaced commas, one spelling error, and that a significant place name was omitted from the map. These student observations and recommendations guided the required revisions which followed their assessment.

Because of its very nature, formative evaluation occurred throughout the developmental stages of the unit--from the formulation and selection of the ILO^s through the implementation in the classroom. To facilitate

this evaluation the developer applied a series of "guiding questions" designed by Anderson and Aoki. The discussion which follows presents a detailed account of this application.

APPLICATION OF GUIDING QUESTIONS

The guiding questions used to facilitate the formative evaluation are entitled "Guiding Questions for Developing Curriculum and Instruction Plans, and Instruction (Based on Johnson's Model)" and were designed by Anderson and Aoki. These questions not only aided the development of the unit but also served as a control for determining the proper consistency between the unit and its theoretical rationale.

The guiding questions are based on Johnson theories for curriculum and instructional development. The structure of the questions is derived from the theories of Morris (1964), which postulate three modes of inquiry; designative, meaning what is or what will be; appraisive, meaning what is wanted; and prescriptive, meaning what should be done.

The following discussion takes each question and applies it separately. However, the guiding questions may be seen in their entirety in Appendix A.

1.0 How will you select the ILO^s from the cultural content?

1.01 What criteria did you use to select the ILO^s?

The criteria used for the selection of ILO^s for the unit Newfoundland's First People: The Maritime Archaic Indians were significance, relevancy, and appropriateness.

The developer of the unit, like most social studies educators, holds the view that social studies education is the study of man's social relationships in all their variations, both past and present, and that these relationships can be explained by considering to some extent this physical environment and his physical make-up. The primary ILO of the unit was selected as to its relevancy to this philosophy. The ILO explicitly stated is to help students acquire a knowledge, understanding, and appreciation of the way of life of a group of people from the past--this past consisting of an era in prehistoric days.

The primary ILO is significant and appropriate because it proposes to fulfill a need in the elementary social studies education in our province. This need arises out of the lack of information available for the elementary school population on the provinces earliest known inhabitants, the Maritime Archaic Indians. Fulfilling this need will also eliminate existing misconceptions concerning Newfoundland's aborigines. One of the vital criteria of all education is that it be up-to-date and authentic. This ILO strives to achieve this purpose.

The secondary ILO for the unit was also selected on the criteria of significance, relevancy, and appropriateness. This ILO explicitly stated is--to introduce to the students the method of archaeology as the scientific means of finding evidence of extinct cultures without written records, and to create an awareness of the archaeologists' contribution to the knowledge and understanding of prehistoric people.

In planning for today's social studies education, teachers are asking how social scientists think; what methods they employ; and what techniques they use to analyze man's social relationships in all their variations. Then they proceed to expose their students to these significant and relevant aspects of social studies education. Thus, the child not only learns the "What" of social education but also the "how."

Contemporary social studies education is also utilizing the contributions of all the social sciences rather than just the traditional disciplines of history and geography. The secondary ILO of the unit is an attempt to provide the existing social studies program with an anthropological and archaeological aspect, based on the assumption that these disciplines have a very significant contribution to make in the quest for a better understanding of man and his social relationships.

Other suggested ILO^s for the unit include the

development of certain skills which are elemental to social education. These skills include accurate spelling, keeping records, vocabulary building, co-operation, discussion, dramatization, group planning, comparing and relating information, drawing inferences, giving explanations, noting main ideas, thoughtful listening, appreciating other cultures, arranging events in sequence, displaying materials, asking thoughtful questions, making decisions, judging importance of information, and summarization of information.

Further implicit criteria for selecting the unit ILO^s were their comprehensibility and usefulness for building a knowledge, understanding, and appreciation of a group of people from the past and of the method of knowing about them.

1.02 Did you obtain the ILO^s you desired?

The developer of the unit Newfoundland's First People: The Maritime Archaic Indians obtained the ILO^s which were desired--ILO^s which were selected from the available cultural content on the selection criteria of relevance, significance, appropriateness, comprehensibility, and usefulness. These ILO^s were considered desirable by the developer because they represented current social education philosophy, and they were consistent with the needs and activities of today's students as members of society. The findings from the

teacher's questionnaire and the assessment by specialists attest to this representation and consistency.

1.11 What are desirable criteria for the selection of ILO^s?

Johnson (1967) stated that the only necessary criterion for curriculum (ILO) selection was that the content be teachable. However, all that is available and teachable in cultural content in the social sciences cannot be included in any one curriculum. Therefore, selection is essential, and whatever criterion is used must be made explicit.

Once explicit criteria exist, the selection of specific curriculum items follows. According to Johnson (1967) when selecting ILO^s special consideration should be given to those elements which analysis identifies as having the greatest potential interpretive value. Which specific curriculum items are selected depends on how fundamental and crucial they are to the disciplines, how well they explicate its structure, and how powerful they are in furthering its characteristic thought processes and mode of inquiry. These criteria help retain the simplifying, coordinating, and generative features of the disciplines. These criteria of teachability, appropriateness, and relevance to the disciplines represented, are all implicitly or explicitly contained in the ILO^s of the unit.

1.12 What are desirable ILQ^s?

Desirable ILO^s especially for a social studies education program include the following:

1. those which strive to explain man's social relationships in all their variations, both past and present.
2. those which strive to help students acquire a knowledge, understanding, and appreciation of people of all cultures and from all times.
3. those which provide the opportunity for students to develop certain skills so that they may be better able to cope with their social environment.
4. those which help students attain a knowledge, understanding and appreciation of how social scientists acquire data and how they arrive at the interpretations and purported facts that the students study.

1.21 If there is a discrepancy between desirable criteria and used criteria, then how should you deal with the discrepancy?

No discrepancy occurred between desirable criteria and used criteria as the developer determined the criteria for the unit on the basis of current social, archaeological, and anthropological education and philosophy. The resulting ILO^s were assessed and found correct by the discipline specialists concerned with the unit. Therefore,

one can assume that the established criteria are desirable.

1.22 If there is a discrepancy between obtained ILO^s and desirable ILO^s, then how should you deal with this discrepancy?

No discrepancy occurred between the obtained ILO^s and desirable ILO^s because they were selected on the basis of how fundamental and crucial they were to the disciplines of social studies, archaeology, and anthropology, and for their ability to explicate and further the characteristic thought processes and modes of inquiry of each of these disciplines. Assessment by the concerned discipline specialists in the first phase of the formative evaluation attest to these attributes.

2.0 How will you organize the ILO^s?

2.01 What criteria did you use to organize the ILO^s?

The ILO^s of the unit were organized so that they proceeded from the simple to the complex in a logical manner embracing the structuring of the disciplines.

According to Johnson (1968), a curriculum is a structured series of intended learning outcomes, it follows that the organization of the ILO^s should be done systematically and not randomly. Johnson stated that the structural relationships within and among skill and

concept clusters serve as an important basis for the ordering of some curricular items. This suggests that reliance on logical structuring as one of the organizing criteria. This assumes its significance from the fact that some learnings are pre-requisite to other learnings and that some learnings expand and expound the substantial aspects of others. Consequently, the unit ILO^s were organized logically for this purpose, with one learning leading into another and each learning expounding and expanding the previous one.

The unit ILO^s, therefore, are organized so that they assume their significance and meaning from their relationship to one another and to the modes of inquiry of the disciplines of social studies, archaeology, and anthropology on whose basis these relationships were derived. The secondary ILO of the unit bears a significant relationship to the primary ILO as it expands and expounds its substantive elements. This logical relationship takes the child from what he has learned about the Maritime Archaic Indians to how he has learned about them. This progression can also be assumed on a psychological basis. Children do not benefit from learning isolated bits of knowledge. Learnings which evolve out of previous learnings provide the child with better retention and reinforcement possibilities.

2.02 Did you obtain the organization of the ILO^s you desired?

The developer of the unit Newfoundland's First People: The Maritime Archaic Indians obtained the desirable organization of ILO^s through a logical and psychological progression and through the structuring analysis of the applied disciplines, namely, social studies, archaeology and anthropology. Specialist, teacher and student assessments attest to this.

2.11 What are desirable criteria for the organization of ILO^s?

Perhaps the most significant criteria of organization is that the curriculum be structured in some predetermined manner. Johnson (1967) stated explicitly that "curriculum is a structured series of intended learning outcomes," (p. 4) and that an acceptable order or sequence of development is essential. Temporal sequence alone is insufficient. Rather, simple concepts are woven into more complex conceptual clusters and the structure itself must reflect hierarchical or taxonomic relationships.

Since the curriculum is based on the disciplines and according to Johnson (1967) the analysis by Schwab and Phenix revealed that these disciplines are structured both conceptually and methodologically, it follows that

the ILO^s must be organized in a structured way. The integrity of clusters of concepts and skills must be respected. These clusters are all the more significant since individual curriculum items assume their significance and meaning only from their relationships to one another and to the mode of inquiry by which they were formulated.

2.12 What is a desirable organization of ILO^s?

According to the above analysis, it is apparent that the most desirable organization of ILO^s is one that is adequately structured in some logical fashion, while placing significant emphasis on concepts and clusters of concepts. These provide for greater continuity of organization and a higher degree of transfer, retention, and reinforcement.

2.21 If there is a discrepancy between desirable criteria and used criteria, then how should you deal with the discrepancy?

No discrepancy occurred between the desirable criteria and the criteria used for the organization of the ILO^s as the developer researched this area quite extensively before establishing the criteria for the ILO organization. Johnson's concise definition that a curriculum is a "structured" series of intended implies that structuring is a necessary feature of the curriculum. The unit ILO^s were organized in a logical and psychological

fashion, with the developer bearing in mind that the child's learnings proceed from the simple to the complex, from the known to the unknown, and that for the best retention and reinforcement each learning should evolve out of a previous one. As the discipline specialists, teachers, and students favoured the organization of the ILO^s, then it must be assumed that the criteria used for their organization were appropriate and desirable.

2.22 If there is a discrepancy between obtained organization of ILO^s and desirable organization of ILO^s, then how should you deal with the discrepancy?

No discrepancy occurred between obtained organization of ILO^s and desirable organization of ILO^s as the developer established the criteria on sound logical and psychological principles for organization. As this organization was approved by specialists, teachers, and students in the formative evaluation of the unit, no discrepancy presented itself.

3.0 How will you establish the relationship between Instructional Content (ILO^s and instrumental content) and Teaching Strategies?

3.01 Did you establish the relationship between Instructional Content and Teaching Strategies you desired?

Yes, the developer of the unit established the desired relationship between the instructional content

and the teaching strategies as the classroom trials of the unit verified that the relationship between the instructional content and teaching strategies were adequate and appropriate for the attainment of the unit ILO^s.

3.02 What criteria will you use to select the instrumental content?

Instrumental content is that content introduced into the instructional situation, not to be learned but to facilitate the intended learnings. The instrumental content developed for the unit consists of readings, audio-visual materials and activities. These were developed on the criteria of authenticity, accuracy, appropriateness, and significance.

3.03 Did you establish the relationship between instrumental content and ILO^s you desired?

Yes, the developer of the unit established the desired relationship between the instrumental content and the ILO^s. This relationship is such that the sole function of the instrumental content is to aid in the achievement of the unit ILO^s.

3.04 Given the ILO^s as goals, what teaching strategies did you provide for student transactions with the display and for teacher-student interaction?

The teaching strategies can be as many and as varied as the teachers but there are certain basic

strategies recommended for the unit. These strategies consist of those which are both expository and inquiry oriented. The instrumental content of the unit provides the substance for the expository strategy. The inquiry strategy consists of a series of questions developed to provide students with the opportunities to discover for himself and also to exercise the complete range of thinking skills. These questions can also be used by teacher and students in discussions and activities related to such controversial issues as conservation of natural resources and pollution.

3.05 What rationale was given for the teaching strategies adopted?

Questions have always been an important aspect of the teaching-learning situation, but until recently questions were primarily used to test the pupils knowledge. Psychological and educational research has shown that questions could be used to do much more than merely test for knowledge. They can be used to motivate, to instruct, and to raise the level of pupils' thinking beyond the acquisition of knowledge level.

Current curriculum development projects are accommodating the inquiry strategy by using skillful questioning techniques. Questions can be used by the open-minded teacher to help children observe, research, use logical reasoning, find and interpret facts and make

practical judgements.

3.11 What is the desirable relationship between instructional content and teaching strategies?

Teaching strategies are used in cooperation with the instructional content for the purpose of achieving the specific ILO^s. Many curriculum innovations have failed because adequate teaching strategies were not made available to the participating teacher. When one develops new curricula, one must of necessity develop related instrumental content and teaching strategies. Therefore, a high degree of inter-relationship is necessary if the instructional plan is to be positively functional.

3.12 What are desirable criteria for the selection of instrumental content?

The major criteria for the selection of instrumental content is that it be accurate, appropriate, and significant for the specific purpose of achieving the specific intended learnings of a course or unit. It is the curriculum and instructional developer who chooses and develops this content and he or she must see that it includes the above attributes so that teacher and pupils may achieve the intended learnings in the most rewarding way. If the instrumental content provided by the developer is adequate, the individual teacher will be assured that the greatest number of pupils will achieve the ILO^s.

3.13 What is a desirable relationship between instrumental content and ILO^s?

Johnson (1967) stated that the ILO^s limit the range of possible learning experiences, and these in turn determine the instrumental content to be used. The most desirable relationship between the instrumental content and ILO^s therefore, is that instrumental content facilitate the achievement of ILO^s.

3.14 What are desirable teaching strategies that will provide for student transactions with the display and for teacher-student interaction?

According to Johnson (1967), which teaching strategy is employed is basically determined by the curriculum item (ILO). It is through the strategy that the instructee's responses to the curriculum outcome is controlled. To achieve a specific outcome it is imperative that a two-way interaction occur in two areas--between the student and the display and between the student and the teacher. The most desirable teaching strategy is one which can be effectively applied to a specific teaching-learning situation for the achievement of specific intended learnings. One such strategy in current social studies education is the skillful use of questions. This strategy, although employed by teachers for decades, has been expounded to do more than the traditional chore of testing.

Experimental research in this area has recommended that skillful questioning is an effective way to achieve many learnings.

3.15 What is a desirable rationale for the teaching strategies adopted?

Most people consider teaching to be a vastly complex function. The activity of someone teaching something to someone else by some process includes several variables, such as the teacher, the learner, the subject matter, and what one wants to teach. When deciding which strategy to use, one must consider all of these variables. Each and every teaching-learning situation demands its own unique teaching strategy.

According to Feldman and Seifman (1969) teaching strategies can be completely open--those which are unstructured and call for unsolicited responses or they can be completely closed--those which require an implicitly pre-determined response. Between these two extremes are several ways in which a teacher can teach something to someone by combining characteristics of both. Teaching strategies are also referred to as expository and traditional as opposed to discovery and inquiry.

Both areas of teaching strategies are necessary for the effective implementation of the instructional plan. However, for the greatest interaction between the

student and the display and between the student and teacher, the inquiry or discovery method is advocated. Crabtree (1966) after reviewing research in this area concluded that discovery learning enhances transfer and long-term retention, and also reinforces the techniques of inquiry—that is, the strategies of problem solving and productive search. She also concluded that discovery approaches consume no more time and they are likely to bear the added advantage of heightened motivation. Whether they do, of course, depends on certain variables: material, pupil, and teacher. Another disclosure from her research indicated that the inquiry strategy is disadvantageous to the impulsive child. The impulsive child needs immediate answers and this strategy does not satisfy this need. This does not, however, restrict the learnings of the impulsive child to the expository mode as instructional methods can be modified to meet each individual situation.

Programs which provide the opportunities for both expository and discovery teaching strategies are most desirable for the teaching learning situation. Which variation is used will be influenced by the nature of the subject matter, the goals, the teacher, and the learners.

3.21 If there is a discrepancy between the desirable relationship between instructional content

and teaching strategies and the relationship you established, how should you deal with the discrepancy?

No discrepancy occurred between the desirable relationship between the instructional content and teaching strategies and the relationship established by the developer. All teachers at the classroom trials of the unit agreed that this relationship was appropriate for the achievement of the unit ILO^s.

3.22 If there is a discrepancy between the desirable criteria for the selection of instrumental content and the criteria you used, how should you deal with the discrepancy?

Instrumental content is that content developed specifically for the facilitation it provides to the achievement of the ILO^s. For this unit it included readings, audio-visual materials, and activities which were developed on the criteria of authenticity, accuracy, appropriateness, and significance. In order for an honest and valid attainment of ILO^s to occur, these criteria were essential and elemental. Assessing specialists, teachers, and students found the instrumental content adequate and necessary for its prime purpose--to aid in the achievement of the unit ILO^s. As the instrumental content was assessed as appropriate, then one must assume that its underlying criteria are sound and desirable and no discrepancy occurred.

3.23 If there is a discrepancy between a desirable relationship between instrumental content and ILO^S and the relationship you established, how should you deal with this discrepancy?

No discrepancy occurred between a desirable relationship between instrumental content and ILO^S and the relationship established by the developer. The instrumental content was designed for the sole purpose of helping achieve the unit intended learning outcomes. Without this instrumental content the ILO^S could not be realized. The classroom trials established that fact that this relationship existed and all participating teachers agreed that the instrumental content was greatly instrumental in realizing the unit ILO^S.

3.24 If there is a discrepancy between desirable teaching strategies and the teaching strategies you provided, how should you deal with the discrepancy?

The teaching strategies for the unit were designed to include both expository and inquiry strategies. Research has shown that both are necessary to accommodate individual differences in the classroom. However, the main emphasis is on the inquiry teaching strategy, especially in the form of specifically designed questions. Research has also shown that the skillful use of questions can lead to motivation, retention, and reinforcement of inquiry techniques. Student and teacher assessment

revealed that the teaching strategies were adequate for the attainment of the unit ILO. Therefore, no discrepancy occurred.

3.25 If there is a discrepancy between a desirable rationale for the teaching strategies adopted and the rationale you gave, how should you deal with the discrepancy?

As the strategies provided by the unit were assessed by the participating students and teachers as being adequate and appropriate for their specific function, then it must be assumed that the rationale supporting these strategies was sound. Consequently, no discrepancy occurred.

4.0 How will teacher Y implement the instructional plan?

4.01 How did Y behave in relation to student transaction with the display?

The display refers to the instrumental content or that content instrumental in bringing about the desired learnings of the unit--readings, audio-visual materials, and activities. The pupils involved in the field-testing transacted with the display in a way anticipated by the developer. All display materials were utilized for the purpose they were intended. Pupils and teachers appeared to enjoy all aspects of the display, and one got the impression that the teachers and learners.

were in a reciprocal relationship. Both were aware of the intended learning outcomes of the unit, and both were striving, in a desired manner, to achieve them.

4.02 How did Y interact with the students?

All teachers involved in the field-testing interacted with the students in a way conducive to the achievement of the unit ILO^s. Students were free to proceed at their own rate and teachers helped explain difficult terms when required to do so. Teachers also helped the children in their efforts to think through the various levels and often questions were rephrased to meet the needs of certain students. Students in all cases were responsible for the audio-visual display. The teachers were always available to help and guide the students whenever the need arose.

4.03 Did teacher Y implement the instructional plan you desired?

Although individual differences in the teachers were obvious, this in no way hindered them from implementing the instructional plan desired by the developer. Prior to the field-testing of the unit Newfoundland's First People: The Maritime Archaic Indians none of the three teachers involved had any knowledge of the Maritime Archaic culture. Two of the three had no previous experience with or exposure to the disciplines of archaeology and anthropology--the cultural content of the unit. This

presented no obstacle as all teachers utilized the Teacher's Manual for the purpose of eliminating this deficiency. Suggestions provided in the manual for implementing the plan were also employed but not without the teacher's individual contribution to the overall realization of the unit ILO^s.

4.11 What is a desirable way for teacher Y to behave in relation to student transaction with the display?

Johnson (1967) stated that instruction consists of two sets of interaction. One is between the student and the environment manipulated by the teacher. The second interaction is the interpersonal one between the teacher and the students. Johnson (1968) emphasized that "the fundamental interaction in instruction is not among people but between an individual and selected elements of his environment (p. 9). During this transaction, it is desirable that the teacher behave as a mediator or director.

4.12 What is a desirable way for teacher Y to interact with the students?

This desirable behaviour of the teacher as a mediator or director has certain implications for the instructional area. Being a mediator or director implies that the teacher should share with the students the responsibility for controlling and directing activities,

for participating in discussion, for the utilization of the instrumental content (display), and for the implementation of teaching strategies. It is also desirable that teachers provide the students the opportunity to work on their own, to discover for themselves, and for the most part be available to guide, help, and direct the students whenever the need arises.

4.13 What is a desirable way for teacher Y to implement the desirable instructional plan?

A desirable way for teacher Y to implement the desirable instructional plan is by using any sound principle of good teaching he or she feels necessary for the achievement of the intended learning outcomes. A teacher can be greatly aided in this accomplishment by using the teacher's manual without being restricted or bound by it. All too often, teachers' guides are left unopened, but for the desirable implementation of the instructional plan for the unit Newfoundland's First People: The Maritime Archaic Indians, it cannot be neglected. This manual does not provide a blueprint for doing anything nor does it dictate to the teacher how to teach. It does, however, provide background materials and suggestions, which if followed will help in the realization of the unit ILO^s.

4.21 If there is a discrepancy between a desirable way for teacher Y to behave in relation to student transaction with the display and the way he did behave,

how should you deal with the discrepancy?

No discrepancy occurred between a desirable way for teacher Y to behave in relation to student transaction with the display and the way he did behave. Observations made by the unit developer disclosed individual differences among the participating teachers. However, these differences were not detrimental to the student transaction with the display. Each teacher provided guidance and direction in all student-display transactions whenever the need arose.

4.22 If there is a discrepancy between a desirable way for teacher Y to interact with the students and the way he did interact, how should you deal with this discrepancy?

No discrepancy occurred between a desirable way for teacher Y to interact with the students and the way he did interact. This interpersonal interaction between the teacher and students is necessary for instruction. Students were allowed to share in many of the responsibilities associated with the unit learnings and they were given the opportunity to work on their own and to discover for themselves the solutions to problems posed. The teachers participating in the classroom trials of the unit were always ready to assist, explain, or guide the students towards the attainment of the unit ILO^s.

4.23 If there is a discrepancy between a desirable way for teacher Y to implement the desirable instructional plan and the way he did implement it, how should you deal with this discrepancy?

All teachers involved in the classroom trials of the unit implemented the instructional plan in a way conducive to the achievement of the unit ILO^s. All teachers prepared themselves for the implementation of the instructional plan by utilizing the manual provided for their convenience. Observations made by the developer revealed that none of the teachers were restricted by their inadequate background in archaeology and anthropology as the manual was used to supply the necessary background materials for a satisfactory implementation of the instructional plan. Consequently, no discrepancy was apparent.

5.0 How will you view the process of evaluation of curriculum development and instructional planning?

5.01 How did you view the evaluation of curriculum development and instructional planning?

Evaluation was viewed by the unit developer as being a very important and vital part of curriculum development and instructional planning. Consequently, provision was made for evaluation to occur in two ways. First, a continuous form of evaluation occurred all

through the development of the unit, from its inception to its field-testing, with the application of "guiding questions" which were developed specifically for guiding the development of curriculum and instructional plans. Second, periodic evaluation occurred in the form of specialists' assessments, field-testing in the classroom, by informal teacher and student questionnaires, and by observation by the developer. Teachers and students were asked to contribute specific practical suggestions for improvement. These suggestions led to revision where possible. This formative evaluation which occurred throughout the developmental stages of the unit is a very necessary and rewarding part of curriculum development and instructional planning.

5.02 What is a desirable way for the process of evaluation of curriculum development and instructional planning to be viewed?

The process of evaluation of curriculum development and instructional planning should be viewed as an integral and elemental factor, taking place in a well organized fashion with pilot-testing as a significant part of the process. Curriculum and instructional evaluation should entail validation of content, structure, and presentation and this should occur during the formative stages of development. This can be accomplished successfully only through formative

evaluation. Through continuous formative evaluation, deficiencies can be detected in the intermediate versions of new curriculum and instructional materials, thus ensuring a more satisfactory final product.

5.03 If there is a discrepancy between a desirable way for the process of evaluation of curriculum development and instructional planning to be viewed and the way you viewed it; how should you deal with this discrepancy?

No discrepancy was apparent between a desirable way for the evaluation of curriculum development and instructional planning to be viewed and the way it was viewed by the developer. Formative evaluation was employed by the developer of the unit and deficiencies and defects were brought to light through the process thus allowing the developer to revise in the intermediate stages of development.

The application of the guiding questions greatly facilitated the curriculum development and instructional planning for the unit Newfoundland's First People: The Maritime Archaic Indians. It not only provided a means for formative evaluation of the unit but also served as a guide for the utilization of Johnson's theories for curriculum development and instructional planning.

In summary, this chapter dealt with the formative evaluation that occurred during the development of the unit Newfoundland's First People: The Maritime Archaic

Indians. In it the concept of formative evaluation was discussed and the three phases of formative evaluation were described. Observations, findings, and revisions were presented. The developer refrained from testing her own product as bias is inherent in such an activity. No summative testing was employed as this project was totally reliant on formative evaluation. Conclusions and implications evolving from the formative evaluation will be discussed in the summarizing chapter which follows.

CHAPTER 5

SUMMARY, CONCLUSIONS AND IMPLICATIONS

SUMMARY

The present study has been concerned with the utilization of the theories of Mauritz Johnson Jr. for the development of a unit of curriculum and instruction entitled Newfoundland's First People: The Maritime Archaic Indians. The unit was developed on the criteria of current educational thought and research, especially that put forward by Massey and Hodgetts; the present needs of the school; and the philosophy of the developer.

Reviewing the related literature provided insight into several areas. First, the "unit" concept was investigated. This investigation revealed that the unit method is by no means a recent phenomena in curriculum and instruction but dates back to such early twentieth century educators as Dewey, Kikpatrick, and Morrison.

The unit method has several contributions to make to the field of education. It can provide inclusiveness, flexibility, and elasticity for teachers and learners. It can also serve as a channel whereby

new materials can be added to existing programs without any fuss or formality.

The unit method, however, is not without its disadvantages. Its greatest weakness presents itself when teachers try to include all of their learnings within its structure; for example, art, grammar and mathematics. Only materials and learnings supporting the central idea should be included.

Today, the practice of organizing social studies education on the unit basis has won general acceptance in the elementary school.

Second, the curriculum and instructional development theories as propounded by Mauritz Johnson, Jr. were researched and analyzed. This provided a well defined theory for the development of curriculum and instructional materials as it distinguished between the two yet explicated their relationships.

Third, the content area for the unit was researched. This investigation involved analysis of scientific writings as prepared by Dr. James A. Tuck, who in 1968 headed the excavation at Port au Choix which revealed the culture of the Maritime Archaic Indians who lived in Newfoundland more than four thousand years ago. The substantive content for the unit was extracted from these original works. Research was also carried out in the fields of archaeological and anthropological thought and inquiry.

Described in Chapter 3 was the development of the unit. The ILO^s and content were selected, structured and transposed to the appropriate reading level. Appropriate instructional content was also developed.

Chapter 4 dealt with the formative evaluation which occurred during the development of the unit. The formative evaluation was implemented in three ways. First, specialists assessed it for its content, structure, presentation, and representation. Second, teachers and students assessed it for its learnability, teachability, credibility, and potential. Revisions were made on the recommendations and suggestions presented in these evaluation phases. Third, an overall evaluation was provided by the use of "Guiding Questions for Developing Curriculum and Instructional Plans, and Instruction" (Based on Johnson's Model) as designed by Anderson and Aoki. These questions provided guidance from the unit's earliest stages of development to its implementation in the classroom. Findings from the formative evaluation of the unit have certain implications in the field of education. These will be presented in the following section.

CONCLUSIONS AND IMPLICATIONS

Three major conclusions result from the present study. They are as follows:

1. Substantive content of a highly cognitive nature can be studied by children in early grades if the content is properly selected, transposed, and structured.
2. The unit approach would seem to enable the insertion of new information--a continuous problem in the field of social studies as well as other fields--into existing programs.
3. The theories of Mauritz Johnson, Jr. provide a viable rationale for developing units of curriculum and instruction. Johnson's theories enabled the researcher to adequately develop and implement the unit Newfoundland's First People: The Maritime Archaic Indians.

Findings from the different phases of the formative evaluation of the unit have important implications especially in the area of curriculum and instructional development. Some of these implications are discussed below:

1. Units of work can play a significant part in updating and supplementing existing programs. When new information comes to light, a unit of work on this information dispels the need to rewrite textbooks or initiate new programs. Units can be injected into any program without disturbing what is in existence.

2. A theoretical rationale such as Johnson's, is desirable for curriculum and instructional development. Without it the developer could be easily influenced by intuition and bias. A theoretical rationale provides sound guidelines for developmental endeavours.
3. Formative evaluation is a very important aspect in curriculum and instructional development. Defects found in the intermediate stages of development can be much more easily corrected than when the materials are finalized.
4. Specialists in the various disciplines can contribute greatly to the evaluation process because only they can determine the validity of the content, structure, presentation, and representation of the selected areas being developed.
5. Students and working teachers can contribute greatly to the evaluation of curriculum and instructional materials by assessing the suitability, appropriateness, and potential of the developed materials before the final product is attained.
6. All the social sciences can and should be drawn upon by social studies educators in their attempt to study and present man's social

relationships in all their variations, both past and present. Substance should be drawn from anthropology, sociology, economics, political science, and social psychology as well as the traditional disciplines of history and geography.

Finally, the development, evaluation, and implementation of the unit Newfoundland's First People:

The Maritime Archaic Indians has convinced the developer that it can make an important contribution to the teaching-learning process. The developer believes that the unit may prove to be a worthwhile addition to the existing social studies program in Newfoundland schools. Any teacher or pupil who willingly explores this unit should find it a very rewarding experience.

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APPENDIX A

GUIDING QUESTIONS

GUIDING QUESTIONS FOR DEVELOPING CURRICULUM AND
INSTRUCTION PLANS, AND INSTRUCTION

(BASED ON JOHNSON'S MODEL)

- 1.0 How will you select the ILO's from the cultural content?
 - 1.01 What criteria¹ did you use to select the ILO's?
 - 1.02 Did you obtain the ILO's you desired?
 - 1.11 What are desirable² criteria for the selection of ILO's?
 - 1.12 What are desirable ILO's?
 - 1.21 If there is a discrepancy between desirable criteria and used criteria, then how should you deal with the discrepancy?
 - 1.22 If there is a discrepancy between obtained ILO's and desirable ILO's, then how should you deal with the discrepancy?
- 2.0 How will you organize the ILO's?
 - 2.01 What criteria did you use to organize the ILO's?

¹Whenever the word criteria is used, it is assumed that an adequate rationale will be used in the selection of criteria.

²Desirable refers to local needs, as well as educational theory.

2.02 Did you obtain the organization of ILO's you desired?

2.11 What are desirable criteria for the organization of ILO's?

2.12 What is a desirable organization of ILO's?

2.21 If there is a discrepancy between desirable criteria and used criteria, then how should you deal with the discrepancy?

2.22 If there is a discrepancy between obtained organization of ILO's and desirable organization of ILO's, then how should you deal with the discrepancy?

3.0 How will you establish the relationship between Instructional Content (ILO's and instrumental content) and Teaching Strategies?

3.01 Did you establish the relationship between Instructional Content and Teaching Strategies you desired?

3.02 What criteria will you use to select the instrumental content?

3.03 Did you establish the relationship between instrumental content and ILO's you desired?

3.04 Given the ILO's as goals, what teaching strategies did you provide for student

transactions with the display and for teacher-student interaction?

3.05 What rationale was given for the teaching strategies adopted?

3.11 What is the desirable relationship between instructional content and teaching strategies?

3.12 What are desirable criteria for the selection of instrumental content?

3.13 What is a desirable relationship between instrumental content and ILO's?

3.14 What are desirable teaching strategies that will provide for student transactions with the display and for T-S interaction?

3.15 What is a desirable rationale for the teaching strategies adopted?

3.21 If there is a discrepancy between the desirable relationship between instructional content and teaching strategies and the relationship you established, how should you deal with the discrepancy?

3.22 If there is a discrepancy between the desirable criteria for the selection of instrumental content and the criteria you used, how should you deal with the discrepancy?

3.23 If there is a discrepancy between a desirable

- relationship between instrumental content and ILO's and the relationship you established, how should you deal with the discrepancy?
- 3.24 If there is a discrepancy between desirable teaching strategies and the teaching strategies you provided, how should you deal with the discrepancy?
- 3.25 If there is a discrepancy between a desirable rationale for the teaching strategies adopted and the rationale you gave, how should you deal with the discrepancy?
- 4.0 How will teacher Y implement the instructional plan?
- 4.01 How did Y behave in relation to student transaction with the display?
- 4.02 How did Y interact with the students?
- 4.03 Did teacher Y implement the instructional plan you desired?
- 4.11 What is a desirable way for teacher Y to behave in relation to student transaction with the display?
- 4.12 What is a desirable way for teacher Y to interact with the students?
- 4.13 What is a desirable way for teacher Y to implement the desirable instructional plan?

4.21 If there is a discrepancy between a desirable way for teacher Y to behave in relation to student transaction with the display and the way he did behave, how should you deal with the discrepancy?

4.22 If there is a discrepancy between a desirable way for teacher Y to interact with the students and the way he did interact, how should you deal with the discrepancy?

4.23 If there is a discrepancy between a desirable way for teacher Y to implement the desirable instructional plan and the way he did implement it, how should you deal with the discrepancy?

5.0 How will you view the process of evaluation of curriculum development and instructional planning?

5.01 How did you view the process of evaluation of curriculum development and instructional planning?

5.02 What is a desirable way for the process of evaluation of curriculum development and instructional planning to be viewed?

5.03 If there is a discrepancy between a desirable way for the process of evaluation of curriculum development and instructional planning to be viewed and the way you viewed it, how should you deal with the discrepancy?

APPENDIX B

DEVELOPER OBSERVATION

DEVELOPER OBSERVATION

1. Grade level of pupils
2. Standing of class--average, below average, above average.
3. Geographical aspect of pupils--rural, urban.
4. Number of pupils in class.
5. Is the classroom equipped with the audio-visual devices necessary for the display materials in the unit?
6. Are the audio-visual devices used in relation to the unit?
7. Is Social Studies of equal importance with other programs in the school?
8. Are the teacher's ILOs the same as those suggested in the unit?
9. Are the pupils aware of the ILOs of the unit?
10. Are teachers and pupils making use of the display (readings, photos, map, slides, audio-tape, activities) of the unit? (All, most, some, none)
11. Which display materials are not being used? Why not?
12. Are pupils transacting with the display in a way consistent with that anticipated by the developer?
13. During the transaction between the pupils and the display, does the teacher behave as a mediator or director, or as a meddler?
14. Does the teacher have any experience with anthropology?
15. Is the teacher interested in the anthropological

aspect of the unit?

16. Are the pupils interested in the anthropological aspect of the unit?
17. Are the activities too easy, too difficult or satisfactory?
18. Does the teacher appear to be enjoying the instructional content and teaching strategies of the unit?
19. Do the pupils appear to be enjoying the instructional content and teaching strategies of the unit?
20. Is the teacher using the teacher's manual in the way anticipated by the developer?
21. Are the pupils given the opportunity to share the responsibility of controlling, participating in and directing the activities, instrumental content and strategies of the unit?
22. Are the pupils given the opportunity to work on their own, to discover for themselves the solutions to the problems posed in SOMETHING TO DISCOVER?
23. Is the teacher available to guide, help or direct when these aspects of teaching and learning occur?
24. Does the unit lead to outside inquiry?

OBSERVATION DATES:

COMMENTS:

APPENDIX C

TEACHER'S QUESTIONNAIRE

TEACHER'S QUESTIONNAIRE

1. Number of years teaching experience _____.
2. Number of years teaching Social Studies _____.
3. Is Social Studies your teaching specialty? _____.
4. Does the title of the unit direct your attention to the basic emphasis of the unit? (Not at all, not very much, much, very much) _____.
5. Do you have any background in the subject area of the unit--anthropology and archaeology? _____.
6. Does the teacher's manual provide sufficient background in the subject area for effective teaching of the unit? _____.
7. Does the teacher's manual explain adequately which teaching strategies are used and the temporal and geographical boundaries of the unit? _____.
8. Are the intended learning outcomes of the unit consistent with the existing curriculum, and with the needs and activities of today's students as members of society? _____.
9. To what extent did the learning activities and opportunities provided in the unit help in achieving the unit intended learning outcomes? (Not at all, not very much, much, very much) _____.
10. Did the questions posed in SOMETHING TO DISCOVER motivate the pupils into searching out the solutions _____.

for themselves? (Not at all, not very much, much, very much)

11. Were the activities in SOMETHING TO DO too easy, too difficult, satisfactory?
12. Did the activities in SOMETHING TO DO help in achieving the intended learning outcomes of the unit? (Not at all, not very much, much, very much)
13. Did the questions posed in SOMETHING TO THINK ABOUT help pupils to think beyond the basic skill of remembering? (Not at all, not very much, much, very much)
14. Did the questions in SOMETHING TO THINK ABOUT help in achieving the intended learning outcomes of the unit? (Not at all, not very much, much, very much)
15. Did the pupils understand the readings, pictures, map, slides, audio-tape and activities of the unit? (Not at all, not very much, much, very much)
16. Did the pupils enjoy the readings, pictures, map, slides, audio-tape and activities of the unit? (Not at all, not very much, much, very much)
17. Did you enjoy the readings, pictures, map, slides, audio-tape, activities and teaching strategies of the unit? (Not at all, not very much, much, very much)
18. Did the map, pictures and artist's sketches help you to achieve the intended learning outcomes of the unit? (Not at all, not very much, much, very much)

19. Did the colored slides and audio-tape make the unit learnings more meaningful? (Not at all, not very much, much, very much)
20. Were the pupils interested in the anthropological and archaeological aspects of the unit? (Not at all, not very much, much, very much)
21. Were you interested in the anthropological and archaeological aspects of the unit? (Not at all, not very much, much, very much)
22. Is the suggested test relevant to the unit? (Not at all, not very much, much, very much)
23. Do the suggested test items concentrate on what you think to be the most valuable aspects of the unit? (Not at all, not very much, much, very much)
24. Does the unit lead to outside inquiry, such as making use of a resource person, learning about other cultures and so on? (Not at all, not very much, much, very much)
25. Have you ever participated in the evaluation of textbooks, courses, or any curriculum and instructional materials? _____
26. Do you feel that pupils and teachers should be involved in the evaluation of curriculum and instructional materials? _____
27. Do you feel that the unit NEWFOUNDLAND'S FIRST PEOPLE: THE MARITIME ARCHAIC INDIANS supplements and/or

complements the existing Social Studies program in
Newfoundland schools? (Not at all, not very much,
much, very much)

COMMENTS AND SUGGESTIONS

APPENDIX D
PUPIL'S QUESTIONNAIRE

PUPIL'S QUESTIONNAIRE

1. Did you know about Newfoundland's Maritime Archaic Indians before you studied NEWFOUNDLAND'S FIRST PEOPLE: THE MARITIME ARCHAIC INDIANS? (Yes, No)
2. Did you understand what the book told you about Newfoundland's First People: The Maritime Archaic Indians? (Yes, No)
3. Did you enjoy studying about Newfoundland's First People: The Maritime Archaic Indians? (Not at all, not very much, much, very much)
4. Were the readings too easy, too hard, just right?
5. Did the pictures in the book help you learn about the Maritime Archaic Indians and how we know about them? (Yes, No)
6. Did the questions in SOMETHING TO DISCOVER make you want to search for the answers yourself? (Yes, No)
7. Were the activities in SOMETHING TO DO too easy, too hard, just right?
8. Did the questions in SOMETHING TO THINK ABOUT really make you think? (Yes, No)
9. Did the activities and questions help you learn about the Maritime Archaic Indians and how we know about them? (Yes, No)
10. Did the colored slides and sound tape help you learn about the Maritime Archaic Indians? (Yes, No)

COMMENTS AND SUGGESTIONS

APPENDIX E

PUPILS' MATERIALS



**NEWFOUNDLAND'S FIRST PEOPLE:
THE MARITIME ARCHAIC INDIANS**

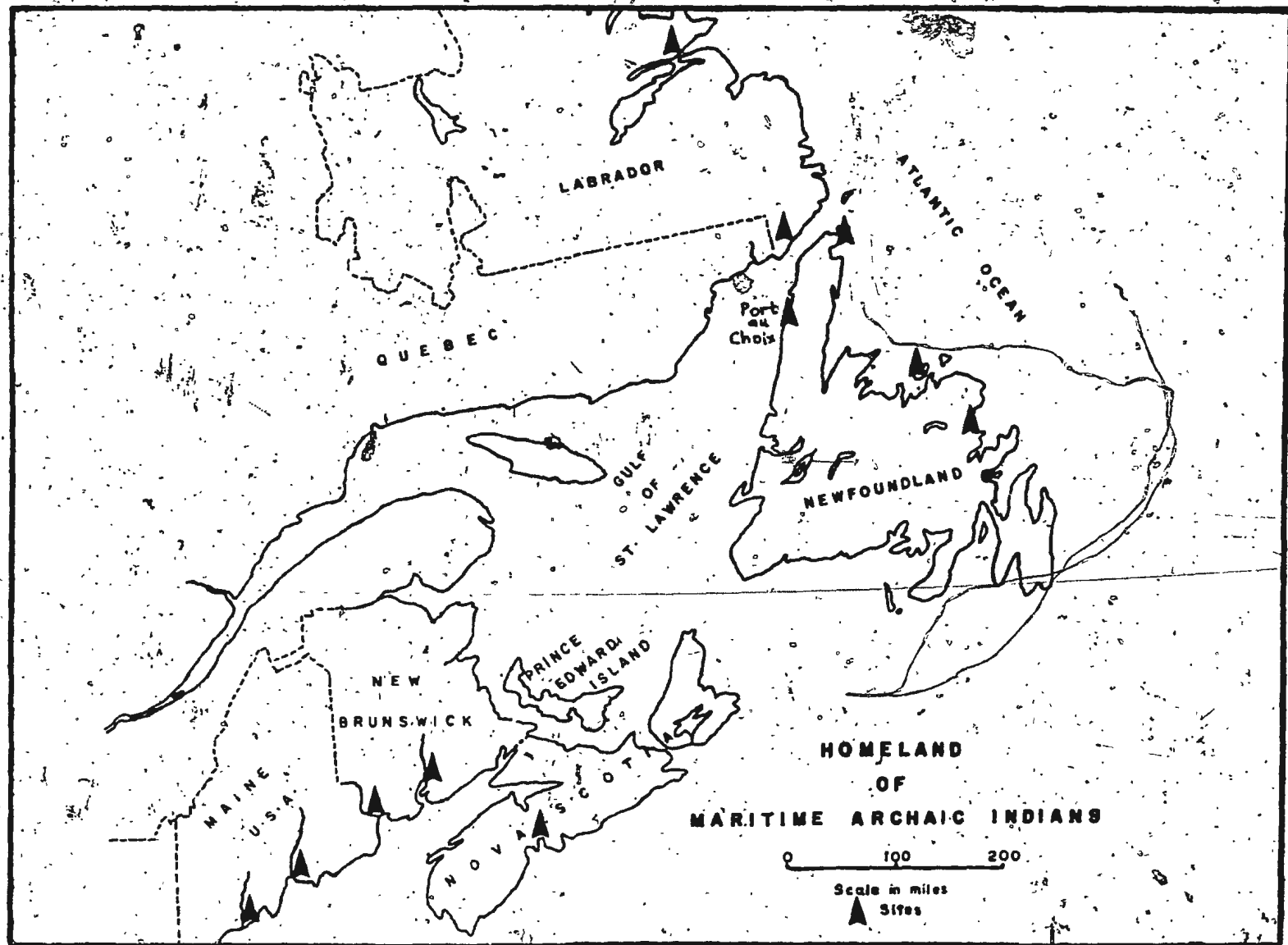
NEWFOUNDLAND'S FIRST PEOPLE:
THE MARITIME ARCHAIC INDIANS

by
FLORENCE COWAN

NEWFOUNDLAND'S FIRST PEOPLE:
THE MARITIME ARCHAIC INDIANS

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Maritime Archaic Territory

There are many kinds of Indians and we do not know what Newfoundland's first people called themselves. The name Maritime Archaic was given to them for a very special reason. Examine the name and see what it tells you.



The word Maritime means near the sea. It tells you that a great part of their culture or way of life depended on the sea.

From the sea, they got many of the things they needed to live.

The word Archaic refers to a very old culture or way of life-- a culture which goes back to more than two thousand years before the birth of Christ.

The Maritime Archaic way of life was one where the people lived by hunting, fishing, and gathering. They lived together in small bands. Bands were made up of several families. They roamed the land together to get the food and raw materials each season of the year brought with it.

They travelled in bands because food was easier to find for a small number of people. Everyone in the band worked together; fathers, mothers, grand-

parents, boys, and girls. They lived near each other and they helped each other. This was the only way they could stay alive and well especially during the long, cold months of winter.

The Maritime Archaic Indians made a good living in Newfoundland. People all over the world, whether ancient like Newfoundland's first people, or modern-day like ourselves, have certain needs which have to be met in order to live. All people must have food, clothing, and shelter. They must have tools for the work that has to be done and for making things. People satisfy their needs in many different ways. How did the Maritime Archaic Indians satisfy their needs?



A small band of Maritime Archaic Indians

The Maritime Archaic Indians used their total natural environment to satisfy their needs. Their natural environment was made up of all the things of nature which surrounded them: the ocean, lakes, and streams; the mountains and valleys; the forests; the snows of winter and the rains of summer. Their natural environment provided them with many resources which they needed and used to satisfy their needs.

These resources included the land and sea animals, the fish, the birds, the plant life, and the rocks and soil. The Maritime Archaic Indians hunted the land and sea animals for food. They used the animal skins for clothing and shelters. From the animals they also got bone, ivory, and antler which they

used to make tools, weapons, and other things. They fished in the ocean, lakes, and streams. They hunted sea birds along the edge of the sea and gathered the birds' eggs. They gathered firewood and berries in the forests and they cut the trees to make boats, tent-posts, and handles for their tools and weapons. They gathered certain kinds of stone to make some of their tools and other things.

The Maritime Archaic people were kept busy all year. Food, shelters, and clothing were needed all year round. Tools and weapons had to be made and kept in good shape. Small children had to be cared for. Moving from place to place in search of food meant there was always packing and unpacking to do. When they moved, everything

they owned, shelters, clothing, tools, and weapons had to be carried with them. There was always plenty of work for everybody and everybody helped.

Living a life of hunting, fishing and gathering kept the Maritime Archaic Indians busy and on the move most of the year. Imagine what it must have been like--making and breaking camp several times a year to go in search of food when and where it became available. Life for them seems to have been a series of camping trips--camping trips which they had to make if they wanted to stay alive.



Mountains, valleys, lakes

*Some of the things which
help make up
THE NATURAL ENVIRONMENT*



Forests and streams



The sea and seashore



Summer



Winter

SOMETHING TO DO

Finish the crossword puzzle.
The first one down and the
first one across are done for
you.

DOWN

1. The plants, animals, fish
and birds of the natural
environment are called its

2. A word which refers to a
very old way of life is

4. A word which means near the
sea is _____

5. The Maritime Archaic In-
dians lived in Newfound-
land four _____
years ago.

ACROSS

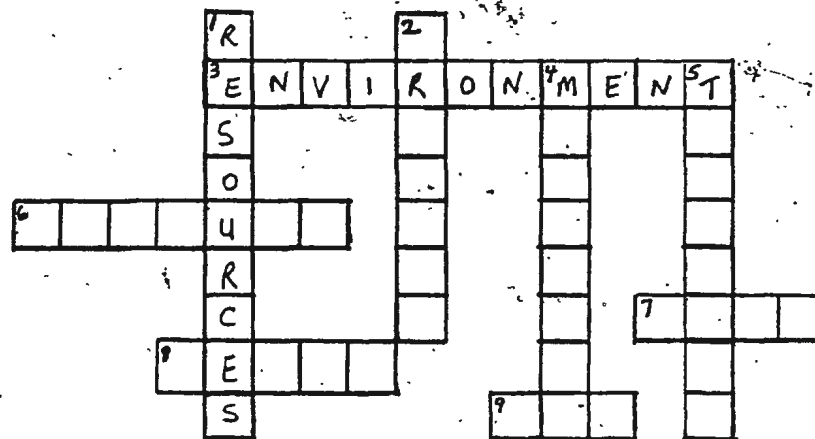
3. The hills, valleys, ocean,
streams and seasons help to
make up the natural _____
of a place.

6. _____ means the way of
life of a group of people.

7. A small group of people liv-
ing together is called a

8. All people are alike because
they have certain _____ which
have to be met in order to
stay alive.

9. The Maritime Archaic Indians
got many of the things they
needed from the _____



SOMETHING TO THINK ABOUT

1. On the picture of the band,
find clues which tell you
that the early people of
Newfoundland were hunters
and fishermen.

2. Study your map. How many
Maritime Archaic sites are
there? How many are locat-
ed by the sea? What does
this tell you about the im-
portance of the sea to them?

SOMETHING TO DISCOVER

What resources did the Maritime Archaic Indians find in Newfoundland which helped satisfy their needs?

How did they use these resources?

How did the seasons fit into their way of life?

THE CYCLE OF THE SEASONS

The seasons of the year played a very important part in the lives of the Maritime Archaic Indians. Each season of the year provided them with certain resources of the natural environment. Each season of the year also brought its own work.

Fall

The fall of the year brought the Maritime Archaic Indians two important animals--the black bear and the caribou. These two great animals of the forests and barrens meant many things to Newfoundland's first people.

After the long summer eating fish, insects, and berries, the black bear was in excellent condition. His coat was long,

shiny and thick. The Maritime Archaic people hunted this big fellow before he snuggled down for his long winter's nap. Besides meat, this fine animal provided the thick, fluffy hide which the Indians used to make outer clothing, blankets, and probably coverings for their shelters. Bear skins also made comfortable rugs for sleeping and sitting on.



The Black Bear

The fall also brought the caribou, the most important animal in the lives of the Indians. The caribou provided them with meat for food, and skins for clothing and shelter. They used the sinews for sewing and for fastening handles to their tools and weapons. They used the bones and antlers to make tools, weapons, and other things.

Each fall, at the first sign of snow, the caribou gathered in large herds. Then they moved inland to the shelter of the forests and their winter feeding grounds. On their way, they crossed many rivers and streams. This was a good place for the early hunters to take some of these animals.

The Maritime Archaic Indians followed the caribou when they



The Caribou



moved inland in the fall. They too, liked the shelter of the forests. But more important, they wanted to be near the caribou herds so that they would have a good supply of food and raw materials for the winter. A few good days of caribou hunting would provide the band with enough meat for several weeks.

The fall was a very busy season for the early Indians. Moving with the caribou meant taking down shelters, packing up all the band's belongings, moving, and setting up camp again near the caribou herds. Their shelters had to be made weather-proof and firewood had to be gathered for the long winter months ahead.

There were also other chores which had to be done in the fall. The animal skins had to be

cleaned and made ready for sewing. With the winter coming on, they needed plenty of warm clothing and blankets. Of course, cooking and looking after the small children went on as usual. With a long winter ahead, the hunters made ready their weapons; for they knew that the fall was only the beginning of a long hunting season.

Winter

During the winter, the early Indians stayed close to the caribou herds. Winter was a good season for hunting other animals in the forests. At that time of year, the animals had their best coats of fur. The animals were also easy to track in the winter because their footprints could be easily seen in the snow.



Caribou Herd in Winter

In winter, the Maritime Archaic Indians hunted the beaver. This animal was a good source of food and skins. The early hunters often made knives from the beaver's strong, sturdy teeth. They also stitched the teeth on their clothing for good luck.



The Beaver

There were other animals which the early people hunted in winter. Among them were the otter, the timber wolf, and



The Otter

the pine marten. To-day, the timber wolf has disappeared from the island of Newfoundland, and the pine marten is very rare in all the places he once lived.



The Timber Wolf



The Pine Marten

The winter was a good season for making tools, weapons, and other materials they needed. All their materials were made by hand and this took up a lot of time. Such slow work was

probably done in winter when raging blizzards often kept the hunters inside for days at a time.

In winter, the women probably did most of their sewing. This was also a long task, because the animal skins which the hunters brought home had to be cleaned and dried before they could be sewn. With the hunters on the go all winter, there was always plenty of clothing to be repaired.

The people in the band who were good at making things, and those who had spare time on their hands, probably spent their long winter days making charms, necklaces, whistles, and ornaments for their hair. Like the fall, the winter brought plenty of work for everyone in the band.



Spring at last

Spring

The winter was long and the snow was deep, but the hunting was good for the Maritime Archaic Indians of Newfoundland. The days were longer now and signs of spring were all around the campsite as it

nested in the shelter of the forests. The snow had just about disappeared and many of the robins had come back. The pussy-willows were popping out of their shucks, and the flies were coming back to life. Their spring had come at last.

Another important sign of spring was the movement of the caribou herds. The flies of spring in the woodland areas always made the caribou very restless. Besides, the twigs and rushes which fed them all winter were used up. They began to move out to the coast where they would find fresh food. There, they would also get rid of some of the flies of the forests.

The early Indians also moved to the coast in the spring. Their main supply of food, the

caribou, had moved and the rest of their food was all used up. They knew that there would be much food at the seashore in spring.

Moving time again saw everybody in the band very busy and anxious to get going. There were no roads and the going was rough, but with everybody helping out, it did not take long to reach their new camp grounds.

At the seashore, the Indians looked around for a good place to set up camp for awhile. They chose a spot by the mouth of a river, just where it entered the sea. There, they were near the ocean, and the river provided them with a good supply of fresh water which they needed for cooking and drinking.



Spring brought the Seal

In the spring, it was good to be near the sea. At that time of year, the Arctic ice fields crowded the Newfoundland coasts and with it came thousands of seals. The early people hunted the seals for food and skins. Sometimes they used the seals' claws to make good luck charms.

The spring also brought many thousands of sea birds to the cliffs of Newfoundland. Their cries filled the soft spring air and this was a very welcome sound for the early people.



Hundreds of Sea birds



Ducks in early spring



Geese



Sea gulls near the shore



The Loon

The most popular sea birds hunted by the early hunters were ducks, geese, loons, the murre and the now extinct great auk. In more recent times, over-hunting with better weapons than those of the Indians, has killed off every great auk in the world.

The sea birds provided the Indians with delicious meat. With the early Indians and others who depended greatly on nature, there was no waste, so they used all parts of the

sea birds. They used the bones for making small items such as sewing needles and sweet sounding whistles. They used the bird bills to make charms and decorations for their clothes.



The now extinct Great Auk



Fresh eggs in the Spring

In spring, the sea birds made their nests all along the cliffs and offshore islands. These nests provided the early people with another kind of food--fresh eggs. They must have appreciated a meal of fresh eggs after the long winter.

Seal and bird hunting, gathering fresh eggs, and the usual every day chores kept the early people busy and well fed all during the spring.

Summer

As their spring changed into summer, the Arctic ice which hugged the coasts all spring moved off and melted. At that time, many large sea animals appeared and the early hunters were ready for them. They hunted the large sea animals for food, skins, bone, and ivory.



The mighty whale



The walrus sunning himself

They ^{may have} hunted the whales when they came into shallow waters. From the whale they got food and whalebone which they used to make weapons. To-day, the whales no longer come in great numbers. Over-hunting with powerful boats and weapons, has decreased their numbers to a dangerous low.

In summer, they also hunted the walrus as he lazed around the beach sunning himself. This huge sea animal provided them with a good, tough skin which they probably used to help cover their shelters. They also used the walrus tusk for making tools and other things they needed.



Early fishermen

Besides being good hunters, the early people were also very skillful fishermen. Late spring and early summer gave them many chances to practice their fishing skills.

During the early summer, thousands of Atlantic salmon and sea trout made their yearly run up the rivers to lay their eggs. The early fishermen knew the ways of the salmon and trout, and they were



Salmon and trout for the band

ready for them as they made their way upstream. With their fish spears, they were able to take many of these tasty fish. What a meal for all the families in the band--fresh salmon and trout cooked over the open campfire!

Sometimes the early fishermen ventured off shore in their dug-out canoes to fish for the skate. From this fish they got



The skate fish

more than food. They used its fine teeth to decorate their clothing and skin pouches. They probably used the skate teeth to make ornaments for their hair.

The Maritime Archaic fishermen fished and hunted along the seashore all summer. Meat and fish which they did not eat right away, they dried and stored for use later on.

Besides fishing, hunting, and preparing food, there were other chores which their summer brought. Tools and weapons had to be kept sharp. There was probably time in the long summer evenings to carve charms, ornaments, and other things which they liked.

There was always plenty of work for the women and children during the summer. Of course, cooking and looking after the small children were year-round jobs for the women; but there were others. Late summer in



Newfoundland brought millions of berries on the barrens and in the marshes. The Maritime Archaic women kept a close watch on the berries all summer, and as soon as they were ready to pick, they gathered them from all around. There were blueberries, bake-apples, and squashberries for the berry-pickers. They probably picked the berries in wooden containers or skin pouches. What a treat this fresh fruit must have been, after a diet of so much meat



and fish. If the berries were plentiful, the early people stored some for use later on in the year.

The Maritime Archaic Indians must have enjoyed their summer visits to the seashore. The clean, fresh sea breezes, the salmon and trout, the large sea animals, and the berries, all helped to keep the band happy, busy, and well fed. A good summer season gave them extra food for the fall and winter.

As the large sea animals moved away and the berries began to fall from the bushes, the early Indians knew that fall was near. With the coming of fall, there was always much work to do for the cold season ahead.

Berries for the families

Fall again

The coming of fall brought many changes around the Indian campsite. The days became shorter and colder. Most of the birds had disappeared and the hills were covered with a blanket of red and gold. The most important change for the Maritime Archaic Indians was the movement of the caribou. They had begun to gather again. Soon they would move inland to their winter feeding grounds. This was the signal for the Indians that summer was over, and that winter was on its way.

Fall was a very busy season for these early people. If they were to have food for a long winter ahead, they must move with the caribou. This

meant breaking camp and moving away from the coast to the shelter of the forests, where they could hunt the caribou, the black bear, and other animals.

The Maritime Archaic Indians'



Getting ready for moving

search for food was never ending. Indeed, it formed a way of life-- that of hunting, fishing, and gathering, moving with the seasons to take advantage of what their natural environment provided them.

SOMETHING TO DO
THE HUNTING EXPEDITION

Hidden in this group of letters are some of the resources used by Newfoundland's first people. Go on a hunt and see what you can find. When you find one, put a circle around it and put it in its proper place below. The first two are done for you. There are twenty in all.

PLANT LIFE

FISH

Salmon

P Q C A R I B O U X Y G S A L M O N H X M A R T E N L P
S Q U A S H B E R R I E S S Y X S K A T E S P G U L L P
Q S X T R E E S T S Q B E A R Z Q S T L O O N A Z P G B
B E A V E R N M L P C F Q O T T E R R Y G M S E A L P Q
R S F T W D U C K M N W H A L E G F T Z G E E S E Q P Y
B L U E B E R R I E S S K M N W G R E A T A U K M N L W
X B L T I M B E R W O L F P L M B A K E A P P L E S T P
G F T Y R F G R Y W Q W A L R U S H H G Y P L P K W Z D

LAND AND SEA ANIMALS

Caribou

BIRDS

SOMETHING TO THINK ABOUT

1. Why was the natural environment so important to the early people of Newfoundland?
2. When the fish and animals did not come, what did it mean to the Maritime Archaic Indians? Does it mean the same to us? Why or why not?
3. You are a Maritime Archaic Indian and you have to find a good place to set up camp. What things would you look for in choosing a good campsite?

SOMETHING TO DISCOVER

What cultural materials did the Maritime Archaic Indians have which helped them make a living in Newfoundland? From what did they make their materials?

How did they make them?

How did they use the materials?

What were the children required to learn?

DISCOVER also what skillful craftsmen the early Indians were.



Maritime Archaic materials

THEIR CULTURAL MATERIALS

You have discovered that the Maritime Archaic Indians lived by hunting, fishing, and gathering the many natural resources they found in

their environment. To do this, they had certain materials which helped them in their way of life.

The early Indians of Newfoundland had no metal, so they used the wood, stone, and bone which they found

around them to make the things they needed. They had no machines, so they made everything by hand. Making things from stone, wood, and bone by hand required a lot of time. It also required a lot of skill.

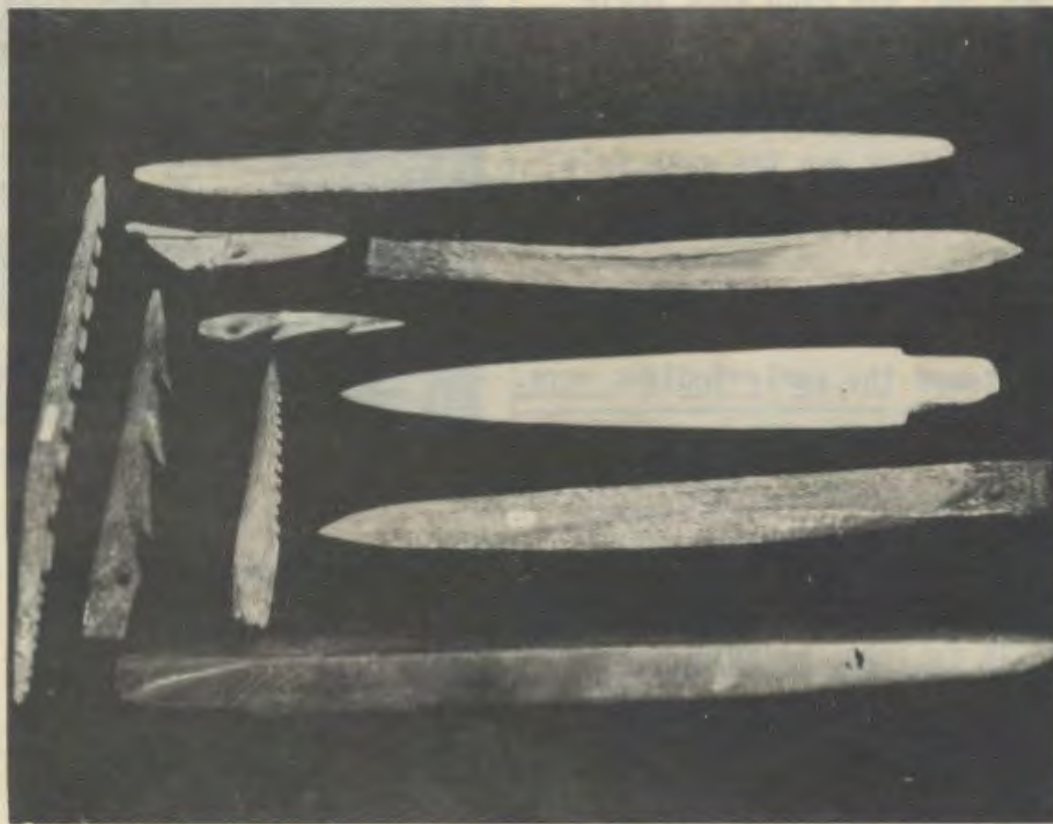
The first thing the Indian craftsman did when making an item was to select a suitable piece of material. For example, if he wanted to make a spear point, he chose a strong, sturdy piece of stone or bone. Then with a grinding-stone, he would grind and grind the stone or bone until it was the size and shape he needed. When this was done, he would polish it until it was very smooth. Often, the craftsman spent many days on an item the family needed.

There was always a great demand for tools, weapons, and other things the Indians used. Tools and weapons which became broken could not be repaired so new ones had to be made. Also, when some person in the band died, the relatives

placed all kinds of materials in the grave with him. This meant lots of work for the Indian craftsmen.

Hunting and fishing weapons

For hunting, the Maritime Archaic Indians had several kinds of weapons.



Hunting weapons

Spear points



For hunting large animals, they used spears. The spear points were made by grinding slate and animal bone. They fastened their spear points

to wooden handles with strips of raw-hide and animal sinews. These points, without the handles, could be used to cut up meat.

They also used bayonets for hunting the large animals. Like the spear points, they were made by grinding slate and animal bone.



Bayonets

Large lances were also a part of the hunting equipment. These large lances were made from whalebone.



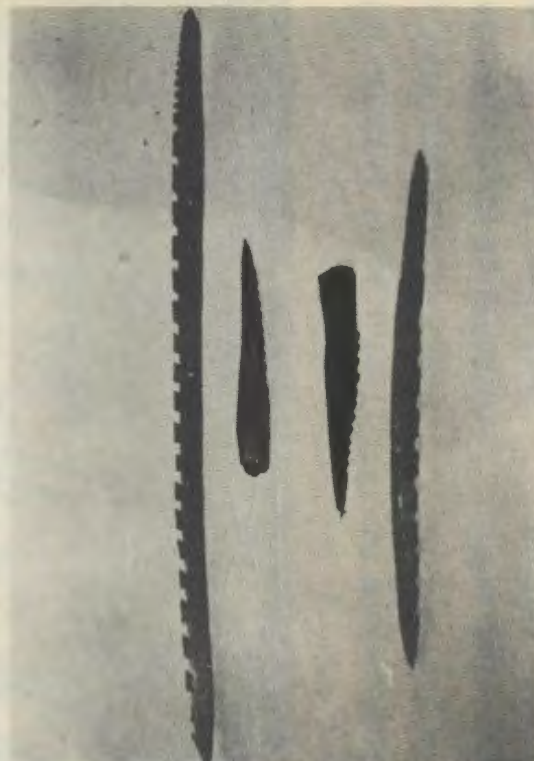
Lances



Harpoon heads



Daggers



Fish spears and bird darts

When an animal was wounded, the hunters often found it necessary to use another kind of weapon. This weapon was a dagger. They made their daggers from walrus ivory, caribou antler, and sometimes caribou leg bones.

Another item used in the hunt is called a foreshaft. The foreshaft was usually made



from whalebone. The early hunters used the foreshaft by fitting it between the handle and the tip of a hunting weapon. This made the weapon longer so that the hunter could push it deeper into his prey.

For hunting large sea animals such as the seal, whale, and walrus, the early Indians used harpoons. They used two kinds of harpoons. The one with the barbs like a fish hook is called a barbed harpoon. The barbs kept the weapon in the flesh of the hunted animal. The other kind of harpoon is called a toggling harpoon. When this one struck an animal, it turned across in the flesh. This kept it from coming out. These harpoon heads were made from bone and antler,

and they were fastened to wooden handles with long strips of hide and sinews. A long line let the hunter hold his animal until it could be taken ashore.

The Maritime Archaic Indians had special weapons for fishing and bird-hunting. For fishing they used fish spears. The spear points were made from animal bones and were fastened to wooden handles.

They used bird-darts for bird hunting. Notice the barbs in both the fish spear points and the bird darts.

These hunting and fishing weapons allowed the Maritime Archaic Indians to hunt and fish the many animals available to them for satisfying their needs.

Tools

The early Indians of Newfoundland made many of the things they needed from wood. They made their dug-out canoes, frames for their shelters, and handles for their tools and weapons from wood. They had special tools for working with wood.



A stone axe, adze, and gouge

Their most common wood-working tools were axes, adzes, and gouges. They usually made these tools from slate, but sometimes they used ivory from the walrus tusks. The axes and adzes were



Adzes made from the walrus tusk

used for cutting and trimming wood. The adze is very much like the axe, but it was usually ground down more on one side than on the other. They used the gouge to gouge or dig out the wood. They also fastened their tools to wooden handles with strips of raw-hide and animal sinews.

The early Indians had a very interesting tool which they used for working with wood. This was a knife made from caribou antler and beaver teeth. They

sharpened the teeth and set them in a piece of caribou antler. They could carve designs in the wood with this knife.



Beaver tooth knife



You have discovered that the Maritime Archaic Indians used the skins of animals for making clothes and tent coverings. Just as they had tools for working with wood, they also had tools for working with the animal skins.



Tools for preparing animal skins

The early Indians followed certain steps when preparing animal skins for clothing or tent coverings. Each step required special tools.

The first thing which the Maritime Archaic Indians did

Scraper



with the animal skins was to clean the fat and pieces of meat from the inside. They did this with a scraper which they made from the shoulder blade of a caribou. They held the animal skin in one hand, while they cleaned and scraped with the other.



Sometimes they removed the hair from the outside of the animal skin. They used another kind of scraper for this. It is called a beamer. The person using the beamer, held it in both hands when removing the hair from the hide. They made their beamers from split animal bones.



Beamer



Animal skins are very thick, so the early Indians used a special tool for making holes for their sewing needles. This tool is called an awl. They made their awls from animal bones. This awl was made from caribou bone.

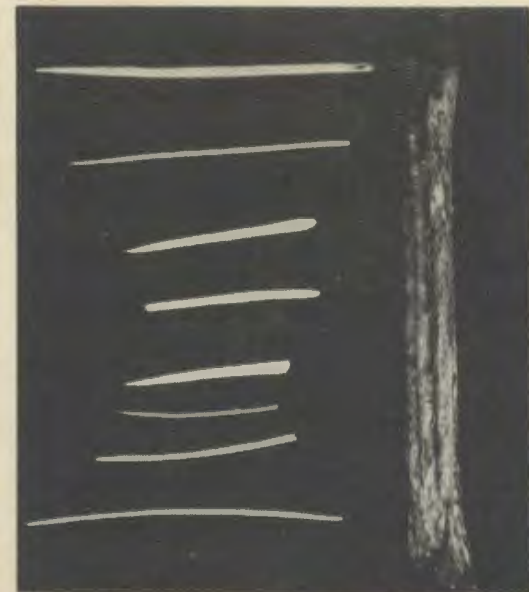


Awl



The Maritime Archaic Indians had finely made needles for sewing the animal skins together for clothing or tent coverings. They made their sewing needles from bird bone splinters. They ground the bird bone splinters until they were the right size and shape. Notice the eyes in the needles.

Newfoundland's first people



Sewing needles and case

placed great value on their sewing needles, so they kept them in a needle case. This kept them from becoming lost or broken. Their needle cases were made from the leg bones of the caribou.

You can see by looking at the tools of the early Indians, that they were well suited to their ancient way of life.

Decorations and charms

Besides the needs for food, shelter, clothing, and tools, there are other needs which people develop as part of their way of life. People like to have things around them to help please their sense of beauty. They like to make things look attractive and they like to look attractive themselves. The Maritime Archaic Indians had many things which helped satisfy these needs.

After the early Indians had their skin clothing all sewn together, they liked to trim it with pretty beads. They used tiny seashells which they gathered along the seashore. They also used fish teeth for decorating their garments. They liked very much to trim the



Pretty shell beads for their parkas

hoods of their parkas with tiny shell beads. To-day, four thousand years since the Maritime Archaic Indians used their tiny shell beads and fish teeth to

make their clothes look more attractive, people still use beads, braid, or whatever is available to satisfy the same need.



The Maritime Archaic people also liked to decorate themselves. They made many pretty things to wear in their hair. They carved dainty combs from caribou antler. They also

carved hair pins from bone. They carved their combs and hair pins to look like the things they liked and respected in their natural environment: ducks, geese, and the great auk.



Sometimes they carved them as models of the things they made, for example, the hair pin which looks like a spear.



Mothers wore necklaces

Both the Maritime Archaic fathers and mothers liked to wear pretty necklaces around their necks. Some of the pendants for their necklaces they carved from shell and stone. Others they carved from bone and antler. They carved their pendants to look like many things: birds, humans, and teeth.



Fathers also wore necklaces



Pendants made from shells, bone, and stone

The early Indians made sweet-sounding whistles which they probably wore around their necks. These whistles made beautiful sounds and they were probably used sometimes to lure birds or animals to the hunters. They made their whistles from the wing bones of the geese. Notice the designs carved on the whistles.



Whistles from goose wing bones

The early people of Newfoundland had other items which they stitched on their clothing, and these too, served a very special purpose. These items were charms. Charms made the dangers and stresses of life more easy to face. A person believing that some charm brought good luck, felt much better than if he had nothing to believe in.

The Indians used charms which suited their way of life. They used seal claws, bird bills, bear teeth, and so on. They believed that a seal claw sewn on a garment gave the owner strong arms; a bear tooth brought strength; and bird bills made the person a good fisherman. People to-day, still believe that certain things bring good luck. Have you ever searched for a four-leaf clover? Have you ever kept a rabbit's paw? Do you own a charm bracelet or good luck pin?

Besides the charms for wearing on their garments, the Maritime Archaic Indians had other things which they probably used as charms. They probably carried some of these with them. They probably kept others around the shelters. Some of these charms

were small birds carved from stone. Others were strange looking pebbles which they collected from the ground.

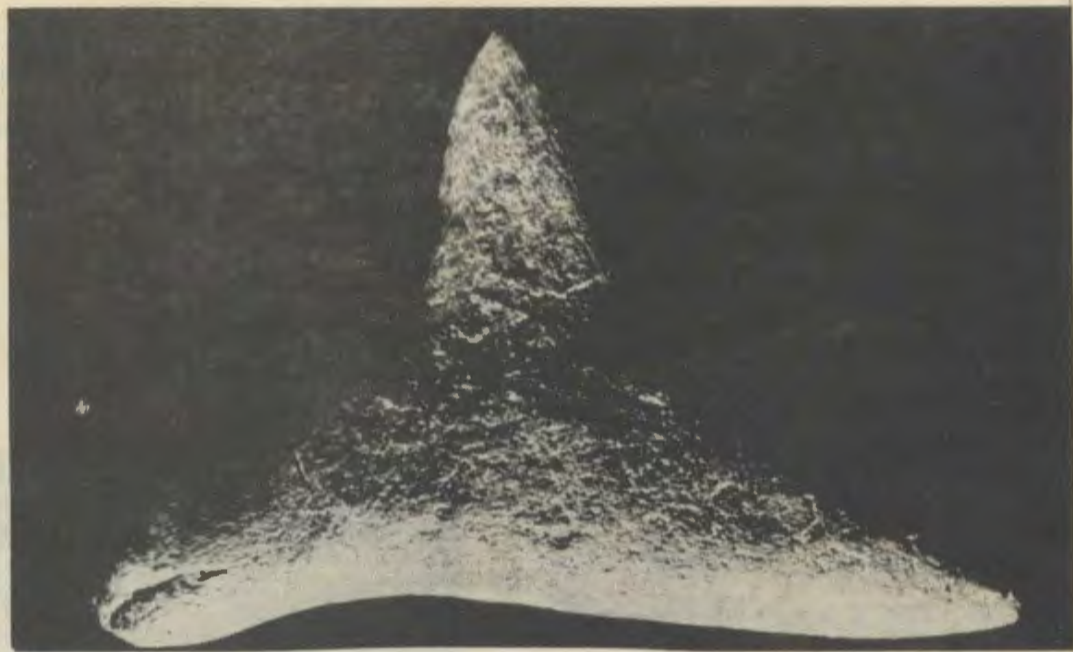
Maritime Archaic charms



Very often, the Indians put all of their charms together to form what is called a medicine bundle. Each person probably carried a medicine bundle with him all the time, for when he needed extra special luck.



The medicine bundle



The mighty killer whale

One very special item used by the early Indians was a carved figure of the mighty killer whale. This was the largest animal around them. He was probably the animal which the early people respected and feared most. The killer whale lived on the same sea resources as the early Indians.

You have discovered that the early Indians of Newfoundland had many cultural materials which helped them live their way of life. Each item they owned had a special place in their life. People who are on the move all the time, do not carry things which they do not need.

EDUCATION

Education

Life in early Newfoundland was not always easy. If the Maritime Archaic Indians were to survive, every person in the band had to do his share of the many chores. Children in ancient cultures like the Maritime Archaic people, began their education at a very early age. They learned by doing. Boys and girls learned by working with the older people in the band.

The girls learned by working with their mothers around the campsite. They learned to look after the fires and cook the meals. They learned how to gather firewood, berries, and eggs. They also learned how to prepare animal skins; how

Stories around the campfire



to sew; and how to put up and take down shelters.

The boys usually followed their fathers when they went hunting and fishing. They had to learn many skills so that they too, would be good hunters and fishermen. Boys learned how to hunt and fish; how to lure the animals and birds to them, and the ways of these animals. They learned how to make boats, tools, and weapons.

The Maritime Archaic Indians had no written language, so like all ancient cultures who have no writing, the history of their people was passed down by word of mouth.

Usually, the old grandfather in the band was the storehouse of wisdom and knowledge. He had lived longest and he knew everyone in the band. He knew and told of their great hunters, of great dangers, and of the good years and bad years of his people. His many years of experience made him a very important person to the band. The stories of the bands were probably told around the campfires in the quiet of evening. This was their way of passing along the history of their people from one generation to the next.

RELIGION

We know very little about the religion of the Maritime Archaic Indians. They prob-

ably believed in some spirit world after death. They prepared their people for life after death.



They prepared their dead for another world

The early Indians had a great respect for all the things of nature, especially human life. When one of their people died, he was placed in a chosen burial place with the other people in the band who had died. The remaining people placed many items in the grave with the dead person; weapons, tools, charms, and ornaments. They made sure that the dead person was well able to look after himself in his new life after death.

The Maritime Archaic Indians of Newfoundland depended on their total natural environment to satisfy all their needs. They also depended on their own skills. Their education and religion were of a useful nature, and indeed, blended well with their whole way of life.

SOMETHING TO DO

List A gives you some of the materials used by the Maritime Archaic Indians.

List A

1. ~~D~~ Beamer
2. --- Gouge
3. --- Harpoon
4. --- Beaver tooth knife
5. --- Charms
6. --- Fish teeth
7. --- Awl
8. --- Foreshaft
9. --- Dart
10. --- Dagger

SOMETHING TO THINK ABOUT

1. Why were bone, antler, stone and ivory materials so valuable to the early Indians? Are they important to us? Why or why not?

List B tells for what each one was used for. Match them up by placing the right letter on the line made for you. The first one is done for you.

List B

- A. to hunt seals
- B. to scoup out wood
- C. to bring good luck
- D. to remove hair
- E. to make holes in animal hides
- F. to make a weapon longer
- G. to carve designs
- H. to decorate clothing
- I. to kill a wounded animal
- J. to hunt birds

4. To whom did the Maritime Archaic children go to learn about their people, about the animals, how to make a tool? Why?
5. Your time machine has taken you back four thousand years to spend a summer's day with the Maritime Archaic Indians. Write a report about all your observations. Tell where the campsite is and why? Tell about their clothing and food. Tell about the day's chores and how they treat each other. When your time machine brings you back to the present, read your report to your class.

SOMETHING TO DISCOVER

The Maritime Archaic Indians lived in Newfoundland more than four thousand years ago. They lived at a time before writing was invented in this part of the world. If they left no written records, how do we know about them? READ TO DISCOVER

HOW WE KNOW

To-day, we know a lot about people who lived long ago in Newfoundland and many other parts of the world. We learn through archaeology. Archaeology is the study of how man lived long ago. Scientists who study how man lived long ago are called archaeologists. It takes many years of study and field work to become a

good archaeologist.

Archaeologists learn how man lived long ago by studying the artifacts he left behind. Artifacts are things made by man. Man has always made things: tools, weapons, cars, rockets, and space ships. All the materials which the Maritime Archaic used and left behind are called artifacts. Artifacts do not tell us every-

thing about the culture of a group of people. For example, the early Indian artifacts tell us that they were hunters and fishers. They do not tell us what language they spoke or what songs they sang. Artifacts then, are the clues which the archaeologist studies, as he tries to piece together the culture of a group of people who lived a long time ago.



The places where artifacts are found are called archaeological sites. There are many kinds of sites. Some are where people lived. Some are where people worked. Others are where people buried their dead or where they held their

ceremonies. Archaeological sites are found all over the world. They are found in the jungles, in the forests, and under the sea. They may lie beneath the surface of the earth for thousands of years, until someone discovers them.



Until discovered in 1967, the Archaic burial site at Port au Choix lay underneath this garden for four thousand years.

Archaeological sites are found in many ways. Some are found by looking for them. Some are found when nature makes changes in the land; for example, when heavy rains wash away part of the earth, leaving a site uncovered. Still others are found by chance.

A good example of a site found by chance is the Maritime Archaic burial site located at Port au Choix on the west coast of the island of Newfoundland. Locate the site on your map. In the fall of 1967, some people at Port au Choix were digging out a basement for a theatre. After a few digs with the bulldozer, a burial site was uncovered. The workers stopped work right away and called

some archaeologists to come and examine the site. The archaeologist and his crew began work on the site as soon as they could. They began the long task of putting together the way of life of a group of people. As a result of this chance find, the archaeologists were able to tell us a great deal about Newfoundland's first known people, the Maritime Archaic Indians.

SOMETHING TO DISCOVER

1. How does the archaeologist go about removing the artifacts from the ground?
2. What tools does he use? Why does he use those tools?
3. How can he tell when people used the site?
4. How does he interpret what he finds in a site?

At the site

When an archaeologist begins work on a site, the first thing he does is look the site over very carefully. At this time he does very little or no digging. He surveys the site and makes a map of the area. He then decides how many helpers and how much money he needs to excavate the site.

The excavation in archaeology means digging out a site to find clues about the people who used it. An excavation is also called a dig. The excavation or dig is always very exciting because the archaeologist never knows what he will dig up next.

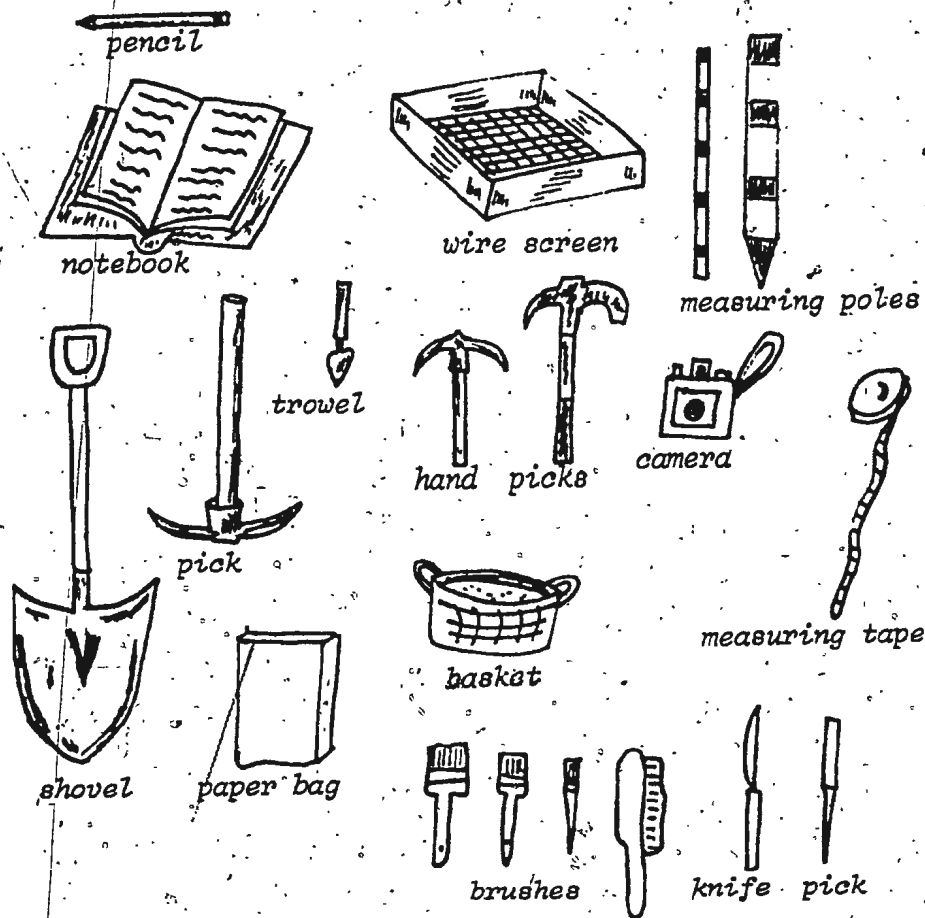
The first step in the excavation is to mark the site off into squares. They do this by using string and pegs. Each square is given

a number. By marking the site off into squares, the archaeologist can put a label on each artifact to show exactly where in the site it was found.

After the site is marked off into squares, the excavation or dig begins. The archaeologist and his crew use many kinds of tools to excavate the site.

Sometimes a bulldozer is used to move the top layer of dirt and stone from the site. They also use picks to loosen up the dirt. They use shovels to remove the dirt. The dirt is sifted through a wire screen so that small artifacts are not thrown away. Wheelbarrows are used to take the dirt away.

When artifacts are found in a site, the archaeologist uses small tools to get them out of the ground without breaking them.



Tools of the archaeologist

They use small picks, knives, trowels, and brushes. The archaeologist and his crew have to be very careful with the artifacts because they are very old and are easily broken. A measuring tape is used to get the right measurement of the place where the artifact was found. Everything is written down in a book. They use a camera to take pictures of the artifact before it is lifted up. The archaeologist wants to know what things go together.

Often the artifacts are found in different layers or strata in the site. Artifacts found in the lower layers are usually oldest in the site.

The archaeologist has to know exactly in which layer an artifact was found. He also has

to know in what square it was found and what other artifacts were found near it.

When the artifacts are taken from the ground, they are labeled and placed in strong paper or cloth bags. Each bag is labeled to match the square in which it was found. The labels also include the date and the initials of the digger.

When the excavation is finished, the archaeologist takes all the notes, records, pictures, and artifacts into the laboratory. Now he is ready to begin a very important part of his work. This work is putting together the way of life of the people who used the site long ago. He does this by studying the bits and pieces which he has spent many hours digging from the earth.



Archaeologists at work

In the laboratory

Before the archaeologist begins serious study of the artifacts, there are some chores that must be done in the laboratory. The artifacts have be washed or dusted with fine brushes. Broken artifacts have to be put together again and sometimes given a coat of lacquer or glue so that they do not crumble apart.

One of the first questions an archaeologist asks about a site or artifact is "How old is it?" An archaeologist has to know the age of a site or artifacts found in it so that he can explain the find and relate it to other things about the past. Putting an age on a site or artifact means dating it. Dating is part of the laboratory work. There are two



The earth is made up of layers or strata

types of dating. They are relative dating and absolute dating.

Relative dating does not give an exact date. It tells whether an artifact is older or younger than some other artifact. You have already learned that the earth is made up of

certain strata or layers of rock and soil. The oldest things are usually found in the bottom layer. For example, a spear point found in layer 4 would be older than one found in layer 2. This kind of dating, using the strata or layers of the earth, is called stratigraphy.

The other kind of dating used by the archaeologist is absolute dating. Absolute dating gives us a date such as years ago or years old; for example, four thousand years ago, or 1973. There are several ways to do absolute dating. The one most used is known as Carbon 14 dating. To do this dating, a laboratory has to have special equipment. Also, a special kind of scientist does

this work in the laboratory.

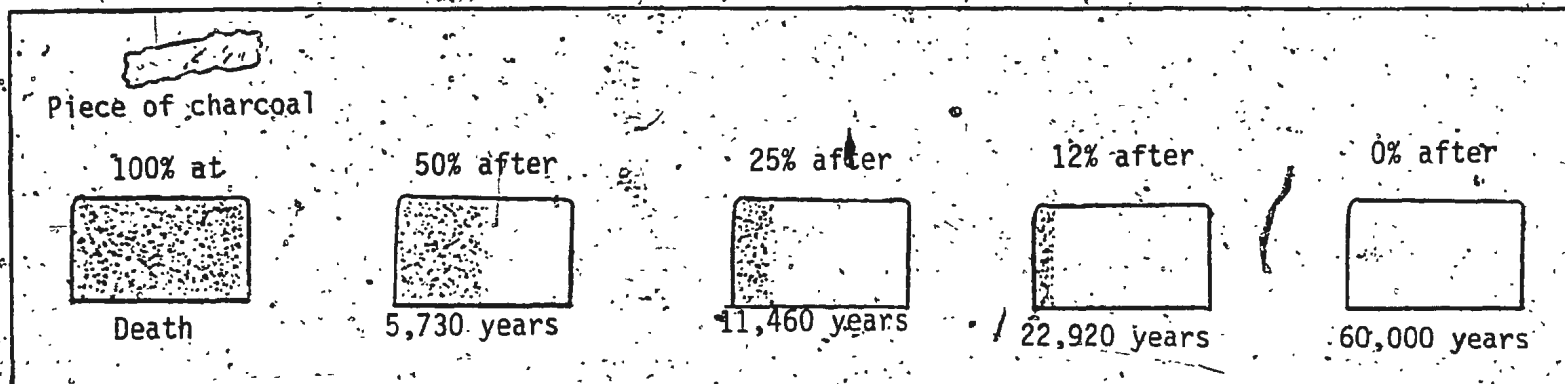
All living things, both plants and animals have Carbon 14. The scientist knows how much Carbon 14 is present in a living plant or animal. When the plant or animal dies, the Carbon 14 begins to disappear. The scientist knows the rate at which the Carbon 14 disappears. By measuring how much Carbon 14 remains, a scientist can tell the year a plant or an

animal died.

This method of absolute dating can be used on different things which were made from living things. It can be used on charred wood, charred bones, shells, or things made from animal skins.

Carbon 14 is the most used method of dating. It cannot date things much older than sixty thousand years. After that time, too much of the Carbon has disappeared.

CARBON 14 DATING



Another chore done in the laboratory is describing the artifacts found in a site. A record is made for each and every artifact found in a site. The record says what the artifact is. It describes its size, weight, and the kind of material from which it is made. The artifact is given a number and this number is put on a card. Each artifact has a card of its own. The card is its record. The card also says in which square in the site the artifact was found, which layer, and what things were found near it. This description is very important for the archaeologist to explain what he has found.

After the laboratory

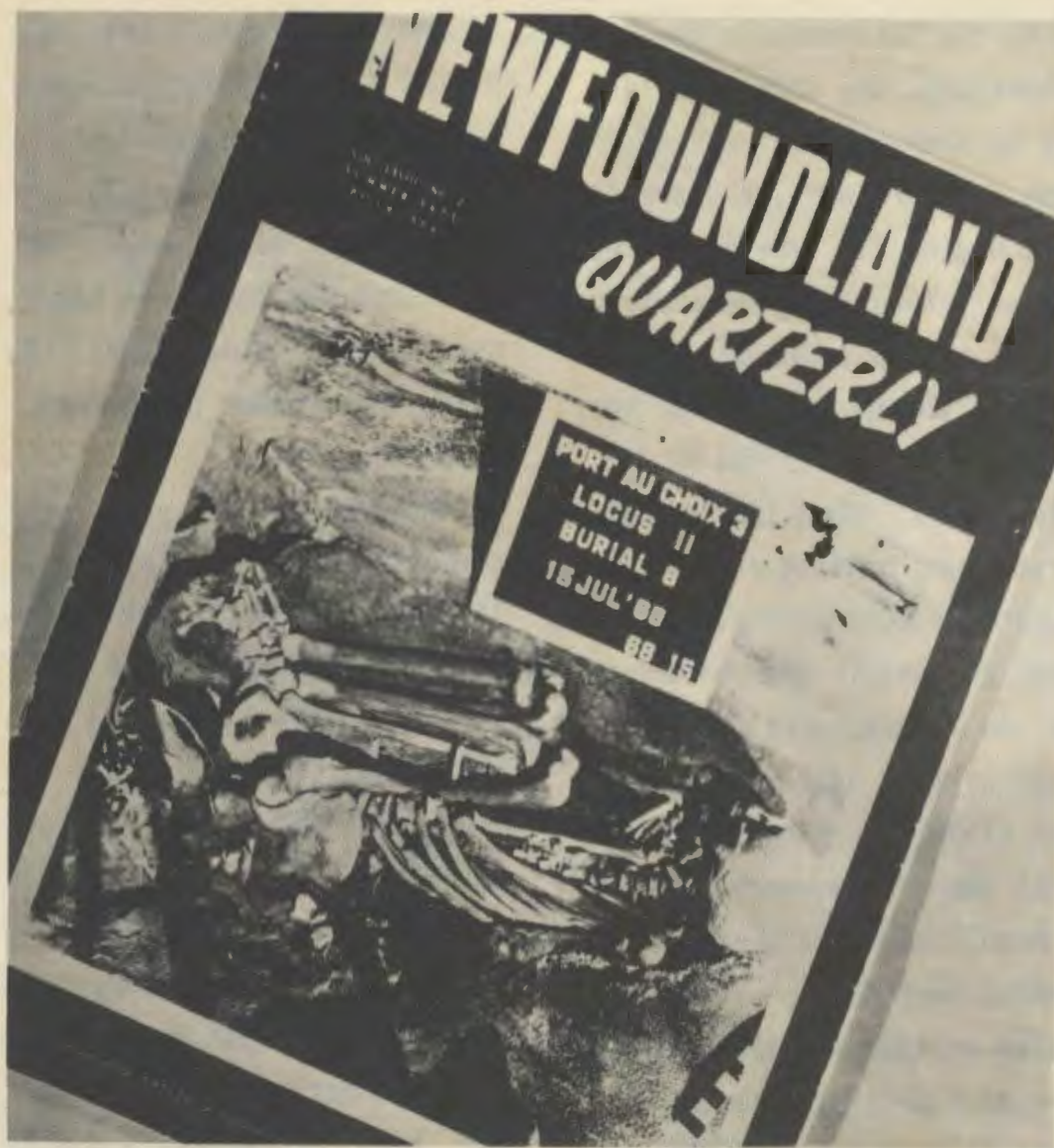
In all stages of his work, from the time a site is discover-

ed to the last step in the laboratory, the archaeologist has to keep careful records. From these records, the archaeologist begins his very important job of interpreting or explaining what he has found. He has to describe the culture of the people from the things he has discovered. When the archaeologist found hunting and fishing spears at Port au Choix, he knew that the people must have hunted and fished. The sewing needles must have been used to sew clothing. When he found that the needles were kept in a needle case, he knew that the owners must have placed great value on their sewing needles. The many artifacts found in the burials told him that they believed in some sort of life after death.

The last stage in the work of the archaeologist is writing about what he has found. He must tell other people about what he has learned. He publishes his report in books, newspapers, and magazines. By doing this, other people can read about it.

Archaeology is a very interesting study. Archaeology is man's discovery of his past.

Some day you may find an archaeological site. You should not try to dig it yourself. Many good sites have been ruined by untrained diggers. You should get in touch with the university nearest you. Most universities have archaeologists. In summer, many high school and many university students go on digs with the archaeologists. May-

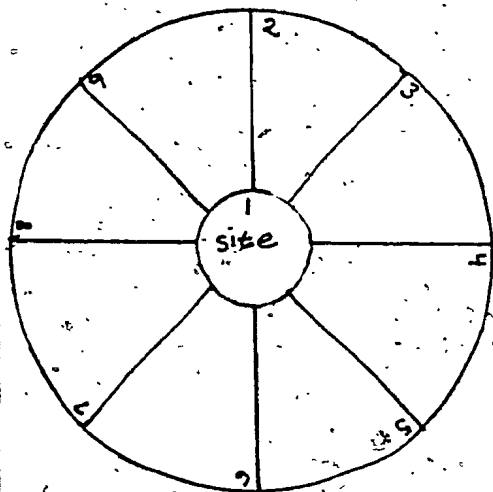


Archaeologists publish their findings.

be one day you will help on a dig. By doing this, you will be helping us to know more about how man lived long ago.

CONCLUSION

We do not know what happened to Newfoundland's first people--the Maritime Archaic Indians. They remained in Newfoundland for more than a thousand years. Archaeologists have no clues that they were there longer than this. Maybe some day we will find clues which will tell us what happened to them. Maybe the fish and animals did not come. Maybe another group of people came and laid claim to their camping grounds. Until the archaeologists find clues, their disappearance from Newfoundland will remain a mystery.



SOMETHING TO DO

Below are some meanings of words which helped you learn about the Maritime Archaic Indians. Put the word for each meaning in its proper place. The first one is done for you.

1. A place where clues of the past are found.
2. The study of past cultures.
3. A scientist who studies past cultures.

SOMETHING TO THINK ABOUT

1. You are an archaeologist in charge of excavating a site. Write up your plan for carrying out the dig.
2. What parts of a culture is the archaeologist most like-

4. A thing made by man.
5. Putting a date on something.
6. A date which tells you if something is older or younger.
7. A date which says exactly 5 years or 1973.
8. A dating method using the layers of the earth.
9. A dating method using the changes which occur in some living thing after it dies.

3. Why should an archaeologist be very careful when he is digging? Why should he dig very carefully and slowly? Why should he look at every item he finds?
4. A statement on page 43 says that that archaeology is man's discovery of his past. Does the author give enough information to support this statement?
5. Think about all the things that are left at the city dump? Make up a story about an archaeologist who would dig in this dump four thousand years from now. What do you think he might find? Could he tell how you and your friends lived?

6. Why are the major archaeological sites of the Maritime Archaic Indians located along the seacoast?
7. How were the Maritime Archaic Indians like us? How were they different?
8. What changes have taken place over the four thousand years since the early Indians lived in this part of Canada? How do the people living in this area to-day make use of the land, sea, forests, and air?
9. You have discovered that the first people to live in Newfoundland were given their name because they were an ancient culture who depended greatly on the sea for their livelihood. Do your readings and map give you enough information to show that this was so?



THE UNIT

This booklet is part of a unit of curriculum and instruction on the Maritime Archaic Indians of Newfoundland and its surrounding areas. The unit consists of the student's booklet, a teacher's manual, a set of colored slides, and audio-tapes (parts 1 and 2).

ACKNOWLEDGEMENTS

This study was done with the kind co-operation of the Anthropology Department and the Center for Audio-Visual Education at Memorial University. Special thanks to the following for providing photographs: The Department of Tourism, Newfoundland for 7(black bear), 8(caribou), 9(caribou and beaver), 11(tree sparrow), 12(sea birds), 13(eggs), 15(salmon and trout), 16(berries),

17(caribou); the Department of Natural Resources, Saskatchewan for 10(timber wolf); the Greystone Press, Toronto for 10(otter) and 14(walrus); Tom Northcott and Ron Tropea for 10(pine marten); Chesley Sanger for 12(seal); A.P. Cowan for 5(landscapes).

Artwork for the unit include 14(whale), 13(great auk), 14(skate) done by T. Braffet at C.A.V.E. and 39 (archaeological tools) by Craig Cowan. Cover Sketch and all other Indian sketches were provided by the Anthropology Department and were done by Robert Percival, Historic Resources Division, Government of Newfoundland.

APPENDIX F

TEACHER'S MATERIALS

TEACHER'S MANUAL**NEWFOUNDLAND'S FIRST PEOPLE:
THE MARITIME ARCHAIC INDIANS**

TEACHER'S MANUAL

for

NEWFOUNDLAND'S FIRST PEOPLE:
THE MARITIME ARCHAIC INDIANS

by

FLORENCE COWAN

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INTRODUCTION

This unit has been designed to arouse the interest of the student, and to help him discover the pleasure of discovering for himself. A variety of information invites him to investigate, predict outcomes, interpret, analyze, and evaluate--thereby learning the skills needed to meet social problems or make decisions about issues which affect his life.

This unit has also been designed so that the teacher is not required to tell the student everything, but is encouraged to guide and stimulate him to find out for himself. In this way, the teacher can join the student in searching for answers to the problems posed.

Much of the emphasis of the unit is on the anthropological principle that all mankind are alike in that they have approximately the same basic needs. The major

difference between the cultures of the world lies in the way these needs are satisfied. Students learn to see their own culture as one among many--each having its own way of doing things, its own values and its own beliefs. This emphasis proposes to help the students acquire a better understanding and appreciation for all mankind.

THE INTENDED LEARNING OUTCOMES OF THE UNIT

The primary intended learning outcome of the unit is to help students acquire a knowledge, understanding, and appreciation of the way of life and the problems of Newfoundland's first known people, the Maritime Archaic Indians.

To achieve this outcome, the unit deals with the following aspects of the life of these ancient people:

- their identity
- their origin or affiliation
- their location

- their place in time
- their physical environment
- their cultural materials
e.g. dress, technology etc.
- their magico-religious system
- their values
- their education
- their decline and disappearance

A secondary intended learning outcome is to introduce the students to the discipline of archaeology as the scientific means of finding evidence of extinct cultures without the written records. This does not propose to make professionals out of the students, but it does propose to help them gain some insight into the ways and methods of the archaeologist and the contribution of his work to the knowledge and understanding of prehistoric people. This should help to answer the students' infinite question, "HOW DO YOU KNOW?"

Besides the two basic

intended learning outcomes of the unit, there are several opportunities where the following skills may be promoted:

- accurate spelling
- keeping records
- vocabulary building
- co-operation
- discussion
- dramatization
- group planning
- comparing and relating information
- drawing inferences
- giving explanations
- noting main ideas
- thoughtful listening
- appreciating other cultures
- arranging events in sequence
- displaying materials
- asking thoughtful questions
- making decisions
- judging importance of information
- summarizing information

TEACHER BACKGROUND

WHAT WE KNOW

This study is about Newfoundland's most primitive people, the Maritime Archaic Indians. Evidence is provided to help the students discover how these Indians responded to a specific environment, and how they were dependent on each other and on their own skills in many ways.

Until recently, Newfoundland's earliest known inhabitants consisted of the Eskimo people and the Beothuk Indians. In 1968, a rich archaeological find on the west coast of the island, revealed that an earlier people had inhabited parts of the province many, many centuries before either of the other two groups. These hunters and gatherers lived a rich life, taking advantage of the many resources available in the area.

In the summer of 1968, a prehistoric cemetery was excavated at Port au Choix, a small fishing settlement on

the west coast of the island of Newfoundland. The director of the excavation was Dr. James A. Tuck from the Department of Sociology and Anthropology, Memorial University. This burial place, because of the extreme alkalinity of the soil (pH around 8.0), yielded the remains of over one hundred humans, a small number of dog skeletons, and thousands of excellently preserved artifacts. Carbon dating tells us that this was a preferred burial place for several hundred years between 2000-1200 B.C.

After analysis of the skeletal and artifactual remains, these people were identified as American Indian of the Archaic tradition. Tuck named these people the "Maritime Archaic Tradition". This name was chosen by him because it most appropriately describes their way of life. The term Maritime was applied because first, the same people, or at least people of the same cultural tradition, had inhabited the Canadian Maritime provinces with extensions northward into the

provinces of Quebec and Newfoundland, southward into New England especially in the state of Maine, and westward up the St. Lawrence, probably as far as the city of Quebec. Secondly, Tuck applied the name Maritime because he found that a great part of their culture was oriented towards the sea. The term Archaic of course, refers to an ancient or very old way of life.

Of the Maritime Archaic people, Tuck wrote that they represented a full cultural tradition which was well adapted to life in the Maritime area by 4000 years ago. They divided their time between the coast and the easily accessible inland area where they took advantage of the specific resources found in each area. He concluded that their technology was well adapted to cope with their environment, both in this world and the next.

The many artifacts uncovered at Port au Choix, reveal the way of life or the culture of the Maritime

Archaic Indians. They subsisted on an economy based upon the distinctive resources found in the area in which they lived. These resources consisted of sea mammals; fish; sea birds and other animals, especially in Newfoundland the caribou, beaver, black bear, otter, and pine marten. Evidence of this economy can be seen in the collection from Port au Choix.

This economy needed a special technology. Caribou spears and lances of slate and bone; barbed bone and antler points for bird darts and fish spears; barbed and toggle type harpoons; all helped in the hunting and fishing activities. Other hunting and fishing items include bone daggers and foreshafts.

Besides the hunting and fishing implements, several tools were found which suggest that a wood-working industry was well developed. These artifacts include axes, adzes, and gouges of stone and some of bone and walrus ivory. Beaver incisor teeth

which were sharpened in various ways were also found. No doubt, these tools were used to make wooden bowls, wooden spears; wooden handles for weapons and tools, wooden frames for their shelters, and possibly dug-out canoes.

Skin and hide working was also an important aspect in the life of these ancient people. The tools used for this purpose include bone scrapers and beaming tools, awls, and several sewing needles (with eyes), some of which were made from bird bones. These were made by carving and grinding. These bone needles suggest to us that tailored skin clothing was sewn by the early people.

Specific artifacts also attest to the ornamentation of their clothing. For example, small shell beads were often sewn on the hoods of their parkas. Pendants of the same materials were often found in the graves of young children and infants. Other decorative objects, found in such a

way to suggest that they were sewn on garments, probably served as magical or religious charms and as such tell us quite a bit about the early beliefs of the first inhabitants of Newfoundland. Again, these beliefs were well-suited to the type of life led by the early hunters and gatherers. Carved bone, stone, and antler charms were common, and also feet, claws, heads, bills, teeth, etc., of various birds and animals were also carried on the person to ensure good hunting or fishing. Quartz pebbles and crystals, concretions and water-worn stones, carved stone objects, and bone and antler pendants, often carved to resemble birds or animals also served as fetishes or charms. Other goods found in the graves were bone and antler combs, hairpins, bone tubes, and whistles. Tuck stated that this elaborate burial practice indicates that mortuary ceremonialism was very well developed.

We do not know of the de-

mise of these ancient people, but by about 1000 B.C. they seem to have disappeared from the entire Canadian east coast. Tuck suggested that this disappearance may have occurred because of environmental factors or because of the southward advance of new Eskimo people along the Labrador coast.

For a more detailed report on the Maritime Archaic Indians you may consult the following:

Tuck, James A. "An Archaic Indian Cemetery in Newfoundland," Scientific American, Vol. 222, No. 6 (June, 1970), pp. 113-21.

Tuck, James A. "A Current Summary of Newfoundland Prehistory," Newfoundland Quarterly, Vol. LXVII, No. 2 (Summer, 1971), pp. 17-25.

Tuck, James A. "An Archaic Cemetery at Port au Choix, Newfoundland," American Antiquity, Vol. 36, No. 3 (July, 1971), pp. 343-358.

TEACHER BACKGROUND

HOW WE KNOW

To-day, we know a great deal about man's past. Some of his past is revealed to us through written records or history. But the art of writing has not always been with man. Picture writing was invented some five thousand years ago and the first alphabet some four thousand years ago. Relatively, writing is a fairly recent phenomena when we consider that man has lived on the earth for over one million years. This vast extent of past time when man had no written language is referred to as prehistory.

We know and learn about the prehistory of man by means of a social science--archaeology. Archaeology is a division of cultural anthropology and is the scientific study of the material remains (artifacts) of past human life and activities. Archaeology has certain limitations in that it cannot always tell all about

the culture of a people by studying the artifacts. Man's culture is made up of more than material things; man talks, sings, works, tells stories, plays, builds his shelters, eats, and sleeps. A spear point found with a skeleton may tell us that the man was a hunter but it does not tell us what language he spoke or how he treated his wife. An archaeologist can only piece together and try to understand what he finds.

The archaeologist and historical records combined often yield a richer and more vivid picture of man's past than either of them would alone.

All archaeologists have to rely on the study of artifacts to gain insight into man's past. Archaeological materials are important because of the light they shed on the history and cultural development of man. By digging into the past, we may be better able to understand, evaluate, and appreciate our own culture.

The classification and understanding of artifacts require a highly developed

sense of style on the part of the archaeologist; he has to be able to distinguish between the products of separate cultures, be able to distinguish the stages of cultural development, and detect the interaction of different traditions. The archaeologists lean very heavily on the natural sciences for support in these interpretations. They draw on the disciplines of botany, geology, physics, climatology, chemistry, palaeontology, and zoology.

Archaeologists then, are scientists who excavate the material remains of vanished cultures and through the study of such evidence, attempt to re-construct the history of man from his earliest past and to determine the nature of the many different cultural systems at different times and different places around the world.

Man has always been fascinated by and interested in digging into the remains of past cultures. Grave robbers have been at work for thousands of years.

Egyptian tombs have been broken into and robbed; Eskimo burials have been pillaged; Viking burials have been ravaged, and early explorers in search of gold, plundered Peruvian tombs.

However, man has developed much more than a lust for loot and souvenirs. The Renaissance in Europe played a great part in bringing about a great appreciation of the sculpture, pottery, and other cultural materials of the ancient civilizations of Egypt, Greece, and Italy. The desire to know more about ancient cultures led many Europeans to excavate sites, especially the easily recognized Roman sites in Europe.

Interest in the classical past was heightened by the excavation of Pompeii in the year 1754. The eighteenth-century student of Pompeii was J.J. Winckelmann, who helped to interpret and explain much of the material that was unearthed.

A very interesting find in 1869 confirmed the existence of the city of Troy, a

supposedly imaginary city of Homer's epics. Heinrich Schliemann, a German businessman, who became an American citizen in 1850, was always fascinated by the epics of Homer. When he retired from business in 1850, he devoted himself to the study of Homeric sites, thus finding an outlet for his lifelong interest in the Homeric epics. He set out to find the much written about Troy, and found it in 1869 at Hissarlik, Anatolia.

This was just a start at many more re-creations of past cultures. Excavations revealed earlier and earlier cultures. The culture of the ancient Mingans was revealed in 1899; the Cretan and Indus Valley civilizations in 1922-27; and the ancient culture of Sumar came to light in the late nineteenth century and into the 1920s.

The nineteenth century also saw archaeologists pushing further and further back into time, back into prehistoric days when man had no written records. This meant

that whatever they could learn would have to come from the excavation and the examination of archaeological sites and the study of the artifacts. By now, archaeologists were finding evidence of man living in very primitive ways--man in the Iron and Stone ages.

By the 1920s, archaeology was achieving its own realization. Victor Barnouw has stated that since World War I, archaeological research has become much more professional and scientific in method than any of the previous decades. Scientific and technological advances have made the study of past cultures much more precise, more sophisticated, and much more scientifically sound.

In their efforts to learn about man's past, archaeologists face such problems as the location and classification of sites, excavation procedures, methods of dating their finds, and the interpretation of the evidence.

ARCHAEOLOGICAL METHODS

Location of sites

How does an archaeologist find a site where some past culture lived, worked, buried their dead, or held ceremonies? Sometimes the site is obvious, as in the case of the Mayan ruins in the jungles of Mexico and Guatemala.

Sometimes archaeological sites are located as a result of studying written works--the location of the city of Troy, and the Viking site at L'Ance aux Meadows, Newfoundland.

Barrows, mounds and large stone structures like those at Stonehenge, England are easy to find. Early people who lived in caves and rock shelters have left easy detectable sites for the archaeologist. Sometimes many archaeological materials are revealed through water or wind erosion, or by workmen blasting or digging, or even by animals burrowing into the earth.

Archaeological sites are also detected from the air. Features which would usually

be missed by a person walking through a field, may be clearly seen from an airplane. Often, sites are found by chance or accident. A good example of a chance find is the Maritime Archaic Burial site at Port au Choix, Newfoundland, which was accidentally unearthed in the late summer of 1967, and which led to intensive excavations in 1968. Because of this chance find, we know a great deal about the Maritime Archaic Indians in Newfoundland.

To-day, technology also helps the archaeologist to locate sites for excavation. Sometimes they apply the technique of electrical resistivity. When an electric current is run through the earth between two electrodes, the amount of resistance is measured on a meter. Successive readings over a grid would indicate the possible presence or absence of solid structures such as buried house foundations and other solid materials.

Another technique used for the location of archaeological sites is magnetic location. A proton magnetometer is used

like a mine detector, to discover the presence of underground iron objects.

These are some of the methods which help the archaeologists to decide where to dig.

Classification of sites

When sites are located, they are classified into different types; living sites where people once lived; butchery sites where people cut up animals; workshop sites where tools and weapons were made; quarry sites where flint and minerals were extracted; burial sites such as graves, tombs, and cemeteries; and ceremonial sites where ceremonies were held.

Excavation procedures

After a site has been chosen for excavation, the usual procedure is to stake it out in a grid plan, with the area divided into numbered squares. Before excavation, a scale map is made of the area. A refer-

ence or datum point is chosen on or near the site. This is the reference point for the excavation.

Often, test pits or trenches are dug to determine the layers or strata of the site. Each layer in the earth is allocated a number. Objects found in the lower layers are usually older than those found near the surface. However, the stratification may sometimes be disturbed by such things as animals, floods, etc.

The tools used by the archaeologist in the excavation are varied and consist of whatever implements seem to do the best job.

Bulldozers have been used to remove the soil and rocks from deeply buried sites. Picks, shovels, and mattocks are used when more care is required. Trowels, small brushes, wisk brooms, small picks, and knives are used to remove dirt next to a valuable item.

Removal of the dirt

from within the site is done by using wheelbarrows. Wire screens are used to sift the dirt before it is carried away. This enables the archaeologist to retrieve any small artifact which would otherwise be lost.

Measuring tapes and surveying instruments are also very necessary items because the removal of an artifact from a site without knowing exactly where it came from, can make it useless. The most important items used in excavating are pencil and notebook. To-day, the camera is also used extensively in the excavation of sites.

When an artifact is recovered, its position is carefully recorded in its particular square and layer, it is photographed, then it is numbered, catalogued, and listed in a register. Then the artifact is carefully placed in a strong paper or cloth bag, labelled with identifying numbers and taken to the laboratory for analysis and interpret-

ation. All during the excavation, it is important that all records be made in clear, precise form, so that the work in the laboratory can proceed without delay.

When the excavation has been completed to the satisfaction of the archaeologist, the site is refilled. Usually, if there are property owners involved, a stipulation is made by them to have the site refilled after the excavation is completed.

Dating methods

The question, "How old is it?" is usually one of the first to be asked by the archaeologist when he finds a site. There are two major types of archaeological dating--relative and absolute dating. Relative dating does not give an exact date but indicates whether a site or artifact is older, the same age, or more recent than another site or artifact. Absolute dating gives an exact date such as A.D. 1975, 2,000 B.C., or 125 years old. By combining relative and

absolute dates, archaeologists can describe sequences of events, and say when they took place.

Relative dating includes several methods. Included are seriation, which involves the analysis of variations in the form and style of such items as pottery; the use of flora and fauna; geological relationships and stratigraphy.

Stratigraphy is one of the most commonly used methods of relative dating. It proceeds on the basis of interpreting the layering or stratification of archaeological deposits. Generally, the deeper in the site a layer is, the older it is. This layer upon layer principle allows the archaeologist to see the sequences of deposits in a site. Thus, the stratigraphic position of an artifact may tell its age in relation to artifacts in other strata. Care must be taken however, to recognize bones or items that may have moved down from higher levels.

The absolute dating gives a much more exact date than relative dating. Among the most commonly used techniques

of absolute dating are the calendrical dating system, which involves the use of dates on coins; corner stones, etc.; dendrochronology or tree ring dating; carbon 14 or radiocarbon dating, and potassium-argon dating.

By far, the most widely used absolute dating method in the field of archaeology is carbon 14 or radiocarbon dating. This technique is based on the discovery that all living things, both plants and animals, contain a radio-active carbon known as carbon 14. Plants absorb this carbon from the atmosphere. Animals acquire it by eating plants, or by eating animals that have eaten plants. The amount of carbon 14 normally present in a living plant or animal is known by the scientists. After death, no more carbon is taken in, and disintegration of the carbon 14 proceeds at a steady rate, one half the quantity every 5730 ± 40 years. In a period of 11,460 years, there will only be one fourth of the amount held by the organism at the time of its

death. The carbon 14 becomes weaker and weaker as time passes; and after about 60,000 years the amount is too small to measure. By reading how much carbon 14 remains in an organism, a scientist can tell the time of its death.

Carbon 14 dating can be used on any kind of organic material; charcoal, charred bones, shells, things made from animal skins and so on. Recently, a similar method has been devised which measures absolutely far greater expanses of time. This method is known as potassium-argon dating and it follows similar principles as the carbon 14 method. In this case, a radioactive form of potassium decays at a known rate to form argon. The ages of some rocks can be dated by this method. One advantage of potassium-argon dating is that it can be used to date older sites than those within the range of carbon 14 dating. However, it cannot be used to date things within the range of carbon 14 dating.

Interpretation

Before the actual interpretation begins, there are several smaller tasks which have to be done. Artifacts have to be cleaned; repaired where possible, preserved with shellac or acetate, and finally each and every artifact is given its own card with all related information. These tasks are done by well trained laboratory technicians.

The archaeologist's most difficult and most important task is to analyze, interpret, and explain a way of life of a group of people from the scraps and pieces which he has spent many hours removing from the earth. In most instances, only a limited part of the culture will ever be known from the materials he has found. However, some cultural traits can be inferred from the excavated artifacts. If large numbers of spear points are found, the group did a lot of hunting. The training of the archaeologist is very valuable because

cause it enables him to recognize intricate pieces of evidence, thus enabling him to reconstruct the economic structure, social organization, technology, and other aspects of the culture he has revealed.

The archaeologist begins his interpretation with the artifacts he has recovered, with past and present climate, the kinds of materials from which the artifacts are made and so on. Complete interpretation involves the dating of the site, evaluating it in relation to other sites and cultures, and describing the way of life of the group of people concerned.

The final phase in the work of the archaeologist is the publication of what he has found. This is a very important aspect in the field of archaeology as an unreported or unpublished excavation denies everyone, both scientists and laymen, the knowledge of its existence. No one can successfully re-excavate an archaeological site; once it has

been disturbed, it is usually destroyed beyond any meaning.

Archaeologists supply a well written report on their findings. Usually it begins with a short, concise abstract, which is followed by the full report. Maps, charts, photographs, and diagrams, are generally included in the report to help make it clear and interesting.

The archaeologist, in reconstructing the life of a vanished culture, is making the past live again.

For a more comprehensive report on the work of the archaeologist, you may consult any of the following:

Barnouw, Victor, Physical Anthropology and Archaeology. Georgetown, Ont.: Irwin-Dorsey Ltd. 1971.

Clark, Grahame, Archaeology and Society. London: Methuen & Co. Ltd. 1968.

Deetz, James, Invitation to Archaeology. New York: The Natural History Press. 1967.

"How old is it?" National Geographic. Vol. CIX (August, 1958) 234-255. Description and pictures of the apparatus used in carbon 14 dating.

THE TEACHING STRATEGIES

Teaching strategies for the achievement of the intended learning outcomes of the unit are both expository and inquiry oriented.

Readings, map, sketches, photographs, and film strips are used to accomodate the expository strategies.

The inquiry strategies consist of a series of questions designed to give pupils the opportunity to exercise the total range of thinking skills. Pupils can be led into all kinds of thinking through the

careful use of questions. It is anticipated that through a systematic consideration of questions, pupils will use ideas rather than just remembering them.

Each section of the unit begins with SOMETHING TO DISCOVER. This consists of certain questions designed to motivate the pupil into discovering for himself, the solutions to the problems posed.

Questions at the end of each section under the heading SOMETHING TO THINK ABOUT have been designed to lead the pupils through various levels of thinking. Questions are generally regarded as the basic tools of the inquiry method. Many of the questions in this section require levels of thinking beyond just the recall of facts.

Helping pupils through the various levels of thinking, requires considerable skill and resourcefulness on the part of the teacher. Terms

may have to be defined, the meanings of answers may have to be clarified, and some of the questions may have to be rephrased to meet the needs of the teacher and pupils.

A few examples of the different types of question used are listed below.

Translation--changing information into another form
--On the picture of the band, find clues which tell you that the early people of Newfoundland were hunters and fishermen. (Page 6)

Interpretation--discovering relationships.

--Study your map. How many Maritime Archaic sites are there? How many are located by the sea? What does this tell you about the importance of the sea to them? (Page 6)

Extrapolation--going beyond given information to determine implications, consequences and effects.

--When the fish and animals

did not come, what did it mean to the Maritime Archaic Indians? Does it mean the same to us? Why or why not?

Application--applying known information to a new situation.

--You are a Maritime Archaic Indian and you have to find a good place to set up camp. What things would you look for in choosing a good campsite? (Page 18)

Analysis--identifying main factors in a problem.

--You are an archaeologist in charge of excavating a site. Write up your plan for carrying out the dig. (Page 45)

Synthesis--imaginative thinking.

--Think about all the things that are left at the city dump. Make up a story about an archaeologist who would dig in this dump four thousand years from now. What do you think he might find? Could he tell how you and your friends lived? (Page 45)

Evaluation--the student makes a judgment of good or bad, according to standards he designates.

--A statement on page 43 says that archaeology is man's discovery of his past. Does the author give you enough information to support this statement? (Page 45)

--You have discovered that the first people to live in Newfoundland were given their name because they were an ancient culture who depended on the sea for their livelihood. Do your readings and map give enough information to show that this was so? (Page 46)

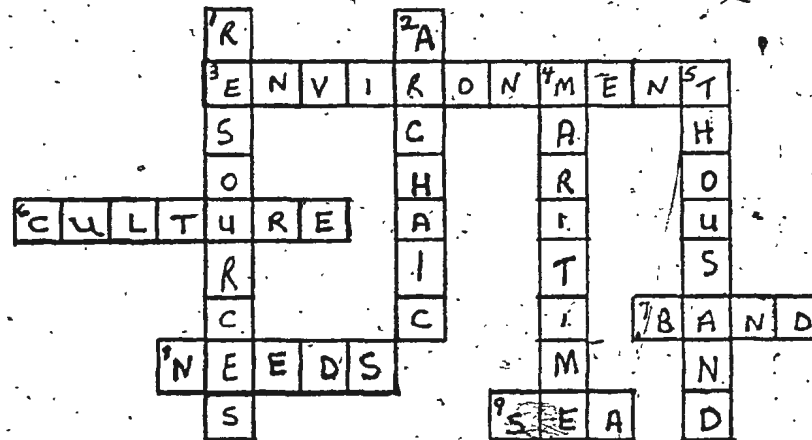
Each section of the unit is also provided with an activity for the individual pupil. This is found under SOMETHING TO DO. These activities have been designed to give each pupil an opportunity to "Learn by doing," a very prominent theory of learning. Children do not have to be act-

ively engaged with their hands and bodies in order to learn--a child can be sitting quietly at a desk and yet be vigorously engaged in any one of a number of mental activities. These exercises propose to do this.

There are four SOMETHING TO DO exercises in all. The solutions to them are listed on the following pages.

KEY TO ACTIVITY PROBLEMS

SOMETHING TO DO PAGE 6



SOMETHING TO DO PAGE 18

P Q C A R I B O U X Y G S A L M O N H X M A R T E N L P
 S Q U A S H B E R R I E S S Y X S K A T E S P G U L L P
 Q S X T R E E S T S Q B E A R Z Q S T L O O N A Z P G B
 B E A V E R N M L P C F Q O T T E R R Y G M S E A L P Q
 R S F T W D U C K M N W H A L E G F T Z G E E S E Q P Y
 B L U E B E R R I E S S K M N W G R E A T A U K M N L W
 X B L T I M B E R W O L F P L M B A K E A P P L E S T P
 G F T Y R F G R Y W Q W A L R U S H H G Y P L P K W Z D

LAND AND SEA ANIMALS

caribou
 marten
 bear
 beaver
 otter
 seal
 whale
 timber wolf

PLANT LIFE

squashberries
 trees
 blueberries
 bakeapples

FISH

salmon
 skate

BIRDS

gull
 loon
 duck
 geese
 great auk

SOMETHING TO DO PAGE 35

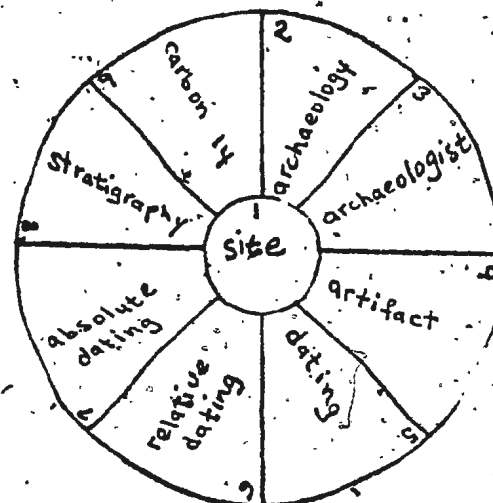
List A

1. ~~D~~ - Beamer
2. ~~B~~ - Gouge
3. ~~A~~ - Harpoon
4. ~~C~~ - Beaver tooth knife
5. ~~C~~ - Charms
6. ~~H~~ - Fish teeth
7. ~~H~~ - Awl
8. ~~H~~ - Foreshaft
9. ~~H~~ - Dart
10. ~~H~~ - Dagger

List B

- A. to hunt seals
- B. to scoup out wood
- C. to bring good luck
- D. to remove hair
- E. to make holes in animal hides
- F. to make a weapon longer
- G. to carve designs
- H. to decorate clothing
- I. to kill a wounded animal
- J. to hunt birds

SOMETHING TO DO PAGE 45



SUGGESTED ACTIVITIES TO HELP
INCREASE UNDERSTANDING AND
SKILLS:

MY OWN DICTIONARY

Each section of the unit has certain concepts which are necessary for the pupils to know. These are basic and can be applied to any study of historic or pre-historic peoples.

Have each pupil keep a record of each new word he meets as he studies the unit. This should help in the development of the following skills:

- accurate spelling
- keeping records
- responsible personal action
- vocabulary building

Suggested concepts are as follows:

- maritime, archaic, natural environment, resources, band, culture, weapons, tools in the section WHAT WE KNOW
- archaeology, archaeologist, artifact, site, relative dating, absolute dating, carbon 14, and stratigraphy in the section HOW WE KNOW.

SHADOW PLAY

At the end of the first section WHAT WE KNOW the pupils may engage in a SHADOW PLAY. The class can be divided into several groups. Give each group a short period of time to select and plan how to act out some phase of Maritime Archaic life, for example, a hunting expedition, a fishing trip, tool or weapon making, preparing animal skins for sewing, and so on. Then each group, in turn, pantomimes its act behind a large sheet, with a strong electric light behind the players. Ask the rest of the class to guess what the act shows.

Skills promoted by the SHADOW PLAY are:

- appreciating other cultures
- comparing and relating information
- co-operation
- discussion
- dramatization
- group planning

GUESS WHAT?

At the end of the first section WHAT WE KNOW each child can describe a person, place, or object that was studied and let the others guess what is being described.

Skills promoted by GUESS WHAT? are as follows:

- drawing inferences
- giving explanations
- noting main ideas
- thoughtful listening

DISCUSSIONS

Discussions are also an important means of involvement. The unit provides opportunities for discussion of such controversial topics as conservation of natural resources; the use and misuse of the land, sea, and air; pollution and other related topics. Many problems faced by man to-day, as a result of industrialization, were non-existent when the Maritime Archaic Indians lived in the Maritime areas of eastern North America four thousand years ago.

THE DIG

During the teaching of the second section HOW DO WE KNOW?, activities may be utilized to help accomplish the secondary intended learning outcome of the unit--to help children to understand and gain some insight into the methods and contributions of archaeology.

Have someone supply the class with an old fish-tank or a fairly large see-through container, some sand, dirt, and artifacts. For artifacts, the children may bring bits of broken pots, bottle caps, pop-can rings, and the like.

Divide the class into two groups. Have group number 1 build up layers or strata of sand and dirt in the container, placing the artifacts in the various layers.

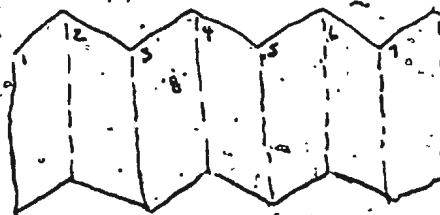
Spray the sand and dirt with a little moisture to keep it from crumbling.

Have group number 2 bring small brushes, tooth-picks, and small popsicle sticks which can be substituted for the archaeologist's tools. Have someone supply a small wire screen. Have

pupils look over surface for clues. Then divide the surface into squares. Excavate carefully a small test pit and record the thickness of each layer. Have the group excavate each layer, keeping records on chart or blackboard. Record also, the square in which each artifact was found. Discuss the results.

ACCORDIAN BOOK

To show the sequence of the activities an archaeologist engages in from the time a site is discovered to the publication of the find, children may display pictures, drawings, and explanatory notes on an accordian chart.



Skills promoted by this ac

ivity are as follows:
--arranging events in sequence
--displaying materials
--giving explanations
--written composition

CHAIN REACTION

To provide a spirited review of information acquired in a unit of work, have class or group gather in a circle. The first player thinks of something that the class or group has learned in this unit. He asks the player on his right to answer a question about it. If he is able to answer correctly, he becomes the next person to ask a question. If he is not able to answer correctly, the player on his right tries to do so, and so on, until someone does answer correctly. This continues until all players have had an opportunity to participate, or until time is called. Encourage meaningful and thoughtful questions. Tell the children to avoid "yes" and "no" questions.

Skills promoted by CHAIN-
REACTION are as follows:

- asking thoughtful questions
- decision making
- judging importance of information
- summarizing information

Some or all, or other teacher designed activities could be used to help achieve the intended learning outcomes. The needs of the particular class would determine this decision.

The following test is merely suggestive, not prescriptive. A teacher may use some, all, or she may adapt or substitute the test items depending on the needs of her class.

Test follows.

TEST

Each problem in this test has four possible answers. You are to read each problem carefully and choose the one answer you think is right. There is only one right answer for each problem. Put a circle around your chosen answer.

Example

The first known people to live in Newfoundland were the

- A. Eskimos
- B. Beothuck
- ☒ C. Maritime Archaic Indians
- D. Vikings

1. Which one of the following gives the correct meaning for the word maritime?

- A. Near home
- B. Away from home
- ☒ C. Near the ocean
- D. Far from the ocean

2. Which one means the same as archaic?

- A. Very old
- B. Fishing
- C. Hunting
- D. Gathering fresh eggs

3. The first known people to live in Newfoundland were given the name Maritime Archaic because

- A. that is what they called themselves
- B. it was a very nice name
- C. other Indians called them by this name
- D. the name suited their way of life

4. The Maritime Archaic Indians first appeared in Newfoundland

- A. four hundred years ago
- B. four thousand years ago
- C. forty years ago
- D. forty thousand years ago

5. The Maritime Archaic Indians made their living by

- A. farming and fishing
- B. working in the woods
- C. making and selling things
- D. fishing, hunting, and gathering

6. The biggest problem the Maritime Archaic Indians had was
- A. to stay alive and well.
 - B. hunting animals
 - C. sailing their dug-out canoes
 - D. travelling from place to place
7. When we speak about the way of life of a group of people, we are speaking about their
- A. history
 - B. geography
 - C. families
 - D. culture
8. The Maritime Archaic Indians were always moving from place to place because
- A. they liked to visit other places
 - B. they liked to visit their neighbours
 - C. this was the only way they could get food
 - D. this was the only way they could buy food
9. Which one of the following means the same as natural environment?
- A. The way we live
 - B. The chores we do every day
 - C. The food, houses, and clothes we use
 - D. The things of nature which are all around us
10. Which group of words means the natural resources of a place?
- A. Fish, animals, birds, plants, soil
 - B. Dug-out canoes, boats, fish, bird darts
 - C. Houses, tents, shelters
 - D. Combs, hair-pins, clothing, charms
11. The natural environment was important to the early people of Newfoundland because
- A. it protected them from the wild animals
 - B. it provided them with wood
 - C. it provided them with the things they needed to live
 - D. it had many lakes and streams

12. For all the things they needed, the Maritime Archaic Indians depended on
- A. other peoples' materials and skills
 - B. their own materials and skills
 - C. buying them from other people
 - D. trading with other people
13. When making their skin and fur clothing, in which order did the early Indians use the following?
- A. Needle, scraper, awl, charms
 - B. Charms, needle, scraper, awl
 - C. Scraper, awl, needle, charms
 - D. Aul, scraper, charms, needle
14. One way in which all people are alike is
- A. they all need food, clothing, and shelter
 - B. they all speak the same language
 - C. they all build their houses the same way
 - D. they all eat the same kind of food
15. The cultural materials of a group of people are
- A. the color of their hair
 - B. the things they make and use
 - C. the animals they hunt
 - D. the things other people give them
16. What most likely happened to the Maritime Archaic Indians when they could find no animals, fish, or birds?
- A. They starved to death
 - B. They did not mind at all
 - C. They bought food and materials from other tribes
 - D. They grew vegetables and fruit
17. An archaeologist is a scientist who studies
- A. different kinds of animals
 - B. cultures of long ago
 - C. how the earth was formed
 - D. how to build boats

18. The place where an archaeologist finds his information is called
- A. a site
 - B. an artifact
 - C. a date
 - D. strata
19. The careful removal of dirt from a site is called
- A. explanation
 - B. examination
 - C. exchange
 - D. excavation
20. Items that are made by man are called
- A. sites
 - B. strata
 - C. artifacts
 - D. carbon 14
21. Which of the following is an artifact?
- A. An animal
 - B. A stone
 - C. A tree
 - D. A shoe
22. Which of these tools do archaeologists use?
- A. Nails, hammer, axe
 - B. Brooms, mops, buckets
 - C. Needles, awls, scrapers
 - D. Shovels, brushes, pencil, camera
23. Which of these is something we cannot learn about people from their artifacts?
- A. What kind of weapons they had
 - B. What kind of tools they had
 - C. How they talked
 - D. What kind of ornaments they had
24. Which one of the following is not an artifact?
- A. A caribou
 - B. A spear point
 - C. A comb
 - D. A knife

25. If you were an archaeologist, in what order would you do the following things?

- A. Date, excavate, publish, explain
- B. Excavate, date, publish, explain
- C. Excavate, date, explain, publish
- D. Publish, date, excavate, explain

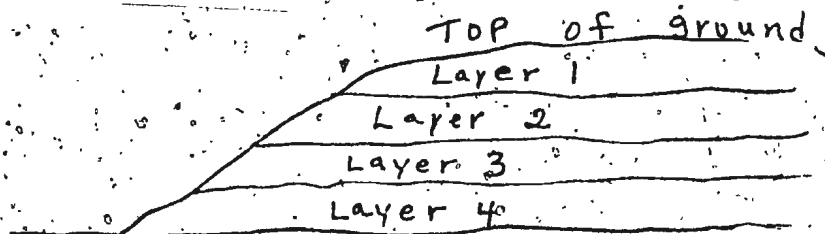
26. The layers of the earth in which items are found are important in which kind of dating?

- A. Carbon 14
- B. Calendar dating
- C. Absolute
- D. Stratigraphy

27. The method of dating which gives an exact date is called

- A. absolute
- B. relative
- C. stratigraphy
- D. calendar

Here is a sketch showing several strata in an archaeological site. Use the sketch to answer questions 28 and 29



28. The oldest artifact would most likely be found in

- A. layer 3
- B. layer 4
- C. layer 2
- D. layer 1

29. The youngest artifact would most likely be found in

- A. layer 1
- B. layer 4
- C. layer 3
- D. layer 2

30. Archaeologists find sites

- A. in forests only
- B. in deserts only
- C. only underneath the sea
- D. all over the earth

31. Imagine you are an archaeologist. After digging down deep in a site, you find the remains of a fireplace with pieces of charred wood. Which of the following methods would you use to date the piece of wood?

- A. The calendar
- B. Stratigraphy
- C. Carbon 14
- D. Relative dating

32. Suppose you found an archaeological site. You should

- A. dig the site very carefully yourself
- B. have your friends help you dig it
- C. dig the site only if it is on your property
- D. not dig the site at all, but get in touch with archaeologists at the university nearest you.

KEY TO TEST

1. C

2. A

3. D

4. B

5. D

6. A

7. D

8. C

9. D

10. A

11. C

12. B

13. C

14. A

15. B

16. A

17. B

18. A

19. D

20. C

21. D

22. D

23. C

24. A

25. C

26. D

27. A

28. B

29. A

30. D

31. C

32. D

