THE EFFECTS OF TEACHER-MADE AND
PUPIL-MADE SIMULATION GAMES
ON STUDENT ATTITUDES
TOWARD SOCIAL STUDIES

by
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We accept this thesis as conforming to
the required standard.

(Chairman)
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ABSTRACT

The purpose of this study was to test the effects of teacher-made and pupil-made simulation games on student attitudes toward social studies. A sample of seventy grades four and five students was randomly assigned to a control group, a teacher-made-simulation treatment group or a pupil-made-simulation treatment group. The control treatment group was instructed through the analytic approach while the teacher-made-simulation treatment group was instructed through the use of simulation games developed by the researcher. In the pupil-made-simulation treatment, the students developed and played simulation games within the classroom.

The same objectives and instructional data were employed in each treatment. The researcher developed this unit following the procedures utilized in recent curriculum development practice. The inquiry processes incorporated in this unit were adapted from the analytic and integrative modes of inquiry. The control treatment utilized primarily the analytic mode while the teacher-made and pupil-made-simulation treatments employed primarily the integrative mode.

The researcher administered the three treatments consecutively with each treatment consisting of fourteen instructional periods. Student attitudes toward social studies were evaluated by means of a paired-comparison rating scale. A pre-test was administered five months prior to the study and a posttest was administered one week after the administration of each treatment. A modified paired comparison rating scale was given as a delayed posttest to the control and teacher-made-simulation treatment groups on the same day that the pupil-made-simulation treatment received its first posttest. The posttest mean scores for the three treatments were adjusted by an analysis of covariance in comparing group performance. Duncan's Multiple Range Test was used to determine the significance and order of differences between treatment group mean scores.

The study revealed that students in the teacher-made and pupil-made-simulation treatments had significantly more favorable attitudes toward social studies than did the children in the control treatment. The teacher-made and pupil-made-simulation treatments were found to be equally effective in influencing favorable student attitudes toward
social studies. Conclusions and implications were drawn relevant to classroom practice and curriculum development.
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CHAPTER I
INTRODUCTION

The lack of interest and motivation to learn among students, is a situation of great concern for educators. This problem appears to have been partially created by the failure of teachers to present lessons in an interesting and stimulating manner. One subject in particular that suffers from this problem is social studies. At the classroom level the goals and intent have changed little and rarely reflect recent research and interpretations from the various social sciences. Frequently social studies is taught as a dull exposition based on an outdated text which stresses the memorization of facts.

It is not surprising, therefore, that students dislike social studies. Investigations by Herman and Reynolds have concluded that social studies is one of the least popular subjects taught in school. This lack of motivation in, and unfavorable attitude toward social studies, is the basic question to which this research addresses itself.

THE PROBLEMS

Three problems are advanced in this study. The first one is raised by the situation commented on above. Abt has demonstrated that students who are not motivated to learn in school are frequently motivated in other activities such as games. Simulation gaming is an educational technique that utilizes the child's spontaneity to play. Enthusiasts of this technique claim that it has many advantages, but the most consistent claim is that learning through simulation games is an interesting, enjoyable and highly motivating experience.

Although advocates of simulation games claim that many advantages are derived through the participation in these games, the research data, particularly in the affective domain, is sketchy and inconclusive. Cohen has pointed out that more studies must be made to determine the effect of games


3Clark C. Abt, Serious Games (New York: Viking Press, 1970), p. 420
on students' attitudes and values. Thus this need for further studies raises the first problem to be dealt with in this research paper.

Will children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating teacher-made-simulation games, achieve a significantly more favorable attitude toward social studies than will students enrolled in a similar study without simulation games?

If the proponents of simulation games are correct, the results of playing commercially produced or teacher-made simulations should result in significant changes in student attitudes. This raises a critical issue not thoroughly researched, namely, the effect of pupil-made-simulations on student attitudes toward social studies. Past experiences with students in the classroom leads this researcher to believe that students would be deeply involved and highly motivated as a result of the development of, and the participation in, their own simulation games. This experience may be sufficiently motivating to favorably influence the students' attitude toward social studies. This possibility, however, has not been thoroughly investigated.

The lack of research in this area gives rise to the second problem to be dealt with in this study.

Will children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating student-made-simulation games, achieve a significantly more favorable attitude toward social studies than will students enrolled in a similar study without simulation games?

It appears that teacher-made and pupil-made simulations may be effective in influencing favorable student attitudes. If participation in teacher-made-simulations is sufficiently motivating to influence student attitudes toward social studies, perhaps the same result will be achieved.

with the pupil-made-simulations since the students are not only participating in games, but also developing them. The relative effectiveness of these two approaches has not been rigorously investigated. The paucity of research on this topic gives rise to the third problem to be dealt with in this investigation.

Will children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating student-made-simulation games, achieve no significant difference in their attitude toward social studies from students enrolled in a similar study with teacher-made-simulation games?

STATEMENT OF THE HYPOTHESES

The purpose of this study will be an attempt to test the following hypotheses:

1. Children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating teacher-made-simulation games, will achieve a significantly more favorable attitude toward social studies than will children enrolled in a similar study without simulations.

2. Children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating student-made-simulation games, will achieve a significantly more favorable attitude toward social studies than will children enrolled in a similar study without simulations.

3. Children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating student-made-simulation games, will achieve no significant difference in their attitude toward social studies from students enrolled in a similar study with teacher-made-simulation games.

THE SIGNIFICANCE OF THE STUDY

Most research on simulation games has utilized commercially produced games and has focused on students' cognitive learning. There is a need for further studies on the effects of simulation games on the affective
domain. In addition, few studies focus on the effects of teacher-made- and pupil-made simulation games. Perhaps this investigation will give some insight into these areas of needed research.

Hodgetts, moreover, has pointed out that students have an apathy toward Canadian history. They find little in their nation's past which is interesting and meaningful to them, and practically no source of inspiration for their cultural heritage. Hodgetts stressed that new materials and appropriate teaching strategies should be developed.5

This study is an attempt to develop new materials and to test the teaching strategy of simulation games in one area of the elementary social studies curriculum, namely, Culture Change Among the Nootka Indians. As Canadian data will be used in this study, it should be of importance for British Columbia educators. Simulations may prove to be an interesting and effective technique for teaching history in our schools.

At present there is a need for innovation in education particularly in the area of social studies. Becker has stressed that schools cannot remain static in a rapidly changing society. New techniques and strategies must be attempted. Becker further states that the responsibility for innovation must rest with teachers who make their own plans and devise their own strategies.6 This paper is an attempt by a classroom teacher to investigate the effectiveness of simulation games using materials developed by herself for use in social studies instruction.

METHODOLOGY

Three main steps were involved in the methodology of this study.
1. The developmental phase included the selecting of aims and objectives; selecting and sequencing major organizing centers and developing and refining the instructional program. The criterion instrument was also developed at this stage.

2. The experimental phase involved the pre and posttesting of


the control and experimental groups through the use of the criterion instrument as well as the administration of the three treatments.

3. The data obtained from the tests were analyzed and conclusions were reached.

THE DEVELOPMENTAL PHASE

Development of the social studies unit

The same social studies unit, Culture Change Among the Nootka Indians, was used with the three treatment groups. The procedure for unit development was based on the Binnington model for humanistic curriculum development. Bruner's curriculum Man: A Course of Study, provided five social studies concepts used in this study, namely, technology, social organization, child rearing, language and world view. In addition, the concept of culture change was utilized. Inquiry processes used in this unit were adapted from the analytic and integrative modes of inquiry described in the California State Framework. While the three treatments used the same learning materials, the method of instruction varied.

The Control Treatment

The control treatment involved instruction through the "traditional" or analytic approach. The children engaged in such activities as listening to lectures; taking part in class and group discussions; studying learning materials and answering questions. These instructional materials included documents, slides, sketches and simulated artifacts.

The Teacher-Made-Simulation Treatment

For this treatment the children participated in simulation games

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developed by the teacher. Working in groups, the children assumed the role of Nootka Indians engaged in such activities as hunting the sea otter and trading the pelts for needed items. A class debriefing session followed each game.

The Student-Made-Simulation Treatment

After playing one teacher-made-simulation game, and discussing the structure of others, the children working in groups, attempted to devise their own simulations. The students played the games in class and suggested revisions.

EXPERIMENTAL PHASE

Research Design

The experimental phase of this study used a pretest-posttest design, employing two experimental groups and one control group. The pretest was administered several months prior to the implementation of the study and the posttest was administered one week after each treatment. The control, and the teacher-made-simulation treatments also received a delayed posttest.

A sample of three grade four and five classes was randomly assigned to each of the three treatment groups. The treatments were administered consecutively by the researcher.

Analysis Phase

Data on the effects of the three treatments on student attitudes toward social studies was obtained through the use of a paired-comparison rating scale. The posttest class mean scores were used for the comparison of treatment effects. The overall differential effects among the three treatments were tested by means of a three-way analysis of variance with the covariate sum of squares removed. The pretest scores were used as the covariates and the adjusted posttest scores on the dependent variable were the criteria. Critical F ratios were presented for the main effects and interactions of grade, sex and treatment variables on subject preference, the dependent variable. Since the F test ratios indicated a significant treatment effect, the Duncan's Multiple Range Test was used to determine the order and significance of the differences.
DEFINITION OF TERMS

Simulation Games- Constitutive Definition

A simulation game is any technique which places a learner in a social environment and requires him to respond to games procedures; the learner discovers for himself the theoretical basis of his actions and is led to conceptualize about the practical consequences of his course of action.  

Simulation Games - Operational Definition

Simulation games are situations in which students assume the roles of decision makers in an imitated environment according to specified procedures or rules. Through playing the role a student learns the results of his actions.

Attitude - Constitutive Definition

An attitude is a relatively enduring system of evaluative, affective reactions based upon and reflecting the evaluative concepts or beliefs which have been learned about characteristics of a social object or class of social objects.

Attitude - Operational Definition

An attitude is a response by which an individual indicates where he assigns the object of judgment along a dimension of variability. The dimension of variability is usually an evaluative one such as the desirability of social studies.

ORGANIZATION OF REMAINDER OF THESIS

The general plan for the remainder of the thesis is as outlined below. The following chapter reviews research related to the purpose of this investigation. The methodology, including a description of the evaluative instrument utilized in this study is given in Chapter III. A vital aspect of this research is the development of the instructional unit. Chapter IV gives a description of this procedure. Chapter V outlines the steps in the analysis of data as well as giving the conclusions, limitations and implications pertinent to this investigation.


CHAPTER II
REVIEW OF RESEARCH

In the last chapter it was noted that, in literature examined, no studies were found which attempted to change student attitudes towards social studies through the use of simulation games. This chapter will review the literature appropriate for the purpose of this work. These topics include studies related to student attitudes towards social studies; investigations on the effects of simulation games on student interest and motivation and studies in the area of curriculum development.

STUDENT ATTITUDES TOWARD SOCIAL STUDIES

The topic of student attitudes towards social studies has not been thoroughly or rigorously investigated. One of the earlier studies in this area was conducted by Jerslid and Tasch. The purpose of this study was to examine children's wishes, interests, likes and dislikes as related to a variety of topics. An Interest Finder questionnaire was administered orally, or in written form, to over 3000 grade one through twelve students.

In the area of subject preference, social studies was indicated as the most unpopular subject, particularly among grades four through six students. The unfavorable attitude toward social studies becomes even more significant since many of the students also indicated a great interest in social studies topics. In view of this finding Jerslid and Tasch contend that the children's attitudes towards social studies might have been different if the subject were taught by way of issues that touched on the children's feelings and that have significance in their lives.

In studies reported by Chase and Wilson, social studies was indicated as one of the least preferred school subjects, particularly among girls. Studies, over a ten year period, from 1947 to 1957 indicated scarcely any growth in preference for this subject.

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A later study was undertaken by Robert Curry involving 43,979 grade five students. On a questionnaire, the children indicated their subject preference from a list of ten skills and content areas. Results indicated a gradual drop in the popularity of social studies since the investigations given by Chase and Wilson. When the stated preferences of the boys and girls were combined, social studies was rated as the most unpopular subject taught in school.

Stimulated by earlier studies, Herman sought to test student attitudes towards social studies using a multi-dimensional approach to measurement. His sample consisted of 214 grades four to six students. When all the children in the sample were considered, social studies items on an Interest Inventory were rejected more frequently than were items of any other subject. When students were asked which subject they liked the least, social studies and English were mentioned most frequently.

As a result of this study, Herman concluded that high student interest should be utilized to optimum advantage and that attempts should be made to raise low interest levels by introducing a variety of teaching modes and activities.

Mary Reynolds reported similar results as Herman regarding attitudes towards social studies when she interviewed thirty adults and thirty students throughout the United States about their least-liked school subjects. Out of the sixty participants, forty-seven indicated social studies as their most unpopular subject. The respondents reported they disliked such things as memorizing facts and dates, and reading from texts and answering questions. Reynolds stresses that these results reflect teaching techniques that are common in many schools.

In these studies cited, numerous limitations were noted in the instruments and techniques employed to determine student subject preference.

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Measurement was further limited by the lack of an ideal subject preference pattern against which results could be evaluated. Similarly, no attempts were made to give a clinical analysis of the motives underlying student responses. Lastly, findings to date have been based on ex post facto descriptive and correlational studies. There is a need for investigations on student subject preference based upon sound experimental design. It is hoped this study can make some contribution in this area.

Although these studies have several limitations, their remarkably consistent findings warrant consideration by educators. These findings can serve a twofold purpose: to indicate the general effectiveness, or ineffectiveness, of our instructional program, and to indicate the need for a special effort in motivating students in the area of social studies.

Favorable attitudes towards a school subject are important since, as Strikland points out:

"It is assumed that attitudes play an important role in school performance; that a child with favorable attitudes will achieve more and be better adjusted; and that the adjustment and achievement thus created will facilitate one another."

The problem of motivation, particularly in the elementary grades, becomes more significant when one realizes that the attitudes and skills developed in young children usually determine their later performance.

Therefore, from the preceding studies, one can conclude that many students dislike social studies. This problem appears to stem from archaic teaching methods that do not satisfy the needs of interests of today's students. The purpose of this study is to investigate a teaching technique that may enhance favorable student attitudes towards social studies. The technique selected for this purpose is simulation games.

SIMULATION GAMES

Simulation Games and Student Interest in the Learning Process

A review of the literature reveals that few innovative teaching devices have experienced such enthusiastic and uncritical acceptance as

simulations. In spite of the popularity of simulation games empirical evidence is limited and contradictory concerning their effectiveness as a teaching device. It appears, however, that simulation games have their greatest impact in the area of interest, motivation and affective learning.

In a major review of six earlier studies, Cherryholmes reported that the only consistent finding was that students participating in a simulation game revealed more interest and motivation in the game than in more conventional classroom activity. These early researchers identified the value of simulations as a powerful motivational device. This conclusion encouraged other researchers to investigate the effects of simulations in the affective realm.

One study focusing on this area was undertaken by Cohen and involved 76 grades six, seven and eight students enrolled in the "Speedway" summer program. The students played The Democracy Game and The Consumer Game for five days in place of their regular English classes. Informal questionnaires were administered before and after participation in the games.

The students indicated they enjoyed the games and consistently preferred them to the regular classroom situation on a variety of dimensions. The students reported the games were easier and more interesting than their regular school work; gave them a better idea of how well they were doing; involved more competition with other students; made better use of their abilities and allowed them more independence and freedom to work on their own. The successful outcome of this study confirmed earlier findings and gave some insight into the reasons why children responded so well to the simulation games.

As a result of the success of the earlier study, the Consumer Game was tried again in a regular school setting on grade seven students who were truancy problems and uninterested in the regular school program. One class played the game for five sessions and served as a treatment group while another class served as a control group and was not exposed to the game. Questionnaires were administered before and after participation in the games.

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completed by the students following the five day treatment period.

The students who played the simulation game reported that they found school more interesting. Cohen\(^9\) concluded, however, that the most striking result did not appear in the questionnaire but in the behavior of the students. They requested to play the game on their free time and their attendance record improved markedly during the week they played the game. It appears that even this short exposure to the game had sufficient impact to influence the students attitude not only toward the game, but also, toward school in general.

A study similar to Cohen's investigations was undertaken by Lee and O'Leary\(^10\) and focused on the learning effects of a three-day immersion in the Inter-Nation Simulation as played by high school seniors. A group of thirty experimental subjects played the game while a control group of forty-one subjects engaged in debates, panels and preparation of research papers on various topics on international affairs. As part of the evaluation, a questionnaire was administered to obtain subjective reactions of students to the simulation experience.

The students reported that the simulation was a valuable and enjoyable learning experience that taught them about people and real world problems. The researchers commented that this study implied that student enjoyment was vital to achieve the more profound kinds of learning objectives addressed by simulation games. Beyond enjoyment, the study revealed that simulation could invoke deep and powerful emotional forces which became enmeshed in the learning process and made it an exciting experience.

In addition, the students indicated that they preferred the simulation to the traditional classroom teaching approach. They strongly agreed that simulations should be used in all high school social studies classes.

Although there was a marked increase in the appreciation of the course, there was no significant change in the students evaluation of social studies. Perhaps a favorable change would have been noted if the


students participated in games for a more extended period rather than in only one highly appreciated peak learning experience.

In an attempt to get a more objective evaluation of student attitudes toward learning, Stadklev developed an attitude scale and successfully compared simulations with another teaching method covering the same information on the Constitution of America. The treatment lasted for ten days and involved two matched grade ten classes. One class played the simulation games and served as the treatment group, while another class served as a control group and was taught through the lecture-discussion method. Pre- and posttests were administered to determine student attitudes toward the instructional program.

The results showed that the experimental group had a significantly more positive reaction to their experience than did the control group. The students of the simulation group indicated the instructional experience had been enjoyable, meaningful and that they had been alert, attentive and involved in the learning situation. It was noted that information was gained in a more meaningful context. Above all, the students agreed that the learning experience was interesting and had stimulated their creative thinking.

Stadklev concludes that games appear to be a powerful educational tool for influencing attitudes and values. He stresses that this device appears to create a positive attitude toward learning which is vital to the educational processes.

Thus, in most of these studies cited, researchers enthusiastically endorse the use of simulation games particularly because of their effectiveness in generating student interest, involvement and motivation. They feel that it is a powerful education tool that could be used to revitalize the educational program. On the basis of these contentions, perhaps simulations could be used to create more favorable student attitudes toward social studies which is the purpose of this investigation.

While most studies on simulations conclude that they are effective in motivating students, the findings are by no means unanimous or empirically conclusive. Part of the problem stems from the weakness of the

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experimental design of the studies. Most researchers, particularly in the early period, failed to erect a firm theoretical foundation on which to base field work. In comparative studies, for example, researchers had difficulties matching a game with another teaching device in terms of subject matter covered. Conclusions as to what factors determine success or failure of a game could not be reached because of a lack of knowledge of specific variables involved in simulations. The problems were further compounded by lack of control of non-experimental variables which might be operating during the game.

Although most research on simulations has been in the cognitive realm, most suppositions about them have been in the affective realm. Unfortunately these suppositions are based on informal observations or subjective written evaluations since most researchers had not devised valid or reliable evaluative instruments. Taking these problems into consideration, it is the aim of this study to employ a more rigorous experimental design to evaluate the effectiveness of simulations in influencing student attitudes toward social studies, an area that has not been thoroughly investigated.

**Student-Made-Simulation-Games**

In professional literature, frequent references have been made to student developed simulations. Studies in this area, however, are meager. One of the few investigations on this topic was undertaken by Shelly. The purpose was to have university students develop, test and revise simulation games. Questionnaires were administered before, during and after the developmental process.

The students responded very positively to the process of total class game development. The quality of student participation as estimated by the pupils was high. Shelly stresses that the motivational power of constructing and playing simulation games was evidenced by the high level of involvement and satisfaction experienced by the students.

As a result of this study, Shelly concluded that it is possible for students to devise simulation games for class use. Shelly produced a model to guide game development. A modified version of this model was used in this study.

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Since it appears that the development of simulation games creates a positive student response, perhaps the experience is sufficiently satisfying to favorably influence student attitudes toward social studies. This study will investigate this possibility utilizing a sample of elementary school children.

A necessary step in this research involves the development of a social studies unit to provide the aims, objectives and instructional materials for the treatment groups. For purposes of this task, some works in the area of curriculum development were consulted.

STUDIES IN THE AREA OF CURRICULUM DEVELOPMENT

Bruner's award winning curriculum, *Man: A Course of Study*, investigated whether objectives relating to basic social studies concepts could be feasibly used in elementary school. This widely used curriculum utilized five major ethnological concepts: technology, social organization, language, child rearing and world view. The concept development spirals through different levels as children inquire into the life of the salmon, the baboon and the culture of the Netsilik Eskimo of the past. Emphasis is placed on the Eskimo unit wherein the children explore the meaning of man's humanness by finding similarities and differences between themselves and the Netsilik people. Subject matter organization and inquiry processes are directed through diverse instructional method and media toward three recurring questions:

"What is human about human beings?  
How did he get that way?  
How can he be made more so?"

The curriculum was evaluated on a population of 2,182 pupils, located in classrooms across the United States. The students were tested by a multi-dimensional approach. Evaluation results give supportive data to the contention that elementary children can learn the ethno-

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14 Ibid., p. 74.
rearing and world view and apply them in contrastive analysis of similarities and differences between various species of the animal kingdom including man. This project, which involves the development of a social studies unit, will employ these findings as evidence that the concepts can be employed successfully as organizing elements in unit development.

After a thorough study of works by scholars in the field, Binnington devised a procedure for humanistic curriculum development based on an interdisciplinary model deriving objectives and methods from ethnomusicology and social studies. The study related two scholarly fields in a humanistic curriculum focusing upon the study of the Barrow Eskimo and directed toward upper elementary pupils. It developed a step by step procedure indicating how scholarly resources were consulted for objectives, instructional methods and materials that could guide a child's inquiry into his relationship with humanity. This model consists of the following steps and procedures:

Step one: Derivation of Aims and Objectives.
1. Derivation of aims.
2. Selection and validation of major concepts and processes of ethnomusicology.
3. Derivation of cognitive and affective objectives based on ethnomusicology.
4. Selection of major concepts from social studies.
5. Derivation of cognitive objects from processes of ethnomusicology and concepts of social studies.

Step two: Organizing Major Centers of the Curriculum.
1. Selecting major organizing centers.
2. Sequencing major organizing centers.

Step three: Developing and Refining the Instructional Program.
1. Developing ethnomusicology resources.
2. Selecting learning opportunities through which children may achieve the curriculum objectives.

3. Selecting data needed for achieving objectives of each organizing center.

4. Refining the curriculum through a classroom tryout.

5. Presenting the program of instruction.

6. Discussing observations and implications.

A formative evaluation of the Barrow Eskimo curriculum derived from the Binnington model was carried out using a sample of sixty-six grades four to six students. The comments of the teachers and students taking part in the evaluation indicated that the model had successfully produced a curriculum that brought about favorable cognitive and affective learning.

The above was used in this study to outline the procedures followed its curriculum development. A more detailed description of the procedure is given in Chapter IV. While Binnington utilized the processes of ethnomusicology in the development of the curriculum, this study employed the processes of the analytic and integrative modes of social science inquiry as described in the California State Framework.

The California State Framework was developed by a group of renowned social scientists and educators to meet the needs of today's students in our modern world. This program was to be used in California schools from kindergarten through to grade twelve. It was based on the premise that an effective curriculum in social sciences education must have three components. First, it must have the concepts and generalizations drawn from the social sciences. Second, it must have the settings and topics which serve as the selected samples of human experience both past and present. Third, it must employ the processes or methods of investigating and the modes or ways of learning used in the social sciences.

The three modes of inquiry utilized within the framework are: the analytic, the integrative and the policy or valuing modes. Since this study is concerned with the analytic and integrative modes, they will discussed more fully.

The analytic mode is used in the systematic analysis of urban geo-

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16 Ibid., pp. 41-42.

graphic, economic, historical or other cultural phenomena selected for study in depth. The central thrust of the analytic mode seeks to explain, "Why do these phenomena behave as they do?". The processes of the analytic mode are: observing, classifying, defining, contrasting, generalizing, inferring and communicating.

On the other hand, the integrative mode is employed in studies designed to provide a relatively complete or holistic synthesis of the diverse factors involved in a particular time or place. The questions basic to the integrative mode are, "Who am I or who are we or who are they?". The processes of the integrative mode are observing, classifying, defining, comparing, integrating, inferring and communicating. While the central process in the analytic mode is generalization, in the integrative mode it is holistic integration.

The developers of the California State Framework stress that students should employ the total cycle of processes described in the inquiry modes which have been developed and tested by social scientists in their study of man in society.

SUMMARY

A review of the literature reveals that many students have unfavorable attitudes toward social studies. This attitude may be the result of uninspiring instructional methods. A teaching technique that may enhance student interest is simulation games. Unfortunately, however, the effects of teacher-made and pupil-made simulations on student attitudes toward social studies have not been thoroughly or rigorously investigated. The present study will investigate this problem.

For purposes of this study it is necessary to develop a social studies unit. To aid in this process, Bruner's Man: A Course of Study was consulted for evidence that his five major ethnological concepts could be successfully applied to elementary children. These concepts were incorporated into this unit. The Binnington Model for humanistic curriculum development was studied to provide guidelines on the procedures to be followed in unit development. The inquiry processes to be used in the derivation of the unit's objectives were adopted from the analytic and integrative modes of inquiry as described in the California State Framework.
CHAPTER III

METHOD

This chapter describes (1) the subjects (2) the design (3) the treatments (4) the instrument (5) the implementation of the study and (6) the statistical analysis.

SUBJECTS

The subjects for this study were students from three, grade four and five classes enrolled at Clayton Elementary School, in Surrey, British Columbia. The children in this school are predominantly from rural, middle-class homes. The subjects ranged in age from eight to twelve years. Solicitation of the classes was possible due to: a) their geographic accessibility b) the permission of the administration c) the cooperation of the teachers and d) the ease by which the children could be randomly assigned to three groups.

In their homeroom classes, the children had been following the program of instruction as outlined in the British Columbia Social Studies Curriculum Guide. The students had no prior experience with simulation games.

DESIGN

Initially, seventy-three students were involved in the study but with a mortality rate of three, data on seventy students was analyzed. Using a table of random numbers, the students were assigned to a teacher-made-simulation (T.M.S.T.), pupil-made simulation (P.M.S.T.) or a control treatment group (C.T.). The structure of each group by grade and sex is given in Table I.

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>THE STRUCTURE OF EACH TREATMENT GROUP</th>
<th>BY GRADE AND SEX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade 4 Male</td>
<td>Grade 4 Female</td>
</tr>
<tr>
<td>C.T.</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>T.M. S.T.</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>P.M. S.T.</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>14</td>
</tr>
</tbody>
</table>
The experimental design for this study was based on the pretest-posttest control group design described by Campbell and Stanley\textsuperscript{1}. Two treatment groups and one control group were involved. Timetable difficulties necessitated the consecutive administration of the treatments. All groups were taught the same material but the method of instruction varied. The control group was taught through the traditional or analytic mode. One treatment group was taught by teacher-made-simulations while the other was instructed through student-made-simulations. Pretests were administered several months prior to the investigation. One week after each treatment a posttest was given. In an effort to cope with the problems of history main effects and interactions of history X treatments and maturation X treatments, a modified paired-comparison scale was given to the control group and the teacher-made-simulation group on the same day the student-made-simulation group was administered their posttest. The design of this study is given in Figure 1.

\begin{figure}[h]
\centering
\begin{tikzpicture}
  \node (CT) {C.T.};
  \node (TMS) [right of=CT] {T.M.S.T.};
  \node (SMS) [right of=TMS] {S.M.S.T.};
  \node (R1) [above of=CT] {R \nodepart{two} \hline};
  \node (X1) [above of=TMS] {R \nodepart{two} \hline};
  \node (X2) [above of=SMS] {R \nodepart{two} \hline};
  \node (O1) [left of=R1] {0\textsubscript{1}};
  \node (XA) [right of=R1] {X \nodepart{two} \hline};
  \node (O2) [right of=XA] {0\textsubscript{2}};
  \node (X3) [right of=O2] {0\textsubscript{3}};
  \node (O3) [below of=O1] {0\textsubscript{3}};
  \node (O2) [below of=O2] {0\textsubscript{2}};
  \node (O1) [below of=R1] {0\textsubscript{1}};
  \node (X1) [below of=R2] {X \nodepart{two} \hline};
  \node (O2) [right of=X1] {0\textsubscript{2}};
  \node (X3) [right of=O2] {0\textsubscript{3}};
  \node (O3) [below of=O1] {0\textsubscript{3}};
  \node (O2) [below of=O2] {0\textsubscript{2}};
  \node (O1) [below of=R1] {0\textsubscript{1}};
  \node (X1) [below of=R2] {X \nodepart{two} \hline};
  \node (O2) [right of=X1] {0\textsubscript{2}};
  \node (X3) [right of=O2] {0\textsubscript{3}};
  \node (O3) [below of=O1] {0\textsubscript{3}};
  \node (O2) [below of=O2] {0\textsubscript{2}};
  \node (O1) [below of=R1] {0\textsubscript{1}};

\end{tikzpicture}
\caption{DESIGN OF STUDY}
\end{figure}

\begin{itemize}
  \item C.T. - Control Group
  \item T.M.S.T. - Teacher-Made-Simulation Group
  \item S.M.S.T. - Student-Made-Simulation Group
  \item \(X_A\) - Control Treatment
  \item \(X_B\) - Teacher-Made-Simulation Treatment
  \item \(X_C\) - Student-Made-Simulation Treatment
  \item \(O_1\) - Pre-test
  \item \(O_2\) - Posttest
  \item \(O_3\) - Delayed Posttest
\end{itemize}

THE DESCRIPTION OF THE TREATMENTS

The instructional programs employed in this study were developed and taught by the researcher. Each treatment focused upon the same anthropological concepts and the same topic, culture change among the Nootka Indians during the fur trade period, and employed the same data. Each group spent approximately half the instructional time in group work, while the remaining time was spent in class discussion and individual seatwork. Each student's assignments were checked daily by the researcher and brief records were kept noting each child's progress. See Chapter IV for a more detailed description of the treatments and their development.

The Control Treatment - C.T.

Students in the control treatment engaged principally in the "traditional" method of social studies instruction. Usually each lesson was initiated by the teacher giving an introduction or lecture on the topic of study, followed by group work on primary source data and ending with a class discussion of each group's findings. The children studied learning materials and answered questions. These materials included historical documents, sketches, slides and simulated artifacts. The lessons aimed at engaging the students in the total cycle of analytic inquiry processes adapted from the California State Framework. These processes are observing, classifying, defining, contrasting, generalizing, inferring and communicating. The central thrust of the students' inquiry sought to answer the question, "Why do these phenomena behave as they do?" Each student made a Résource Booklet on his inquiry results.

The Teacher-Made-Simulation-Treatment - T.M. S.T.

The students of this group engaged principally in teacher-made simulations. The usual class procedure involved first, the introduction of the game; second the assignment and studying of the roles; third, the playing of the game; fourth, the debriefing session where the strengths and weaknesses of the games were discussed and lastly, the checking of the accuracy of the game.

by consulting primary data sources described in the control treatment. The students kept individual and group records of each game's progress and summaries of information that had been learned. The simulations aimed at engaging the students in total cycle of the integrative inquiry processes adopted from the California State Framework. These processes are observing, classifying, defining, comparing, integrating, inferring and communicating. This mode of inquiry addresses itself to the identity questions, "Who am I or who are we or who are they?"

The Student-Made-Simulation -Treatment - S.M.S.T.

The student-made-simulation treatment utilized the same integrative inquiry processes as in the preceding treatment, however, the instructional procedure differed. After playing one teacher-made-simulation and discussing the structure of that game and others, the students, working in groups, devised their own games.

The usual developmental procedure involved a number of steps. First, the teacher introduced the purpose of the lesson, namely to develop a game that would teach other students about culture change among the Nootka Indians. Second, the children studied primary data sources to obtain information. Third, the class discussed what they had learned and how this information could be used to develop a game. Fourth, the possible structure, purpose, roles and problems that could be used in games were discussed by the class. Fifth, the class, working in groups, devised their own games. Sixth, each group described to the class the game they developed and a class discussion of each game's value followed. Seventh, the students played some of the games. Eight, the class discussed what they learned from the games and suggested possible revisions.

THE CRITERION INSTRUMENT

A paired-comparison attitude scale was constructed by the investigator in consultation with Dr. Robert Conry, a specialist in research design at the University of British Columbia. An example of the Paired-Comparison Rating Scale is given in Appendix A. Nine school subjects were paired, allowing each subject to appear once with every other subject. Thirty-six subject pairs were

\[3^{\text{Ibid.}}\]
listed on the test. To eliminate threats to instrument validity, school subjects common between pairs were maximally separated and detectable systematic patterns of pairs were avoided. The order of presentation of the pairs varied to eliminate serial learning of a response pattern. The comparison scale was administered as a pre and posttest.

Upon administration of the paired-comparison scale, the students were instructed to rank each pair of subjects in terms of relative desirability. The students indicated their preference by writing "1" by their first choice and "2" by their second choice. The pupils were required to rank each subject pair, no equality of judgement was permitted. Approximately ten minutes was required to administer the instrument.

**Scoring**

A score for each subject pair was obtained by allotting two marks for the first choice and one mark for the second choice. A total score of each subject was calculated. The scores ranged from eight for subjects of least preference, to sixteen for subjects of greatest preference. Since the focus of this study was upon student attitude towards social studies, a class mean for this subject was calculated for all tests.

**Validity and Reliability**

In his comparative study of scaling methods, Barnhart contends:

The paired-comparison form of constant method has long been held the ideal technique for determining preferences since all stimuli serve as standards whereby the others are evaluated.4

Using a sample of forty-one students, Barnhart compared the order of merit and paired-comparison scaling methods as applied to judgments of affective stimuli. The paired-comparison method was found to have a high degree of consistency with average reliabilities of .91. Barnhart concludes that the paired-comparison method is a reliable technique for determining group preference.5

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5Ibid., pp. 387-395.
A further study by Saffir compared, on the basis of empirical data, the scales constructed by the Method of Paired Comparison, the Rank Order Method and the Method of Successive Intervals. Using a sample of 133 university students, Saffir focused on the measure of social attitudes, nationality preferences and handwriting excellence. He discovered that any of the three scales could be used with considerable confidence, producing equally valid results.

Further evidence reflecting substantial stability of the paired-comparison technique is found in the comparative psychometric research of Witroyl and Thompson. These investigators experimentally compared the stability of the partial-rank-order and paired-comparison psychometric approaches applied to four sixth grade populations, ranging in size from nineteen to twenty-five. All the paired comparison scores yielded test-retest stability coefficients of correlation of .903 or above with intervals of one, four and five weeks.

A more recent study by Fisher, Weiss and Dawis compared the Likert and paired-comparison scale as applied to measures of dimensions of vocational needs. Their sample consisted of 175 persons participating in a Work Adjustment Program and 122 college students from the University of Minnesota. The test results indicated that both types of instruments produce adequate scale reliabilities with the medians in the mid-.80's.

In another study, Koch reports a high degree of stability of the paired-comparison method as applied to social acceptability. The sample consisted of children in grades two, four, six and eight with N's of thirty-nine, forty, thirty-five and forty-two respectively. The subjects were asked to indicate which child in a pair they liked the best. The students were re-tested one month later, producing correlation coefficients between the scaled


scores on the two tests of .930, .937 and .990 for grades two, four, six and eight respectively.

In addition to the researchers cited here, writers such as Guilford, and Torgerson regard the method of paired comparisons as a reliable and valid technique. Despite these claims, research on this topic is meagre. Perhaps this study can contribute to this area of needed research.

IMPLEMENTATION

The paired-comparison rating scale pretest was administered by each of the three homeroom teachers in Nov., 1973. At the end of March, 1974, the students were randomly assigned to one of the three treatment groups. The actual instruction started at the beginning of April. Two additional teachers aided by instructing the two other groups using a regular social studies unit that each of them had developed, while the researcher administered the three treatments consecutively beginning with the control group. Following the completion of the control treatment, the classes rotated and the researcher administered the student-made-simulation treatment to the second group. When the second treatment was completed, the pupil-made-simulation treatment was administered to the third group. Each treatment group had fourteen, forty-minute periods. On the fifteenth period, which took place one week after the completion of each treatment, each class met again for the administration of the posttest. The control and teacher-made-simulation treatment groups met for one additional time for the administration of the delayed posttest on the same day that the children of the student-made-simulation treatment were administered their first posttest. This total treatment cycle took nine and a half weeks to complete.

STATISTICAL PROCEDURES

This study employed a 2x2x3 (sex X grade X treatment) factorial design with the pretest used as a covariate. Investigation of grade, sex and treatment main effects and interactions was made on the basis of analysis of var-

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iance. The alpha level of rejection of the hypothesis is $\leq .05$ (d.f. in the numerator - 2, d.f. in the denominator - 56.) The posttest scores were adjusted by an analysis of covariance in comparing group performance. Duncan's Multiple Range Test was used to determine the significance and order of differences between treatment group mean scores.
INTRODUCTION

The purpose of this chapter is to describe the development of the instructional unit employed in this study. The procedure for developing the unit was derived from the Binnington model for the development of a humanistic curriculum. The stages involved include selecting aims and objectives; selecting and sequencing major organizing centers, and developing and refining the instructional program.

SELECTION OF MAJOR EDUCATIONAL AIMS

The first step in developing a social studies unit is widely held to be the derivation of its broad educational aims. Goodlad contends that the values of a society must serve as the sources of the values of the educational system, if that system is to function congruently in that society. In other words, it is essential that educational aims bear the support of the community and reflect its values. Should the aims selected for a curriculum by representatives of the society serving on boards of education be incongruent with the aims of society, opinions will be voiced against its adoption or retention. The British Columbia social studies curriculum guide was examined for educational aims for the development of this unit, as the implementation phase of the research was in British Columbia classrooms.


3Province of British Columbia Department of Education Division of Instructional Services Curriculum Development Branch, Elementary Social Studies Year 1-7 (Victoria: British Columbia Department of Education, 1974.)
Joyce's widely recognized goals for social studies: intellectual education, humanistic education and citizenship education, while not explicitly stated in the British Columbia social studies curriculum guide, are implied by such statements as:

The programme encourages the child to organize his inquiry, provides him with a means of understanding the world around him, and helps him to examine and consider values, and thus begin to develop his own system of values.  

Special emphasis is placed upon extending sensitivity to cultural similarities and differences, and upon realizing the dignity and worth of all people.  

Encourage children to make choices, and make them freely...Give them opportunities to make public affirmations of their choices.  

The three aims for this unit are defined and stated in the following sections.

**Intellectual Education**

In the discussion of his widely acclaimed curriculum, *Man: A Course of Study*, Jerome Bruner maintained that intellectual education is the basis of learning and the foundation of curriculum planning.

One must begin by setting forth the intellectual substance of what is to be taught, else there can be no sense of what challenges and shapes the curiosity of the student.  

According to Joyce, the social sciences provide the best models of the social world which have been developed. By learning these models the child comes to possess the most complete description of the events, people

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6 Ibid., p. 2.  
7 Ibid., p. 6.  
and problems of his social world. As the child matures, the social science methods he employs in his inquiry becomes progressively more sophisticated.9

Considering all of these factors, the overriding intellectual aim of this unit is:

The child will employ the concepts, models and modes of inquiry of the social scientist in progressively more sophisticated form.

**Humanistic Education**

In the development of a humanistic curriculum, Binnington cautions that we must not, "...isolate intellectual understanding from our affective lives. Intelligent action must be integrated with a deep concern for others...."10

Taking this factor into consideration, the overriding humanistic aim of this unit selected from the Binnington curriculum is:

The child will develop his human capacity to understand and to value himself as a unique person, and persons and phenomena outside himself as unique persons and phenomena.11

**Citizenship Education**

According to Joyce, citizenship education gives the child opportunity to identify with the heritage of his society. It also teaches him to use the tools of the social scientist in dealing effectively with social problems and in participating in the political life of his time. Thus, citizenship education provides stability and order within the society, and provides the child with practice in decision making processes and with information necessary to adapt to his rapidly changing world.12

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9 Joyce, *Strategies For Elementary Social Science Education*, p. 12.


11 Ibid., p. 162.

12 Joyce, "Strategies For Elementary Social Science Education." pp. 7-11.
Robert J. Havighurst supports the views of citizenship education:

First, it is the stabilizer or perpetuator of society, and second, it is an agent for change. As a stabilizer, education mirrors what is already in the society and reflects it into the lives of the next generation. As an agent of change, education acts under the direction of technological or ideological forces to make each generation different from its parent. 13

The broad citizenship aim for this unit is stated as follows:
The child will become a well-informed citizen able to make wise political decisions and to deal wisely with social problems.

DERIVATION OF EDUCATIONAL objectives

While a broad statement of aims can give direction to education within the school setting, they are too general to direct the decision making process of curriculum selection and instruction. Goodlad, 14 for example, advocates objectives which are narrower, more specific, and sufficiently explicit for the behavior sought to be observed or readily elicited through a testing instrument, as a means of directing this process.

The purpose of the developmental phase of this research was to create one social studies unit concerned with developing the students' understandings of and positive response toward people of a particular culture, namely, a Nootka speaking people of Vancouver Island, British Columbia. Through these means the effect of simulation games on children's response toward social studies could be evaluated. The subject matter topic through which the aims were to be met was selected from the programme of studies adopted by the British Columbia Department of Education.

Objectives must be consistent with, and contribute to achievement of the broad educational aims. They must also be explicit, and satisfy the criteria for the objective-setting operation in curriculum making. Those criteria include the following:


The objectives were derived from an area of knowledge that is compatible with the intellectual and humanistic aims of the curriculum, namely:

The child will employ the concepts, models, and modes of inquiry of the social scientist in progressively more sophisticated form.

The child will develop his human capacity to understand and to value himself as a unique person, and persons and phenomena outside himself as unique persons and phenomena.

Objectives for the citizenship aim could be derived through a similar process. The experimental phase of this research was not directly related to the citizenship aim, therefore, objectives directed toward that aim will not be developed herein.

The content of the chosen subject matter area must be studied to ascertain the cycle of concepts which forms its basic substantive structure. Objectives are formulated from both the substantive and the behavioral elements of the subject area. A full range of interrelated processes must be selected through which children can conduct their inquiry into the social sciences.

Lastly, the objectives must be screened against selected criteria, i.e. comprehensiveness, internal consistency, feasibility, and attainability.

These objective-setting operations are described in the following section of this chapter.

SELECTION OF CURRICULAR DATA SOURCES

Anthropology is concerned with the study of man in the context of his natural and cultural environment. Herskovits represents scholars in the field who attest to this point of view:

...anthropology, takes into account all phases of man's existence, biological and cultural, past and present, combining these varied materials into an integrated attack on human experience.15

This inquiry into all phases of human experience is the essence of anthropology. For this social studies unit, anthropology was selected as the data source because it is congruent with the wholistic approach put forth in the selected aims.

**SELECTION OF CONCEPTS FROM ANTHROPOLOGY**

Five major concepts of anthropology were chosen from Bruner's widely respected and authoritative social science curriculum, *Man: A Course of Study*. Each of the five selected concepts is an important tool in investigating a culture and is recognized as a powerful "humanizing force". Each of these interrelated concepts is described as it is utilized in the study of the nature of man. The following concepts were included in the selection of substantive elements for the development of cognitive objectives for this unit: (1) language (2) social organization (3) technology (4) child rearing practices and (5) world view.

In addition to the above, the selection of culture change as the primary concept to be developed in this unit is central to the topic outline of the British Columbia curriculum committee, 1974. It is also supported by scholars in the field of anthropology such as Ralph Linton, who contends that:

All cultures, even the simplest, seem to be in a continuous state of change.

Cultures are infinitely perfectable and everything indicates that all cultures are in a constant state of change.

The concepts used in this unit are described in the following section.

**Social Organization**

The concept of social organization involves understandings about cooperative relations of individuals within groups, and is illustrated by the Nootka Indian's relation to his family and to others within and outside the community. The concept of social organization is central to the following conceptual statement about Nootka Indians:

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16 Bruner, *Toward a Theory*, pp. 73-101
Nootka Indian kinship and extended kinship ties formed primary systems of mutual aid, societal control and reciprocal obligation.

Technology
The concept of technology consists of understandings about the use of resources, the diversity of tools and the variety of man's activities these indicate. Examples of technology to be discussed include such items as weapons, tools, implements, shelter, clothing, containers and means of transportation.

The concept of technology is central to the following conceptual statement about Nootka Indians:

Some manufactures of the Nootka Indians, in addition to clothing and objects with religious or ceremonial associations, were embellished or decorated. Example: storage boxes.

Child Rearing
The concept of child rearing involves understanding of the individual's gradually decreasing dependency relationship within his family and community from infancy to early adulthood.

The concepts of child rearing is central to the following conceptual statement about Nootka Indians:

Certain changes have taken place in child rearing practices since the coming of non-Indians to the west coast of Vancouver Island.

World View
The concept of world view or philosophy incorporates communication relevant to man's desire to explain and represent his world through use of symbols in speech, music, dance, visual and plastic arts, myth, drama, poetry and religion.

The concepts of world view is central to the following statement about Nootka Indians:

The Nootka Indians believed rituals, prayers and songs aided in the communication with the supernatural.

Language
The concept of language comprises understandings of structure, usage and function of man's verbal symbolism.
The concept of language is central to the following conceptual statement about Nootka Indians.  

Chinook jargon gradually became a second language to most Nootka Indians.

Culture Change

Culture change, "...is a matter of change in knowledge, attitudes and habits of individuals who compose a society."  

The concept of culture change is central to the following conceptual statement about the Nootka Indians:

Contact with non-Indians hastened culture change among the Nootka Indians.

Through inquiry into culture change focused upon the five concepts previously described, children can become involved in the full range of human experience which comprised the way of life of this particular people.

SELECTION OF ANALYTIC INQUIRY PROCESSES

The comprehensive Social Sciences Education Framework for California Public Schools, provided the modes and processes of inquiry utilized by this unit. A team of eminent social scientists, curriculum workers and educators working through the social sciences, devised three modes of inquiry which are employed by social scientists. Children can use these modes to direct their study of mankind.

The analytic mode is used in systematic analyses of cultural phenomena selected for in depth study. The integrative mode is used in studies designed to provide a relatively complete or holistic syntheses of the diverse factors involved in a culture in a particular time or place. The policy mode is used in making decisions or judgements related to social or political issues or

19Reference to Nootka Indians refers herein to Indians who belong to the linguistic group referred to by anthropologists as Nootka. The specific locale to which the references are formed is Nootka Sound.

20Linton, Acculturation in Seven American Indian Tribes, p. 468.

21Statewide Social Sciences Study Committee, Social Sciences Education Framework for California Public Schools (Sacramento, California: Department of Education, 1968)
problems. The essence of each mode of inquiry is a complete cycle of interrelated processes essential to addressing the analytic, integrative or policy questions of the social sciences.

While the three modes of inquiry are never separated in practice, they should be separated for instructional planning in social sciences education, to give children the opportunity to understand the relationships among them. The following sections provide an overview of the comprehensive model developed in the California document as it is applied in the selection of objectives for this unit.

The Analytic Mode

The analytic mode addresses itself to the intellectual question, "Why do these phenomena behave as they do?" The analytic mode is well suited to satisfy the intellectual aims of this unit:

Analytic inquiry proceeds by isolating selected phenomena for study, making specific observations of the phenomena, classifying the phenomena by precise definition, and examining the relationships among the defined classes. Selected aspects of behavior are classified according to constructed concepts.... Relationships among the concepts are examined and may be stated as a generalization....

The cycle of processes of the analytic mode of inquiry are defined as follows:

Observation

Observing is perception of selected and clearly defined facets of the total reality being studied. Observation may involve either objects such as technology, or patterns of behavior such as child rearing practices. It may be direct or indirect, and often involves measurement.

Classification

Classifying is grouping of data, to enable the observer to name certain objects or patterns of behavior perceived which are to be contrasted within various settings.

Definition

Defining is the labelling or naming of the groups of observed data.

Social Sciences Study Committee, Social Sciences Education Framework, p. 10.
for use in the subsequent processes of analytic inquiry, focused on that class of objects or behaviors within one or more social settings.

Contrastive Analysis
Contrasting in the analytic mode is the lining up the categories of objects or behavior so that the identical characteristics among them are held constant, and the critical respects in which they vary are identified precisely.

Generalization
Generalizing in the analytic mode is comprised of generating and testing of an hypothesis, that is, making a statement about a possible relationship among variables, and using the tested hypothesis as a generalization for interpretation of data. Generalizations are never considered absolutely "right" or "wrong", but are used as a tool for identifying "contaminating" variables and analyzing their effect.

Inference
Inferring is the process of putting results of inquiry regarding a particular phenomena to further intellectual or practical use in generating further generalizations. Over generalization is a danger if one loses sight of the type of phenomena from which a generalization was derived and tries to apply it to dissimilar phenomena.

Communication
Communicating is recording and relating to others the results of inquiry. "In the analytic mode, precision of communication is a paramount necessity, and such language as mathematics, statistical tables, graphs, maps and explicitly stated propositions will often be used."

DERIVATION OF COGNITIVE OBJECTIVES
BASED ON ANTHROPOLOGICAL CONCEPTS
AND THE PROCESSES OF THE
ANALYTIC MODE OF INQUIRY

Six concepts or substantive elements and seven inquiry processes of the analytic mode provide the basis for statements of major cognitive objectives of this unit.

23 Ibid., p. 18.
To simplify the process of selecting cognitive objectives a grid is provided in Figure 2, A Grid of Concepts from Anthropology and Processes of the Analytic Mode of Inquiry. Possible objectives are derived at the intersection of each vertically listed process and horizontally listed concept.

Each major objective is refined into a series of increasingly complex sub objectives. The processes of analytic inquiry focused upon each of the concepts engages the children in the full range of objectives. Table II demonstrates the hierarchical arrangement of cognitive objectives utilizing the analytic mode of inquiry.

The following sections of this paper apply these objectives to each of the selected concepts of this unit, with examples to demonstrate the range of inquiry processes the children will experience.

STATEMENT OF COGNITIVE OBJECTIVES BASED ON ANTHROPOLOGICAL CONCEPTS AND PROCESSES OF THE ANALYTIC MODE OF INQUIRY

The objectives stated in Appendices B to G of this section classified according to the hierarchy previously described, focus upon each of six anthropological concepts: 1) technology, 2) social organization, 3) child rearing, 4) language, 5) world view, and 6) culture change. Some examples are included for purposes of clarification. All objectives involve the children in the study of the culture of the Nootka Indians.

Integrative Mode

While analytic inquiry is focused on a limited number of selected, clearly defined patterns of behavior as seen in a wide range of social settings or set of events, the integrative mode focuses on many relevant aspects of a single setting or set of events. To see the totality of social reality, the integrative mode gives attention to the many diverse events and personalities involved.

...the inquirer seeks to experience the culture vicariously; and, in communicating the results of his inquiry, he seeks to enable others to do the same.24

The understandings derived from the integrative mode help to alter, enrich, and sharpen considerations on the identity questions, "Who am I, or

24Social Sciences Study Committee, Social Sciences Education Framework, p. 12.
<table>
<thead>
<tr>
<th>Processes from the analytic mode of inquiry</th>
<th>2 Technology</th>
<th>3 Social Organization</th>
<th>4 Child Rearing</th>
<th>5 Language</th>
<th>6 World View</th>
<th>7 Culture Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 Observing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.00 Classifying</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.00 Defining</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.00 Contrasting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.00 Generalizing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.00 Inferring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.00 Communicating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: A Grid of Concepts from Anthropology and Processes of the Analytic Mode of Inquiry.
TABLE II
THE HIERARCHY OF COGNITIVE OBJECTIVES
UTILIZING THE ANALYTIC MODE OF INQUIRY

1:00 Observing
1:10 Observing data to determine the structure of selected concepts.
1:20 Observing data to determine the usage of selected concepts.
1:30 Observing data to determine the function of selected concepts.

2:00 Classifying
2:10 Classifying data according to the structure of selected concepts.
2:20 Classifying data according to the usage of selected concepts.
2:30 Classifying data according to the function of selected concepts.

3:00 Defining
3:10 Defining terms according to the structure of selected concepts.
3:20 Defining terms according to the usage of selected concepts.
3:30 Defining terms according to the function of selected concepts.

4:00 Contrasting
4:10 Contrasting data according to the structure of selected concepts.
4:20 Contrasting data according to the usage of selected concepts.
4:30 Contrasting data according to the function of selected concepts.

5:00 Generalizing
5:10 Generalizing about the structure of selected concepts.
5:20 Generalizing about the usage of selected concepts.
5:30 Generalizing about the function of selected concepts.

6:00 Inferring
6:10 Inferring about the structure of selected concepts.
6:20 Inferring about the usage of selected concepts.
6:30 Inferring about the function of selected concepts.

7:00 Communicating
7:10 Communicating the results of inquiry on the structure of concepts.
7:20 Communicating the results of inquiry on the usage of selected concepts.
7:30 Communicating the results of inquiry on the function of selected concepts.
Who are we, or who are they?

The integrative mode of inquiry has been selected to meet the humanistic aim of this unit.

The cycle of processes of the integrative mode are defined as follows:

**Observation**

While similar in many respects, observing in the integrative mode is different from observing in the analytic mode in that the observer is more comprehensive, and includes a wider range of relevant facets and features of any event being observed.

**Classification**

Classifying involves grouping data by the observer into a unit that is perceived and used in the observed culture to name certain objects or patterns of behavior. This grouping can be used by the observer for further application into inquiry on related aspects of a specific cultural situation.

**Defining**

Defining is the labelling or naming of the group of data as perceived in the minds of members of the observed culture and refined by the observer for use in subsequent integrative inquiry into related phenomena within the particular setting.

**Comparing**

Comparing in the integrative mode is looking to general rather than specific similarities and differences of unique events which are important to understanding the unique events under study. The essence of integrative comparing is the running comparison with one's own experience through which the inquirer generates and tests believability through participating in the vicarious experience which poses the question "If I were this person I would....?"

**Integration**

Cultural integration means treating a given cultural situation as an entity whose constitute aspects or social processes...are mutually supporting and reinforcing. Cultural integration may focus upon one or more institutions, themes of thought or feeling, or social processes that seem to permeate life in most of its expressions in that society.25

25Ibid., p. 17
Historical integration focuses on the relationship that exist within a specific setting and tries to identify the causes of change in major aspects of culture. This integration traces the course of change in specific cultural settings.

Both cultural and historical integration focus on the identity question of "Who?", which involves integrating affective aspects (feelings) with cognitive learning (understanding relationships).

**Inference**

Inferring in integrative inquiry is the process of putting the results of inquiry to further intellectual or practical use as in making predictions. Since the integrative mode focuses on the unique qualities of particular times and places, inferences must be made with caution.

**Communication**

Communicating in the integrative mode of inquiry is selecting appropriate means to adequately express cognitive and affective aspects of the identity question investigated regarding the particular culture.

Communication in the integrative mode may, because of the wider range and more speculative nature of the information to be communicated, more often use connotative and evocative as opposed to denotative statement and includes such languages as poetry, historical narrative, and works of art.\(^{26}\)

Children may also create simulation games, role playing, dramatization, and diary accounts to communicate findings of integrative inquiry based on vicarious participation in the wide range of activities and events in the particular culture.

DERIVATION OF COGNITIVE OBJECTIVES BASED ON ANTHROPOLOGICAL CONCEPTS AND THE PROCESSES OF THE INTEGRATIVE MODE OF INQUIRY

The six selected anthropological concepts or substantive elements and seven inquiry processes of the integrative mode provide the basis for the statements of the major cognitive objectives of this unit.

\(^{26}\)Ibid., p. 18.
<table>
<thead>
<tr>
<th>Processes from the Integrative mode of Inquiry</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Technology</td>
</tr>
<tr>
<td>1.00 observing</td>
<td></td>
</tr>
<tr>
<td>2.00 Classifying</td>
<td></td>
</tr>
<tr>
<td>3.00 Defining</td>
<td></td>
</tr>
<tr>
<td>4.00 Comparing</td>
<td></td>
</tr>
<tr>
<td>5.00 Integrating</td>
<td></td>
</tr>
<tr>
<td>6.00 Inferring</td>
<td></td>
</tr>
<tr>
<td>7.00 Communicating</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3: A Grid of Concepts from Anthropology and Processes of the Integrative Mode of Inquiry.
To simplify the process of selecting integrative cognitive objectives, a grid is provided in Figure 3, A Grid of Concepts from Anthropology and Processes of the Integrative Mode of Inquiry. Possible objectives are derived at the intersection of each vertically listed process and horizontally listed concepts.

Each major objective is refined into a series of increasingly complex sub objectives. Processes of integrative inquiry focused upon each of the selected concepts engages the children in the full range of objectives. Since the processes of observing, classifying, defining, inferring and communicating are fully applied in deriving analytic objectives, and variations for integrative objectives were described in the definitions in the previous section, they will not be repeated at this time. It is important to note, however, that they are more comprehensive in integrative inquiry since the purpose of data gathering is participative activity rather than for use in generating and testing hypothesis. The processes of comparing and integrating in the integrative mode vary considerably from contrasting and generalizing in the analytic mode. Table III demonstrates the Hierarchy of Cognitive Objectives Utilizing the Processes of Comparing and Integrating in the Integrative Mode of Inquiry.

**TABLE III**

THE HIERARCHY OF COGNITIVE OBJECTIVES UTILIZING THE PROCESSES OF COMPARING AND INTEGRATING IN THE INTEGRATIVE MODE OF INQUIRY

<table>
<thead>
<tr>
<th>Time</th>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00</td>
<td>Comparing</td>
<td>Making a running comparison of the <strong>structure</strong> of selected concepts through participating in the vicarious experience.</td>
</tr>
<tr>
<td>4:10</td>
<td>Making a running comparison of the <strong>usage</strong> of selected concepts through participating in the vicarious experience.</td>
<td></td>
</tr>
<tr>
<td>4:20</td>
<td>Making a running comparison of the <strong>function</strong> of selected concepts through participating in the vicarious experience.</td>
<td></td>
</tr>
<tr>
<td>5:00</td>
<td>Integrating</td>
<td>Integrating feeling and understanding focused on the <strong>structure</strong> of selected concepts as evidenced by the child's comments on behavior through participating in the vicarious experience.</td>
</tr>
</tbody>
</table>
TABLE III (cont'd)

5:20 Integrating feeling and understanding focused on the usage of selected concepts as evidenced by the child's comments on behavior participating in the vicarious experience.

5:30 Integrating feeling and understanding focused on the function of selected concepts as evidenced by the child's comments and behavior participating in the vicarious experience.

STATEMENT OF COGNITIVE OBJECTIVES BASED ON ANTHROPOLOGICAL CONCEPTS AND PROCESSES OF THE INTEGRATIVE MODE OF INQUIRY

Objectives stated in Appendices H to M in this section, classified according to the hierarchy utilizing the processes of comparing and integrating as explained above are described in Table III and focus upon each of the six anthropological concepts: (1) technology, (2) social organization, (3) child rearing, (4) language, (5) world view, and (6) culture change.

Some examples are included for clarification purposes. All objectives involve inquiry into the culture of Nootka speaking Indians, particularly in the Nootka Sound locale.

Policy Mode

The policy mode of inquiry involves the child in the value question, "What should I, or we, or they, do next?"

While the policy mode is well suited to meet the citizenship aims of this unit, it is not directly related to the experimental phase of this research and, therefore, will not be developed herein.

DERIVATION OF AFFECTIVE OBJECTIVES

Because affective learning is of crucial concern to the experimental phase of this study, and central to the humanistic aim of the unit objectives are given prime consideration.

Affective objectives, developed herein involve a substantive element which is the stimulus of a person or phenomena outside oneself. The affective objective of this unit involve behaviors which are organized according to the
degree of internalization or willingness to respond to the stimulus.

The Krathwohl, et al,\textsuperscript{27} continuum of behavioral elements ranging from awareness of the stimulus to a response which is so deeply internalized that it becomes a habit, is used in defining childrens affective response in this unit:

- **Receiving** is the awareness of and willingness to respond to stimulus, e.g. to social studies inquiry involving simulation games.

- **Responding** is willingness to respond to the stimulus repeatedly, and ranges from merely complying to expectations of another such as the teacher, to beginning to find satisfaction in responding to the stimulus a number of times, e.g. asking repeatedly for a particular social studies experience such as to play a simulation game.

- **Valuing** is preferring to respond to the stimuli, e.g. asking for social studies experiences such as to play simulation games.

- **Organizing** is conceptualizing and defending response to stimuli, e.g. making statements regarding the nature of social studies experiences involving simulation games and giving reasons for responding to them.

- **Internalizing** a value is making judgements on the pattern inherent in the stimuli, e.g. choosing to respond positively to social studies experiences involving simulation games over an extended period of time on the basis of the pattern or quality inherent in the experience.

Two substantive elements were selected as the aspects to which a positive response was hoped to be elicited. These involve various levels of response 1) toward social studies, on the one hand involving students in a unit including simulation games and, on the other hand, involving students in a similar unit not involving simulation games, and 2) toward the Nootka Indians.

**STATEMENT OF AFFECTIVE OBJECTIVES**

Figure 4 presents A Grid of Substantive and Behavioral Elements of Affective Objectives. Observable behavioral elements are listed vertically and substantive elements are listed horizontally.

General affective objectives for the unit are suggested at the intersection of each observed behavioral element and each substantive element.

## Figure 4: A Grid of Substantive and Behavioral Elements of Objectives.

<table>
<thead>
<tr>
<th>Behavioral Element</th>
<th>1 Social Studies</th>
<th>2 Nootka Indian</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Receiving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Responding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Valuing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Organizing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Internalizing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Varying degrees of responses are possible under each objective.

While the two substantive elements were utilized in the developmental phase of this research, namely social studies and the Nootka speaking Indian people, the element of primary concern for the experimental phase of this study was student attitudes towards social studies. Affective objectives involving attitude towards social studies based upon the processes described above as stated in Appendix N.

Screening Instructional Objectives

Decisions regarding the selection and implementation of objectives were made by screening against specific criteria of: 1) comprehensiveness, 2) internal consistency 3) feasibility and 4) attainability.28

Comprehensiveness

The criterion of comprehensiveness required checking the total set of cognitive and affective objectives with the broad educational aims of the unit.

Internal Consistency

The criterion of internal consistency demands that the objectives do not counteract one another. The choice of the data source for the objectives was directed toward the aim that cognitive and affective objectives compliment one another. In addition, the cognitive objectives were designed to be consistent with and to build upon one another. The affective objectives which are directed toward internalization from a lesser to a greater degree likewise demonstrate internal consistency.

Feasibility

The criterion of feasibility demands that learning opportunities be made available through which selected objectives can be met. This is the central process for developing the instructional program.

Attainability

The criterion of attainability demands that each objective be appropriate for the learner. The analytic objectives of this unit are compatible with the symbolic mode of learning described by Bruner29 and

28 For a more detailed description of the screening process see Binnington, "The Development of an Interdisciplinary Curriculum...." pp. 162-165.
29 Bruner, Toward a Theory, p. 11
involve the children primarily in verbal and written symbols representing aspects of Nootka speaking Indian culture. The integrative objectives of this unit likewise employ the symbolic mode of learning, but focus on the iconic and enactive modes of learning described by Bruner because of indications that participative, rather than spectator behavior, is associated with the identity questions central to integrative inquiry.

Following the selection and screening of objectives, the major organizing centers must be selected, organized and developed, i.e. opportunities through which the learners can achieve the stated objectives.

**DEVELOPMENT OF MAJOR ORGANIZING CENTERS**

After the aims and objectives for the unit had been established, the next major undertaking was to select, organize and develop the major organizing centers through which the objectives might be attained. The objectives were developed to engage students in the content of the anthropologist and in the cycles of processes of the analytic and integrative modes of social science inquiry as they investigate the culture of the Nootka Indians and the stages of culture change.

**SELECTION OF MAJOR ORGANIZING CENTERS**

**Applying the Criterion of Giving Practice to Objectives**

The problem of selecting major organizing centers was chiefly one of determining what content, activities and events of Nootka Indian life would best illustrate and give practice to the objectives.

The first consideration was to focus upon Nootka culture and the factors which brought about cultural change. Through involvement with these factors and events, the children are given the opportunity to practice the objectives and to achieve the goals of this unit.

To ensure that children may practice the behavior of the cognitive objectives sought, the organizing centers focusing on the study of Nootka culture and culture change, allow children to utilize the analytic and integrative modes of social science inquiry into the content based on activities and events organized around the concepts selected from anthropology.

To give the children the opportunity to achieve the affective objectives of this unit each organizing center provides opportunities for them to respond toward social studies inquiry experiences, and toward the Nootka people through involvement in activities and events of these Indians.
Applying the Criterion of Authenticity

To meet the criterion of authenticity, primary data sources available in print to classroom teachers were consulted to determine the major organizing centers and to provide the learning opportunities for this unit. Primary data sources consulted included diaries, journals, ships logs, cargo lists, museum artifacts, and authoritative ethnographic works on the topic.

On the basis of the above data sources, five major organizing centers were selected. The Selection of Major Organizing Centers is demonstrated in Figure 5. The numbers one to five indicate the sequence of these major organizing centers.

1. Nootka Culture before contact
2. Nootka culture during the fur trade period
3. Nootka culture during the missionary period
4. Nootka Culture today
5. Validation of the findings of first four periods through interviewing Indian resource people

Figure 5 SELECTION OF MAJOR ORGANIZING CENTERS

Applying the Criterion that Content be Valid and Significant

To satisfy the criterion that content be valid and significant, major organizing centers were selected which illustrated the fundamental concepts of the culture of the Nootka Indian, as well as engaging students in the analytic and/or integrative mode inquiry. Specific facts on Nootka culture were selected from data collected and reported by anthropologists, and early explorers, maritime fur traders and adventurers.

Applying the Criterion of Efficiency

Each organizing center should be efficient in terms of providing for simultaneous achievement of multiple objectives. The content of each center is organized around human experience: hence the child explores data for objectives focused on the six anthropological concepts, not under separate topics, but in relation to particular activities or events. The child deals simultaneously with the affective objectives through the wholistic approach of each organizing center.
Applying the Criterion of Continuity

Continuity is taken into account in this unit as the increasingly complex changes in Nootka culture are gradually revealed through the sequence of the major organizing centers, which allow the child to build upon previous learnings and to anticipate more complex learning to follow.

Applying the Criterion of Feasibility

Each organizing center must be feasible in that it provides several ideas and catch points for children's interests. Varied materials and activities have been provided in this unit to stimulate student interest.

The feasibility of each organizing center takes into account adaptability to experiences of children. The range of activities provides opportunity for children to participate in the symbolic modes of learning, e.g. listening, viewing, reading, discussing; the iconic mode of learning, e.g. preparing and using simulation board games; the enactive or participative mode of learning, e.g. constructing and using simulated artifacts.

To summarize the selection of major organizing centers, each met the criteria of a) giving practice to the objectives, b) authenticity, c) validity, d) significance, e) efficiency, f) continuity and g) feasibility. Once the major organizing centers have been selected, the curriculum developer must consider the problems of sequencing major organizing centers for continuous learning.

SEQUENCING OF MAJOR ORGANIZING CENTERS IN THE OVERALL UNIT DESIGN

Considering Sequential Development of Concepts and Processes

Sequencing of major organizing centers to provide for continuous learning, requires consideration of the content of the field of study and objectives derived therefrom.

The processes or behavioral elements of the objectives for this unit form one type of recurring theme as advocated by learning theorists. As the child interacts with increasingly complex data while moving through successive organizing centers, he engages repeatedly in the inquiry processes defined in the specific objectives. Each inquiry process is related to the next - e.g. observing of data sources is related to classifying of data which in turn is related to defining and so on.
As the scope of the content enlarges, during the progression from one organizing center to the next, the child applies the inquiry processes to increasingly heterogenous data. The recurrence of concepts at each major organizing center allows each one to be sequentially developed, increasing in its generality, abstractness and complexity as the content becomes more complex. Similarly, more proficiency in application of the inquiry processes is required by the increased complexity of the overall content.

The Sequencing of Major Organizing Centers and Concept Development selected for this unit is illustrated in Figure 6.

Sequencing of the organizing centers is closely related to criteria considered in their selection, namely continuity which provides opportunity to build upon what has gone on before and to prepare for what is to come, and chronological order of events in the content.

Sequencing of major organizing centers requires careful consideration of the best order for children's understanding of the event in the lives of the Nootka people and its relation to the themes of organizing centers preceding and following it. This permits the students to become involved gradually with the increasingly complex relationship between Nootka culture and the events of contact with fur traders, missionaries and finally with modern society.

For purposes of this unit, the order of presentation of the major organizing centers was derived from the chronological order of these events as they occurred in history. Materials of the past give insight into the elements of present life when trends of continuity and change are considered. Through the historical chronological approach of this unit, the children build gradually upon the learning of past events to help explain the events and conditions of Nootka culture in today's society.

SELECTING A MAJOR ORGANIZING CENTER FOR TESTING PURPOSES

Once the chronological order of the major organizing centers had been decided, the developer selected one organizing center to be utilized for measuring student attitudes towards social studies. Because of the availability of research and learning materials, and because children in previous years of the researcher's experience found the fur trade period interesting, major organizing center two, namely Nootka Culture During
Figure 6: Sequencing of Major Organizing Centers and Concept Development.
the Fur Trade, was selected for the emphasis in the testing process.

A summary follows describing the objectives, learning opportunities and resource materials for the center using the three treatments.

Treatment A employs analytic inquiry; Treatment B employs integrative inquiry involving the use of teacher-made-simulations described in Appendix O, and Treatment C employs integrative inquiry involving the use of student-made-simulations described in Appendix P. Observations and photographs of student participants are incorporated into the description of the learning opportunities for clarification purposes. Children's comments for treatments A, B and C are presented for the reader's interest in Appendix Q, R and S respectively.

DEVELOPING MAJOR ORGANIZING CENTER II: TREATMENT A, THE FUR TRADE. - UTILIZING THE ANALYTIC MODE OF INQUIRY

Affective Objectives

The affective objectives previously described are operant throughout the entire unit. Each child responds at his own capacity of positive response toward two selected stimuli, namely 1) Nootka Indian people and 2) social studies inquiry.

Cognitive Objectives

The instructional program developed for the purpose of this organizing center encompasses a core of cognitive objectives which give practice to the processes of the analytic mode of inquiry applied to content relevant to six anthropological concepts. The statement of objectives, and learning opportunities which follow are classified according to seven inquiry processes and the hierarchy of specification established elsewhere. Resource materials for this analytic organizing center are described following the statement of objectives and learning opportunities. Student comments are found in Appendix Q.

I. Process: Observation

Objectives

1. In examining historical documents, slides and simulated artifacts from the period of the fur trade, the child will obtain and interpret specific data on culture change as seen in the structure of Nootka Indian technology.
social organization, child rearing practices, language and world view.

2. In examining historical documents, slides and simulated artifacts from the period of the fur trade, the child will obtain data on culture change as seen in the usage of Nootka Indian technology, social organization, child rearing practices, language and world view.

3. In examining historical documents, slides and simulated artifacts from the period of the fur trade the child will obtain data on culture change as seen in the function of Nootka Indian technology, social organization, child rearing practices, language and world view.

**Learning Opportunities**

1. Working in small groups, the students studied excerpts from journals of Captain Cook, members of his crew and from maritime fur traders such as Meares and Strange.

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Figure 7: Students studying and discussing historical documents.
II. Process: Classification

Objectives

1. Using data obtained from historical documents, the child will classify information on culture change according to the structure of Nootka Indian technology, social organization, child rearing practices, language and world view.

2. Using data obtained from simulated artifacts of trade goods, the child will classify aspects of culture change by grouping the artifacts according to their usage in Nootka Indian technology, social organization, child rearing practices, language and world view.

3. Using data obtained from slides dealing with Nootka culture during the maritime fur trade, the child will classify data on culture change by grouping slides according to their function in Nootka Indian technology, social organization, child rearing practices, language and world view.

Learning Opportunities

1. The children grouped the simulated artifacts of trade goods - sheet copper, soap, needles, beads, rice, cloth, molasses, iron chisels and whiskey - according to the cultural changes they produced in the five concepts of Nootka culture.

Figure 8: Students working with simulated artifacts of trade goods.
2. The children grouped the slides of changes in Nootka culture by classifying them under the five aspects of Nootka culture.

III. Process: Defining Objectives

1. In examining historical documents, slides and simulated artifacts from the fur trade, the child will demonstrate an understanding of the terms - chisels, iron collars, Chinook jargon, button blankets, argolite pipes - by describing their structure in oral or written descriptions of specific activities or events.

2. In examining historical documents, slides and simulated artifacts from the fur trade, the child will demonstrate an understanding of the Chinook terms - lice = rice, six = friend, chuck = water, ou = brother - by using them in oral or written descriptions of specific activities or events.

3. In examining historical documents, slides and simulated artifacts from the fur trade, the child will demonstrate an understanding of the terms - button blanket, iron collars, Chinook jargon, argolite pipes - by describing their function in oral or written descriptions of specific activities or events.

Learning Opportunities

1. Working in small groups, the children studied word lists of Chinook terms used by Indians and non-Indians in their trading activities. The children used these terms when they made a "Class Dictionary" of Chinook words and their English meanings.

2. The children labelled and documented a "museum
display" of "replicas" of Nootka Indian artifacts of the fur trade period, that the children voluntarily constructed as part of their group activities.

IV. Process: Contrasting

Objectives

1. In examining historical documents, slides and simulated artifacts the child will contrast Nootka culture in the pre and post fur trade periods noting differences in structure of Nootka technology, social organization, child rearing practices, language and world view.

2. In examining historical documents, slides and simulated artifacts the child will contrast Nootka culture in the pre and post fur trade periods noting differences in usage of Nootka technology, social organization, child rearing practices, language and world view.

3. In examining historical documents, slides and simulated artifacts the child will contrast Nootka culture in the pre and post fur trade periods noting differences in function of Nootka technology, social organization, child rearing practices, language and world view.

Learning Opportunities

1. The children used slides of Nootka Indian culture before and after the fur trade period to contrast the Indian culture and to note changes. The children identified such things as changes in weapons, tools, transportation (the sail), clothing, food, objects for personal adornment and symbols of wealth.

2. The children studied historical documents written by Captain Cook, by members of his crew and by the maritime fur traders. The students contrasted Nootka culture during the pre and post fur trade periods. They identified cultural differences such as utili...
zation of metal tools; adoption of non-Indian fashion such as powdered hair and clean faces; adoption of non-Indian customs such as table manners and method of greeting and employment of new symbols of wealth and prestige, e.g. - metal.

V. Process: Generating and Testing Hypotheses

Objectives

1. The child will generate and test hypotheses regarding culture change by noting differences in structure of Nootka Indian technology, social organization, child-rearing practices, language and world view as related to the fur trade.

2. The child will generate and test hypotheses regarding culture change by noting differences in usage of Nootka Indian technology, social organization, child-rearing practices, language and world view as related to the fur trade.

3. The child will generate and test hypotheses regarding culture change by noting differences in function of Nootka Indian technology, social organization, child-rearing practices, language and world view as related to the fur trade.

Learning Opportunities

1. After listening to the account of Captain Cook's arrival at Nootka Sound in the book Maquinna the Magnificent, the children hypothesized that at the beginning of the fur trade the Nootka believed the white men were Indians returning from the dead or some supernatural creatures because of their manner of dress, their method of transportation and their possessions.

2. The children studied slides of Nootka metal bladed tools plus slides of Nootka art during the fur trade period. From the slides the children hypothesized that Nootka art flourished during the fur trade period because metal tools made carving easier and more efficient.
VI. Process: Inferring Objectives

1. The children will demonstrate the ability to make inferences regarding culture change by predicting the outcome in another time, place or for individuals in a similar setting, focusing upon the structure of Nootka Indian technology, social organization, child rearing practices, language and world view in relation to the maritime fur trade.

2. The children will demonstrate the ability to make inferences regarding culture change by predicting the outcome in another time, place or for individuals in a similar setting focusing upon the usage of Nootka Indian technology, social organization, child rearing practices, language and world view in relation to the maritime fur trade.

3. The children will demonstrate the ability to make inferences regarding culture change by predicting the outcome in another time, place or for individuals in a similar setting focusing upon the function of Nootka Indian technology, social organization, child rearing practices, language and world view in relation to the maritime fur trade.

Learning Opportunities

1. The children studied simulated artifacts of trade goods and made inferences regarding what changes these articles would make in Nootka culture. Student inferences included e.g. cloth - If the Nootka Indians found the trader's cloth more colourful, warm and comfortable than their own bark cloth, they would probably no longer weave their own cloth, e.g. chisel - If the chisel made wood carving easier, probably the Indians would carve more and make finer works, e.g. - If the Indians wanted these trade goods and could not make them themselves, they would probably become dependent on the fur trader to supply these articles.
2. The children studied statistics on the number of ships that visited Nootka Sound from 1785 to 1825. From the figures which indicated a sharp decline in the number of ships, the children inferred such things as "if the Nootka killed more sea otter than in the past probably there weren't many animals left and therefore the fur traders would not come.

VII. Process: Communicating Findings

1. The child will make a chart indicating changes in structure of Nootka technology, social organization, child rearing practices, language and world view as related to the maritime fur trade.

2. The child will use Chinook terms such as lice - rice, six - friends chuck - water and ou - brother in small groups and class discussion of trading activities.

3. The child will make entries in a Resource Booklet describing changes in function of Nootka technology, social organization, child rearing practices, language and world view as related to the maritime fur trade.

Learning Opportunities:

1. The children began a Resource Booklet of historical documents, illustrations and research findings focusing on changes in the structure usage and function of Nootka culture.

2. The children orally reported changes in the structure of Nootka technology discovered from research of historical documents.

RESOURCE MATERIALS FOR ORGANIZING CENTER II, TREATMENT A

1. Excerpts from the book *Maguinna the Magnificent* by Bruce A. McKelvie describing Captain Cook's arrival at Yuquot were used in the listening activity.

2. Excerpts and sketches from historical documents were provided for the children in booklet form. The
material was derived from the journals of Captain Cook, some members of his crew and from the journals of maritime fur traders such as Meares and Strange.

3. Statistics on the number of ships visiting Nootka Sound from 1785 to 1825 plus the cargo lists of these ships were derived from Joyce Wike's *The Effect of the Maritime Fur Trade On Northeast Coast Indian Society*.

4. Indian population statistics (1835-1963) were derived from Wilson Duff's *The Indian History of British Columbia Vol; 1*.

5. The simulated artifacts of trade goods were selected from the cargo lists given by Joyce Wike. The artifacts were made from available materials and included - rice, needles, cloth, molasses, whiskey (coloured water in appropriate bottle), sheet copper, beads, soap. Each group of four students received a bag containing these items.

6. Slides of Indian culture before and after the fur traders arrived were photographed by this researcher from the holdings at the B.C. Provincial Museum, the Centennial Museum and on location at Fort Langley. In addition, slides were obtained from the British Columbia Teachers Federation lesson aid services.

DEVELOPING MAJOR ORGANIZING CENTER II: TREATMENT B, THE FUR TRADE - UTILIZING TEACHER-MADE SIMULATIONS

**Affective Objectives**

The affective objectives described previously will not be re-stated at this time. In summary, they are directed at an increasingly positive approach toward the Nootka Indians, and toward social studies.
Cognitive Objectives

The instructional program developed for the purpose of this organizing center encompasses a core of cognitive objectives which give practice to total cycle of processes in the integrative mode.

IV. Process: Comparing Objectives

1. The child will do a running comparison to identify elements of structure of Nootka technology, social organization, language, child rearing practices, world view and culture change through participation in a teacher-made simulation of trading activities.

2. The child will do a running comparison to identify elements of usage of Nootka technology, social organization, world view and culture change through participation in a teacher-made simulation of the sea otter hunt.

3. The child will do a running comparison to identify elements of function of Nootka technology, social organization, child rearing, world view and culture change through participation in a teacher-made simulation involving the assignment of trade items to members of an Indian family.

Learning Opportunities

1. The children participated in a simulation called The Otter Box which involved them in the hunt for sea otter. While engaging in the hunt they encountered changes in usage of Nootka culture, e.g. technology - the use of guns, metal tools and weapons; social organization - increased wealth from sea otter hunt used to enhance social status.

2. The children participated in The Brown Bag Game where they assigned trade items to members of a Nootka family according to the item's function, e.g. social organization - sheet copper enhanced a man's social status and prestige; technology - metal needles increased a woman's efficiency at sewing.
V. Process: Integrating Objectives

1. Through playing the role of a Nootka Indian in an End-of-Life exercise, the child will express feeling and understanding of the structure of Nootka social organization, world view and culture change.

2. Through playing the role of a Nootka Indian in a Land Hunt Game, the child will express feeling and understanding of usage of Nootka technology, social organization, world view and culture change.

3. Through playing the role of a Nootka Indian in a game where slides of trade items had to be assigned to family members on the basis of function, the child will express feeling and understanding of the function of Nootka technology, social organization, child rearing practices, world view and culture change.

Learning Opportunities

1. The children participated in the End-of-Life exercise which focused upon some of the negative effects of the fur trade.
Students' integrating comments included: "Now that I'm blind who's going to take care of my family?" and "I was lucky, I didn't catch the measles like other members of my group. They all died."

2. The children participated in the Slide Game where they had to assign slides of trade items to members of their family according to the item's function. Student's integrating comments included: "I'll give these beads to my wife so she can sew them on her dress for decoration." (fashion - world view), and "I'll keep the steel trap for myself so I can trap more animals for food and pelts," (subsistence and economic functions - technology).

Figure 10: Children participating in The Slide Game. The boy on the left is using an individual slide viewer.

VII. Process: Communicating Findings

Objectives

1. The child will contribute to a classroom display of simulated artifacts which illustrate changes in structure of Nootka technology, social organization, child rearing practices, language and world view.
2. The child will demonstrate the usage of a Nootka tool or weapon during a simulation game of the sea otter hunt.

3. The child will orally communicate the function of trade goods while taking part in a simulation game of a fur trading session.

Learning Opportunities

1. During a debriefing session following participation in a simulation game, the children discussed what they learned about the structure, usage and function of selected concepts.

2. Following participation in a simulation game, the children wrote an entry into a simulated anthropological journal describing what they learned about the structure, usage and function of selected concepts.

The Abt guidelines for procedures in game construction were adapted for use in the development of the simulations. First, the general context of the problem was selected. The details and scope of the situation were defined in such terms as time duration, geography, actors concerned and the types of actions and functions involved. Cognitive and affective objectives were selected. Next, the actors who were the main participants in the situation, were specified. The aims, goals, background and role of each participant were determined. A decision was selected which each actor was to make, and which was distinguishable in terms of goals, preferences, capabilities and resources from the other actors. Third, the win criteria were specified and stated in such terms as the achievement of a given set or maximum degree of objectives within a minimum expenditure of resources.

The interaction among the participants, as well as the mechanics of game procedure were determined next. Rules were added to limit the scope of possible actions and interactions among the participants. Lastly, the game materials were constructed. These materials usually included such things as the scenario, which gives background information about the setting of the game and pertinent information about game procedure, and the role

---

cards which describe the background information about each actor.

The teacher-made-simulations were devised by the researcher. The same data sources and materials were used to develop the games as were employed in the development of the learning materials used in Treatment A. A brief description of the games is presented in Appendix O. Additional student comments are given in Appendix R.

DEVELOPING MAJOR ORGANIZING CENTER II: TREATMENT C, THE FUR TRADE - UTILIZING PUPIL-MADE SIMULATIONS

Affective Objectives

The affective objectives are directed at developing an increasingly more positive attitude toward the Nootka Indians, and toward social studies.

Cognitive Objectives

The instructional program developed for the purpose of this organizing center encompasses a core of cognitive objectives which give practice to the integrative mode utilizing the technique of pupil-made-simulations applied to content relevant to six anthropological concepts previously stated. The statement of objectives and learning opportunities are classified according to two of the seven integrative inquiry processes. The processes of observing, classifying, defining, inferring and communicating are the same as Treatment B and will not be repeated.

Process: Comparing

Objectives

1. The child will do a running comparison to identify elements of structure of selected concepts focusing on Nootka culture, through the construction of and/or participation in a student made simulation dealing with the sea otter hunt.

2. The child will do a running comparison to identify elements of usage of selected concepts focusing on Nootka culture through the construction of and/or participation in a student made simulation dealing with simulated artifacts of trade goods.

3. The child will do a running comparison to identify elements of function of selected concepts focusing on Nootka culture through the construction of and/or participation in a student made simulation dealing with slides of trade goods.
**Learning Opportunities**

1. The children studied slides of trade goods. A class discussion followed on how the slides could be used to make a game that would help students indentify with experiences and events in the lives of the Nootka Indians involving culture change and related concepts. The students formed groups and tried to devise games utilizing the slides, that could be played by other members of the class.

2. After studying historical documents from the journals of Captain Cook some members of his crew, and from the journals of the maritime fur traders, the students tried to devise some games using the same procedure as outlined above.

**Figure 11:** Children playing The Sea Otter Hunt Game devised by the students from their reading of historical documents.

**Process:** Integrating

**Objectives**

1. Through the construction of and/or participation in a student made simulation, the child will demonstrate identifying with the Nootka Indians by expressing feeling toward and understanding of the structure of selected concepts. For example: "It's hard to find yew to make the shaft for my harpoon."
2. Through the construction of and/or participation in a student-made simulation, the child will demonstrate identifying with the Nootka Indians expressing feeling toward and understanding of the usage of selected concepts. For example: "My spear works better if I throw it higher."

3. Through the construction of and/or participation in a student-made simulation, the child will demonstrate identifying with the Nootka Indians by participating in similar activities and expressing feeling toward and understanding of the function of selected concepts. For example: "If we had more guns, we could shorten this hunting season."

Learning Opportunities

1. The class examined simulated artifacts of trade goods. A class discussion followed on how the artifacts could be used to make a game that would teach students about culture change and related concepts and help develop favorable attitudes towards the Nootka Indians. The children then, working in groups, tried to devise a game utilizing simulated artifacts that could be played by other members of the class.

2. Using Indian population statistics from 1835 to 1963, the children devised games employing the same procedure as outlined above.

Figure 12: Students devising a game using Indian population statistics.
The student-made-simulation games were devised by the pupils using the same data sources employed by the groups involved in Treatment A and Treatment B. Methodology for introducing game construction was previously described in Chapter III, Description of the Treatments. Twelve games were developed by the students. Eight of these games were played in class by all the students, or by groups of students. A brief description of examples of the student-made-simulation games are presented in Appendix P. Student comments are reported in Appendix S.

The development of the instructional program for the three treatments has been described above. The results of these treatments are given in the next chapter.
CHAPTER V
ANALYSIS OF DATA

From the administration of the criterion test (pretest, posttest and delayed posttest) three class mean scores were obtained for the control treatment, three for the teacher-made-simulation treatment and two for the student-made-simulation treatment. Since the scores on the posttest and the delayed posttest were almost identical, it was decided that the posttest class mean scores could safely be used for the comparison of treatment effects. The pre- and adjusted posttest scores were used in the comparison analysis. Control for pre-treatment difference was achieved by random assignment and utilization of the pretest scores as the covariate.

A University of British Columbia adaptation of the program BMDX64 from U.C.L.A. BMD documentation was used to perform the analyses of variance and covariance. The overall differential effects among the three treatment conditions were tested by means of a three-way analyses of variance with the covariate sum of squares removed. The pretest scores were used as the covariates and the adjusted posttest scores on the dependent variable were the criteria. Critical F ratios are presented for the main effects and interactions of grade, sex and treatment variables on subject preference, the dependent variable.

Table IV summarizes the results of the tests for main effects and interactions pertinent to hypotheses $H_1$ and $H_2$. An analysis of the three treatments revealed a critical F ratio of 22.70 for the treatment main effect. This statistic proved to be significant at the $p < .01$ level. An analysis of covariance revealed no significant sex or grade main effects or interactions.

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>D.F.</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sex</td>
<td>.19</td>
<td>1</td>
<td>.19</td>
<td>.06</td>
</tr>
<tr>
<td>2. Grade</td>
<td>.17</td>
<td>1</td>
<td>.17</td>
<td>.05</td>
</tr>
<tr>
<td>3. Treatment</td>
<td>142.69</td>
<td>2</td>
<td>71.34</td>
<td>22.70*</td>
</tr>
<tr>
<td>4. Sex X Grade</td>
<td>1.29</td>
<td>1</td>
<td>1.29</td>
<td>.41</td>
</tr>
</tbody>
</table>

Table IV
THREE-WAY ANALYSIS OF VARIANCE TABLE WITH THE COVARIATE SUM OF SQUARES REMOVED
### TABLE IV (cont'd)

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>D.F.</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Sex X Treatment</td>
<td>.58</td>
<td>2</td>
<td>.29</td>
<td>.09</td>
</tr>
<tr>
<td>6. Grade X Treatment</td>
<td>.74</td>
<td>2</td>
<td>.37</td>
<td>.12</td>
</tr>
<tr>
<td>7. Sex X Grade X Treatment</td>
<td>7.90</td>
<td>2</td>
<td>3.95</td>
<td>1.26</td>
</tr>
<tr>
<td>8. Covariate</td>
<td>4.21</td>
<td>1</td>
<td>4.21</td>
<td>1.34</td>
</tr>
<tr>
<td>9. Error</td>
<td>176.03</td>
<td>56</td>
<td>3.14</td>
<td></td>
</tr>
</tbody>
</table>

*p < .01

### TESTING OF HYPOTHESES

H₁: Children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating teacher-made-simulation games will achieve a significantly more favorable attitude toward social studies than will a control group.

On an attitude measure, X T.M.S.T. < X C.T.

Since the F test ratios indicated a significant treatment effect, the Duncan Multiple Range Test was used to determine the order and the significance of the differences. Table V gives the Adjusted Treatment Group Means and indicates significant treatment difference at .05 level on Duncan's Multiple Range Test.

### TABLE V

**ADJUSTED TREATMENT GROUP MEANS**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>X Pretest</th>
<th>X Posttest</th>
<th>X Delayed Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Control Treatment (X₁)</td>
<td>23</td>
<td>10.8</td>
<td>11.4</td>
<td>11.4</td>
</tr>
<tr>
<td>2. Teacher-Made- Simulation Treatment (X₂)</td>
<td>23</td>
<td>11.1</td>
<td>14.5</td>
<td>14.6</td>
</tr>
<tr>
<td>3. Student-Made- Simulation Treatment (X₃)</td>
<td>24</td>
<td>10.8</td>
<td>14.6</td>
<td>-</td>
</tr>
</tbody>
</table>

Indicates significant differences at .05 level on Duncan's Multiple Range Test
The magnitude of the differences between $\bar{X}_2 - \bar{X}_1 = 3.1$ was found to be significant as the $p < .05$. This finding warrants the acceptance of the hypotheses $H_1$.

$H_2$: Children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating student-made-simulation games will achieve a significantly more favorable attitude toward social studies than will a control group.

On an attitude measure $\bar{X}_{S.M.S.T.} > \bar{X}_{C.T.}$.

The critical F ratio (Table IV) shows significant results for treatment effects. Using Duncan's Multiple Range Test (Table V), the difference between the adjusted means of C.T. and S.M.S.T., $\bar{X}_3 - \bar{X}_1 = 3.2$ was found to be significant at the $p < .05$ level. Student-made-simulation treatment was more effective than the control treatment in developing favorable student attitude toward social studies. These findings warrant acceptance of the second hypothesis.

$H_3$: Children enrolled in an experimental class for the study of culture change among the Nootka Indians incorporating student-made-simulation games, will achieve no significant difference in their attitude toward social studies from students enrolled in a similar study with teacher-made-simulation games.

On an attitude measure $\bar{X}_{T.M.S.T.} = \bar{X}_{S.M.S.T.}$.

Duncan's Multiple Range Test was utilized to determine if any significant difference existed between the adjusted means of T.M.S.T. and S.M.S.T. The test revealed that $\bar{X}_3 - \bar{X}_2 = .1$ was not significant. This result indicates that no significant difference between T.M.S.T. and S.M.S.T. was present. On the basis of these findings, the third hypothesis warrants acceptance.

**Posttest and Delayed Posttest Results**

A delayed posttest was administered to the C.T. and T.M.S.T. to determine if any change in the mean scores had taken place through time. A correlated $t$-test between the class mean scores for the C.T. on the posttest 11.4 and the delayed posttest 11.4 yielded a "$t$" value of .00 which is not significant at the .05 level. There is no significant
difference between the class mean posttest score and the delayed mean posttest score for the random sample of twenty-three students.

**TABLE VI**

POSTTEST AND DELAYED POSTTEST SCORES FOR C.T. AND T.M.S.T.

<table>
<thead>
<tr>
<th></th>
<th>Posttest $\bar{X}$</th>
<th>Delayed Posttest $\bar{X}$</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.T.</td>
<td>11.4</td>
<td>11.4</td>
<td>.00</td>
<td>NSS.</td>
</tr>
<tr>
<td>T.M.S.T.</td>
<td>14.5</td>
<td>14.6</td>
<td>.07</td>
<td>N.SS</td>
</tr>
</tbody>
</table>

*p= .05

Similarly, a t-test between the class mean scores for the T.M.S.T. on the posttest 14.5 and the delayed posttest 14.6 yielded a value of .07. This score was not significant at the .05 level where $t_{crit} = 1.71$. On the basis of this result, it appears that there is no significant difference between the class mean scores on the posttest and the scores on the delayed posttest for the random sample of twenty-three students.

The scores on the posttest and delayed posttest for the C.T. and T.M.S.T. were almost identical, therefore, it was decided that the posttest class mean scores could safely be used in the statistical analysis.

**CONCLUSIONS**

The statistical analysis of this study has revealed that teacher-made and pupil-made simulations helped to develop more favorable student attitudes towards social studies. The statistics have further revealed that both treatments were equally effective in this area. The results have also shown that sex and grade were not important variables in influencing treatment results. Similarly, the interaction of the following variables was found not to be significant: sex and grade; sex and treatment; grade and treatment; sex, grade and treatment.

The findings of this study suggest that simulation games favorably influenced student attitudes toward social studies. While generalizations made regarding this study are applicable only to the population of grade four and five students used in this study, indications give encouraging
support for the usefulness of continued study of simulation games with a much wider population.

The researcher was able to draw further conclusions as a result of the development of the instructional programs and the implementation of this investigation. The study has shown that it is possible for the classroom teacher to develop simulation games that can favorably influence student attitudes toward social studies. More importantly, it has revealed that it is possible for this sample of grades four and five students to successfully develop and play their own simulation games which enhance favorable attitudes toward social studies.

This investigation has demonstrated the successful use of the Binnington model for the development of a humanistic curriculum. It also has successfully employed the analytic and integrative modes of inquiry as described in the California State Framework.

In addition, the researcher has some impressionistic observations which may be worth noting. The students of the simulation groups appeared to be enthusiastically and actively involved in the games. Their comments, some of which are given in Appendices R and S, revealed that they found the experience highly interesting and enjoyable. While the noise level in the simulation classes was higher than in the control group, the noise was produced by students actively taking part in the learning process. There were no discipline problems and the children appeared to look forward to their social studies lessons. The investigator's observations concurred with the test results.

In the area of cognitive learning the researcher observed a difference in achievement between the three groups as noted on an informal evaluative instrument. The students of the control and simulation group appeared to have learned about the same amount of material while the children in the pupil-made simulation appeared to have learned more. It must be stressed, however, this conclusion is purely impressionistic and would require further empirical investigation.

LIMITATIONS

The conclusions cited must be regarded as tentative because this investigation had several limitations. The subjects for this study were not a random sample from the population of all the fourth and fifth grade students in British Columbia, but were chosen on the basis of their availability
and convenience. Generalizations made as a result of this study are only applicable to the population from which the sample was drawn; namely the fourth and fifth grade students at Clayton Elementary School in the Surrey School District, British Columbia. The study was further handicapped by the small sample size.

While the students in this study have been grouped with other pupils of the school for their language arts and elective programs, the random assignment of the students to social studies groups was a new practice. This departure from the students' daily routine may have influenced their response to the treatments.

Although the students were not permitted to take the instructional materials home, it was not possible to prevent them from interacting with the ideas and techniques employed during the treatments. This problem was further aggravated by the consecutive administration of the treatment programs.

The consecutive presentation of the three treatments was required because of school administration policy. Nine and a half weeks were needed to complete the treatments. Extraneous independent variables such as history and maturation could have interacted with the treatment, making it difficult to determine whether the treatment or time, caused any change in student attitude.

In an effort to cope with the problems of history and maturation, a second posttest was administered to the first two groups on the same day that the third group received its first posttest. Although the second posttest was a modification of the original scale, the writing of the first posttest may have sensitized the students' response to the second.

Sensitization could also have resulted from the administration of the pretest. To keep this problem to a minimum, the test was administered five months prior to this study.

The testing and instructing of the experimental and control groups was done by the researcher. While this procedure controls for teacher effect, unconscious biases could have affected the validity of the study.

The time limitation of a three week treatment period for each group was short. Perhaps different changes in student attitude could have resulted if the treatment period had been extended.

The study was further limited by the administration of only one instrument for measuring attitudes. This attitude scale was handicapped by
the eight to sixteen range of total subject scores. A number of students rated social studies with the maximum number of points. The possible score range should have been wider so that more significant results could have been attained.

An additional limitation was that the test only evaluated student attitudes toward social studies. No attempts were made to measure cognitive learning or different areas of the affective domain.

It must also be noted that the significance of the results of this study were in direct relation to not only the content of the simulations, but also the presentation used by the researcher. Decisions regarding the value of simulation which this study purports would necessitate the presentation of many more teacher-made and pupil-made simulations to various classes by different teachers.

**IMPLICATIONS OF THIS STUDY FOR CLASSROOM PRACTICE AND CURRICULUM DEVELOPMENT**

Despite its limitations, this investigation has some important implications for classroom practice and for curriculum development. This study has shown that a classroom teacher can devise simulation games. Teachers should try to use this technique to add variety to their social studies lessons. Once the children have experienced and analyzed a few games, they should be encouraged to develop their own. This could be done by the class as a whole, in groups or as individuals. Perhaps these student-developers could teach their games to other children in the class or in the school.

Similarly, this study has implications for curriculum development. Within the province of British Columbia the responsibility of social studies curriculum development is increasingly falling upon the classroom teacher. To aid teachers in this area, many school districts have appointed teacher committees who are developing social studies units and materials to be used within the district. While this program has merit, it also has problems, for frequently teachers possess a limited knowledge of curriculum development. These teacher committees require a clear procedure to guide the developmental process. This study has successfully applied the Binnington model for humanistic curriculum development. This model could be of great value by providing a procedure for future curriculum development.

An area that is frequently not emphasized within teacher developed curriculum is that of inquiry skills. Most teachers recognize the worth of
these processes, but have difficulty incorporating them into their unit and lesson planning. This investigation has employed the California State Framework's integrative and analytic modes of inquiry with quite a high degree of success. The modes are not difficult to employ and the processes seem to grow from one another as the child engages in his inquiry. Perhaps curriculum committees should seriously consider utilizing these modes when they are planning their units.

This study has also revealed that simulation games can favorably influence student attitudes toward social studies. Curriculum developers should consider incorporating at least one game per unit and providing opportunity for children to develop their own games. This study indicates that simulations are not difficult to devise and can generate student interest, enjoyment, involvement and motivation.

ADDITIONAL RESEARCH NEEDED

The findings of this study tentatively suggest that simulation games is an effective teaching technique for developing favorable student attitudes toward social studies. The exploratory nature of this research requires that replicative investigations be undertaken to support or reject this conclusion.

The present study employed only the subject matter and concepts taken from anthropology. Additional studies should examine simulation games using subject matter from different areas of the curriculum.

Further studies are also required utilizing the Binnington model for humanistic curriculum development. While this study focused on the affective domain, the effectiveness of this model in prompting cognitive learning requires thorough investigation.

The modes of inquiry taken from the California State Framework have been successfully applied in this study, however, further research in different classrooms and at different grade levels is required to determine their full potential.

The cognitive learning of students involved in teacher-made and pupil-made simulations is an area that requires further investigation.

Additional studies are also required in the affective domain. No attempts were made in this study to test different areas of the affective realm other than student attitudes toward social studies. For example, it is unknown whether, as a result of the simulation experience, the students had any increased empathy for the Nootka people and the problems facing them...
regarding culture change. Studies made of the feelings and attitudinal changes caused by teacher-made and pupil-made simulations would be invaluable.

Other areas of study worth investigating are the effects of simulations on group and decision-making skills.

The number of subjects involved in the present study was relatively small. Research studies utilizing larger numbers of subjects should be encouraged.

In addition, further research on the paired-comparison rating scale is required. Attempts should be made to refine the scale and to make it more sensitive for indicating the extent of attitude change. A study utilizing a multidimensional approach in evaluating student attitudes toward social studies would be of great value.

Hopefully, future research will be conducted which will substantiate as well as extend the conclusions reached through this study. Only by means of such investigations will education keep pace with the needs of today's students in our modern world.
APPENDIX A

THE PAIRED-COMPARISON RATING SCALE
SUBJECT PREFERENCE SURVEY

Rank each group of subjects in order of preference. Place 1 by your first choice and 2 by your second choice.

1. a) Reading
   b) Arithmetic
2. a) Social Studies
   b) Music
3. a) Arithmetic
   b) P.E.
4. a) Music
   b) Health
5. a) Art
   b) Spelling
6. a) Science
   b) Reading
7. a) P.E.
   b) Social Studies
8. a) Health
   b) Arithmetic
9. a) Reading
   b) Art
10. a) Spelling
    b) Health
11. a) Art
    b) P.E.
12. a) Arithmetic
    b) Science
13. a) Social Studies
    b) Arithmetic
14. a) Science
    b) Music
15. a) Health
    b) Social Studies
16. a) Music
    b) Art
17. a) Reading
    b) Spelling
18. a) Music
    b) Reading
19. a) Music
    b) P.E.
20. a) Art
    b) Science
21. a) Reading        32. a) P.E.
b) Health            b) Reading

22. a) P.E.          33. a) Science
b) Spelling          b) Social Studies

23. a) Arithmetic    34. a) Arithmetic
b) Music             b) Art

24. a) Reading       35. a) Health
b) Social Studies    b) P.E.

25. a) Health        36. a) Spelling
b) Art               b) Science

26. a) Social Studies
b) Spelling

27. a) Science       
b) P.E.

28. a) Spelling      
b) Arithmetic

29. a) Art           
b) Social Studies

30. a) Health        
b) Science

31. a) Music         
b) Spelling
APPENDIX B
OBJECTIVES FOCUSED ON THE CONCEPT OF TECHNOLOGY AND UTILIZING THE ANALYTIC MODE OF INQUIRY
1:00 The child will engage in observation of documents, slides, pictures and simulated artifacts to obtain data on Nootka technology related to specific activities and events.

1:10 The child will demonstrate knowledge of data observed on the structure of technology. Example:

   The whaling harpoon was made from a shaft of yew wood. The blade, which was made from a mussel shell, was bound with gut to a barbed head and cemented with pitch.

1:20 The child will demonstrate knowledge of data observed on the usage of technology. Example:

   The Nootka stone-bladed chisels were used for such things as splitting logs, felling trees and making canoes.

1:30 The child will demonstrate knowledge of data observed on the function of technology. Example:

   At the beginning of the maritime fur trade, the bow and arrow functioned in the economic activity of providing pelts for trade.

2:00 The child will classify data on technology related to specific activities and events in the lives of Nootka Indians.

2:10 The child will demonstrate ability to classify data relevant to structure of technology. Example:

   Before contact, containers were constructed of solids, e.g. wooden boxes and flexibles, e.g. baskets of cedar bark fibers.

2:20 The child will demonstrate ability to classify data relevant to the usage of technology. Example:
The bow and arrow were used for the hunt of sea otter; elbowadze and D adze were used for carving.

2:30 The child will demonstrate the ability to classify data relevant to the function of technology. Example:

The fish traps functioned in subsistence activities; the whaler's hat functioned in social activities.

3:00 The child will demonstrate ability to comprehend definition of terms related to Nootka technology by using them in oral or written descriptions of specific activities and events.

3:10 The child will use appropriate terms to label technology according to structure. Example:

harpoon, spear, club, bow and arrow, maul (pixaxpinax), D-adze, elbow-adze.

3:20 The child will use appropriate terms to label technology used for a specific activity. Example:

"Digging sticks" were used to dig clams and the trailing roots of spruce and cedar.

3:30 The child will use appropriate terms to label technology functioning in specific ways. Example:

The "yahank" a cylindrical type fish trap, functioned in subsistence activities.

4:00 The child will contrast Nootka technology in two or more activities and events.

4:10 The child will contrast technology by identifying differences in structure. Example:
Hunting tools before the fur trader arrived, were constructed of natural products. After the fur traders arrived, they were constructed from processed materials.

4:20 The child will contrast technology by noting differences in usage. Example:

Before the fur trader arrived, the sea otter pelt was used for clothing. After the fur trader arrived, the pelt was used as an item for trade.

4:30 The child will contrast technology by noting differences in function. Example:

Hunting the sea otter before the fur traders arrived, served a subsistence function. After the traders arrived, the hunting of the sea otter served an economic function.

5:00 The child will generate and test hypotheses regarding the differences in Nootka technology related to specific activities and events.

5:10 The child will generate and test hypotheses regarding differences in structure of technology. Example:

During the era of the maritime fur trade with non-Indians, the Nootka people put more time and effort into the hunting of the sea otter than in the earlier era, because they wanted the goods the non-Indians offered in trade for otter pelts.

5:20 The child will generate and test hypotheses regarding differences in usage of technology. Example:

The art of the Nootka Indians flourished after the contact with non-Indians, because the availability of metal provided more efficient equipment.

5:30 The child will generate and test hypotheses regarding differences in function of technology. Example:
After contact with non-Indians, technological devices which had previously functioned primarily for subsistence purposes, began to function for socio-economic purposes, because the non-Indians valued the pelts highly.

6:00 The child will make *inferences* based on findings by predicting the outcome in another time, place or for other individuals in a similar setting regarding Nootka technology in relation to specific activities and events.

6:10 The child will make inferences regarding the **structure** of technology. Example:

   If the Nootka Indians had changed the structure of their clothing in imitation of the white man, they may have changed the structure of their houses for the same reason.

6:20 The child will make inferences regarding the **usage** of technology. Example:

   If the use of the gun made the sea otter hunt more efficient and more deadly, then eventually the sea otter would become extinct.

6:30 The child will make inferences regarding the **function** of technology. Example:

   If the non-Indians' blankets were in constant demand, probably eventually the blanket would function as the standard value in trade.

7:00 The child will *communicate* to others results of inquiry on Nootka technology related to specific activities and events.

7:10 The child will communicate to others inquiry findings into the **structure** of technology. Example:

   Documented artifacts from a Nootka village can be displayed in a classroom museum.
7:20 The child will communicate to others findings of inquiry into the usage of technology. Example:

An entry can be written into a simulated anthropological journal on the usage of a whaling canoe.

7:30 The child will communicate to others findings of inquiry into the function of technology. Example:

The function of the whaler's harpoon in subsistence activities can be explained.
APPENDIX C

OBJECTIVES FOCUSED ON THE CONCEPT OF SOCIAL ORGANIZATION AND
UTILIZING THE ANALYTIC MODE OF INQUIRY
1:00 The child will engage in observation of documents, slides pictures and simulated artifacts to obtain data on Nootka social organization related to specific activities and events.

1:10 The child will demonstrate knowledge of data observed on the structure of social organization. Example:

The structure of Nootka Indian society was based upon three broad social classes - the upper class, the common people and the slaves.

1:20 The child will demonstrate knowledge of data observed on the usage of social organization. Example:

Social class was used in determining the roles, duties, responsibilities, rights and privileges in Nootka society, e.g. - the hereditary chief held the position of whaler and conducted trade with non-Indians.

1:30 The child will demonstrate knowledge of observed data on the function of social organization. Example:

Constant recognition of three classes within Nootka society, functioned as a means of maintaining continuity of the social organization.

2:00 The child will classify data on social organization related to specific activities and events in the lives of the Nootka Indians.

2:10 The child will demonstrate ability to classify data relevant to the structure of social organization. Example:

Social position determined work tasks among the Nootka Indians - e.g. the chief hunted the whale while the slaves did menial tasks such as cleaning fish.
2:20 The child will demonstrate ability to classify data relevant to the usage of social roles in determining social traditions. Example:

The Nootka Indian's position in the social organization was used to determine the form and order of invitation, the type of gift and the order of giving and receiving of the gift, and the group with which he would sit during a potlatch.

2:30 The child will demonstrate ability to classify data relevant to the function of social organization. Example:

The Nootka Indian roles could be classified according to the functions assigned to their position in the social organization, e.g. - the hunter served primarily a subsistence function; the shaman served primarily as a contact with the supernatural or a spiritual mediator function; the chief served primarily social and economic functions.

3:00 The child will demonstrate ability to comprehend definition of terms of Nootka social organization by using them in oral or written descriptions of specific activities and events.

3:10 The child will use appropriate terms to label social organization according to its structure. Example:

potlatch, chief's speaker, messengers, privilege, gifts, sheet copper.

3:20 The child will use appropriate terms in relating the social activity to its use. Example:

Potlatches were used for the conferring of a new name on a son; the celebrating of a daughter's puberty ceremony; the building of a house; the accepting of a hereditary position, or the celebrating of a successful whale hunt.
3:30 The child will use appropriate terms in relating the social activity to its function. Example:

The potlatch served primarily a socio-economic function.

4:00 The child will contrast two or more activities and events of Nootka social organization.

4:10 The child will contrast structure of social organization by identifying differences within selected settings. Example:

With the coming of the missionaries, the status of slave was outlawed.

4:20 The child will contrast usage of social organization by noting differences within selected settings. Example:

Before the fur trade, potlatches were used by hereditary chiefs to enhance their prestige. After the fur trade, potlatches became more lavish and were used mainly by wealthy "commoners" to raise themselves on the social scale.

4:30 The child will contrast function of social organization by noting differences within selected settings. Example:

Before the maritime fur trade, inter-tribal trade served economic and subsistence functions. After the non-Indians arrived, inter-tribal trade functioned to strengthen the Nootka chief's economic and social position.

5:00 The child will generate and test hypotheses explaining differences in Nootka social organization related to specific activities and events.
5:10 The child will generate and test hypotheses regarding differences in structure of social organization. Example:

Interior Vancouver Island tribes adopted the structure of the social systems and ceremonies of their powerful coastal neighbours because of increased trade relations and intermarriage stimulated by the fur trade.

5:20 The child will generate and test hypotheses regarding differences in usage of social organization. Example:

The use of the slave to prepare sea otter pelts rather than to do a variety of menial tasks was generated by the value placed on the pelts by the fur trader.

5:30 The child will generate and test hypotheses regarding differences in function of social organization. Example:

The change of the primary function of the chief to commercial leader was caused by the high value placed on sea otter pelts by the fur trader.

6:00 The child will make inferences based on findings by predicting the outcome in another time, place or for other individuals in a similar setting, regarding Nootka social organization in relation to specific activities and events.

6:10 The child will make inferences regarding the structure of social organization. Example:

If, with the coming of the fur trade, there was a redirection and intensification of the sea otter hunt, then the need for shark liver oil in the lumber industry was also a primary cause of redirection in the social structure of the Nootka people.
6:20 The child will make inferences regarding the usage of social organization. Example:

If the chief moved closer to the trading fort, his activities would increasingly involve pot-latching and exchanging pelts for beads.

6:30 The child will make inferences regarding the function of social organization. Example:

If only the hereditary chief could function as whaler, probably his eldest son would take his place at the time of his death.

7:00 The child will communicate to others, results of inquiry on Nootka social organization as related to specific activities and events.

7:10 The child will communicate to others, inquiry findings on the structure of social organization. Example:

A diagram can be drawn of the seating arrangement at a Nootka potlatch indicating the social position of each member.

7:20 The child will communicate to others, findings on the usage of social organization. Example:

A simulated anthropologist's report can be written on how an Indian's position on the social scale was used to determine what rights and privileges he was given.

7:30 The child will communicate to others, inquiry findings on the function of social organization. Example:

A chart can be made indicating the function of the chief, commoner and slave before and after the coming of the fur traders.
APPENDIX D

OBJECTIVES FOCUSED ON THE CONCEPT OF CHILD-
REARING AND UTILIZING THE ANALYTIC MODE OF INQUIRY
1:00 The child will engage in **observation** of documents, slides, pictures and simulated artifacts to obtain data on Nootka child rearing related to specific activities and events.

1:10 The child will demonstrate knowledge of data observed on the **structure** of child rearing. Example:

Nootka children were seldom physically punished. The accepted code of conduct together with the rights and duties of their class, were constantly impressed on them.

1:20 The child will demonstrate knowledge of data observed on the **usage** of Nootka child rearing. Example:

The Nootka Indians used group disapproval to ensure good behavior among their children.

1:30 The child will demonstrate knowledge of observed data on the **function** of Nootka child rearing. Example:

Nootka children engaged in games that functioned to teach skills necessary for adult life.

2:00 The child will **classify** data on child rearing related to specific activities and events of the Nootka Indians.

2:10 The child will demonstrate ability to classify data relevant to the **structure** of child rearing. Example:

Nootka education can be classified as formal, such as instruction given by adults through oral teaching and demonstration and informal such as learning from stories, play activities and learning from other children.

2:20 The child will demonstrate ability to classify data relevant to the **usage** of child rearing. Example:
Games were used in teaching the young. These games can be classified according to the skills they were used to teach - e.g. "play potlatches" were used to teach certain social skills and responsibilities, while spear-throwing games were used to teach hunting skills.

2:30 The child will demonstrate the ability to classify data relevant to the function of child rearing. Example:

Nootka education can be classified into areas that functioned to train the young in technologic, economic, social and religious activities.

3:00 The child will demonstrate ability to comprehend definition of terms of Nootka child rearing, by using them in oral or written descriptions of specific activities and events.

3:10 The child will use appropriate terms to label child rearing according to structure. Example:

- cradleboard, first-game feast, head presses, play feasts, play songs.

3:20 The child will use appropriate terms to label child rearing according to usage. Example:

- The ō'tul or first game feast was given by the parents and used to honour their son for his first successful hunt.

3:30 The child will use appropriate terms to label child rearing according to function. Example:

- The cradleboard functioned to create the feeling of security for the Nootka child.

4:00 The child will contrast two or more activities or events of Nootka child rearing.
4:10 The child will contrast **child rearing** by noting differences in **structure**. Example:

Children of the Nootka chief were told to be kindly and helpful to others. They were never to be arrogant or quarrelsome. They were taught to "take care" of their people by providing food, feasts, good will etc.. Children of low rank among the Nootka were told to play with the chief's children carefully. They were told to help the chief's children and never quarrel with or strike them.

4:20 The child will contrast **child rearing** by noting differences in **usage**. Example:

Before contact the Nootka children were taught to use the Nootka language. With the coming of the fur trade the children were also taught to use the Chinook jargon and English.

5:00 The child will **generate and test hypotheses** explaining differences in Nootka child rearing related to specific activities and events.

5:10 The child will generate and test hypotheses regarding differences in **structure** of **child rearing**. Example:

Nootka education stressed the learning of social behavior and ritual knowledge because the Nootka people felt they were important for the development of a good and useful member of the community.

5:20 The child will generate and test hypotheses regarding differences in **usage** of **child rearing**. Example:

Nootka adults encouraged the use of children's games such as "play feasts" and "shaman dances" because these games were a useful form of training for adult life.
5:30 The child will generate and test hypotheses regarding differences in function of child rearing. Example:

With the coming of the fur trade Nootka parents encouraged their children to learn Chinook jargon because a knowledge of this language functioned to enhance success in an economic activity, the fur trade.

6:00 The child will make inferences based on findings, by predicting the outcome in another time, place or for other individuals in a similar setting regarding Nootka child rearing in relation to specific activities and events.

6:10 The child will make inferences regarding the structure of child rearing. Example:

If a knowledge of the Chinook language was important in trading with non-Indians, probably the Nootka people would stress the learning of this language by their children.

6:20 The child will make inferences regarding the usage of child rearing. Example:

If oral instruction was the most important mode of education among the Nootka, probably scolding was used mainly to discipline their children.

6:30 The child will make inferences regarding the function of child rearing. Example:

If the combination of demonstration and practice functioned as important aspects of the learning process, probably the habit of listening to oral instruction made Nootka children and adults receptive to such teaching.
7:00 The child will communicate to others, results of inquiry on Nootka child rearing related to specific activities or events.

7:10 The child will communicate to others, inquiry findings into the structure of child rearing. Example:

Nootka games can be constructed or a Nootka "myth" containing a lesson for Indian children can be written.

7:20 The child will communicate to others, findings of inquiry into the usage of child rearing. Example:

Nootka games involving marksmenship with spears or bows can be demonstrated and an explanation of how these games were used to develop skills necessary for adult life can be given.

7:30 The child will communicate to others findings of inquiry into the function of child rearing. Example:

A section can be written in a simulated anthropological journal on the function of parents, siblings and grandparents in the education of Nootka children.
APPENDIX E
OBJECTIVES FOCUSED ON THE CONCEPT OF LANGUAGE AND UTILIZING
THE ANALYTIC MODE OF INQUIRY
The child will engage in observation of documents, slides, pictures and simulated artifacts to obtain data on Nootka language related to specific activities and events.

The child will demonstrate knowledge of data observed on the structure of language. Example:

Linguistically the Nootka are related to the Kwakiutl, the two groups forming what is known as the Wakashan language stock.

The child will demonstrate knowledge of data observed on the usage of language. Example:

The Nootka used the term "topa ti" to name all the various kinds of property which were family possessions and subject to certain rules of inheritance and ownership.

The child will demonstrate knowledge of observed data on the function of language. Example:

In the Nootka language, the repetition of a significant syllable functioned to describe numeration objects and frequency in action - e.g. "waw" means "to utter a shout", while "waw-waw" indicates a sustained speech.

The child will classify data on language related to specific activities and events of the Nootka Indians.

The child will demonstrate ability to classify data relevant to structure of language. Example:

The Nootka language can be classified into three dialectic divisions: Nootka proper, spoken from Cape Cook to the east shore of Barclay Sound; Nitinat, used further south at Pachiena and Nitinat Lake; and Makah, used at Cape Flattery.
2:20 The child will demonstrate ability to classify data relevant to the usage of language. Example:

Nootka words can be classified according to the endings used in the words. Trees and grasses end in "pt" while general end in "oop" and "toop".

2:30 The child will demonstrate the ability to classify data relevant to the function of language. Example:

The Nootka language functioned for communication within the tribe while the Chinook jargon functioned for communication in commerce with neighbouring tribes and non-Indian traders.

3:00 The child will demonstrate ability to comprehend definition of terms related to Nootka language by using them in oral or written descriptions of specific activities and events.

3:10 The child will use appropriate terms to label language according to its structure. Example:

Chinook jargon, topa ti, potlatch

3:20 The child will use appropriate terms to label language used for a specific activity. Example:

Chinook jargon was used primarily by the Nootka Indians and non-Indians during their trading activities.

3:30 The child will use terms to label aspects of language functioning in specific ways. Example:

Chinook jargon functioned to enhance the effectiveness of trade activities for the Indian and non-Indian.
The child will contrast Nootka language in two or more activities and events.

The child will contrast language by identifying differences in structure. Example:

The word "potlatch" is taken from Chinook jargon and is a corruption of the Nootka word "patshatl" meaning giving.

The child will contrast language by noting differences in usage. Example:

There was a difference in the usage of the term potlatch by the Indians and by the non-Indians. When the Indians used the word "potlatch" they thought of a considerable number of ceremonies and festivals each having its own Indian name. When the non-Indians used the term "potlatch" they thought mainly of the disposal of property.

The child will contrast language by noting differences in function. Example:

With the coming of the fur trade, many Indians were quick to adopt English words. The adoption of English words functioned to enhance the Indian's prestige and increase his effectiveness in commercial activities.

The child will generate and test hypotheses regarding differences in Nootka language related to specific activities and events.

The child will generate and test hypotheses regarding differences in structure of language. Example:

To many non-Indians, the Nootka language sounded harsh and rough because the pronunciation was done almost entirely with
the teeth and each syllable was articulated by pauses. The words abounded in consonants and words often ended in "tl" and "tz".

5:20 The child will generate and test hypotheses regarding differences in the usage of language. Example:

As the maritime fur trade progressed, Chinook jargon was increasingly used by non-Indians and the Nootka because they found it difficult to communicate with each other using their native language.

5:30 The child will generate and test hypotheses regarding differences in function of language. Example:

In Nootka society the oral expression of language functioned as the central core of education because the chief mode of instruction was lecturing, scolding and story telling.

6:00 The child will make inferences based on findings by predicting the outcome in another time, place or for other individuals in a similar setting regarding Nootka language in relation to specific activities and events.

6:10 The child will make inferences regarding the structure of language.

If Chinook jargon was made up of words from non-Indian groups such as the English, French and Hawaiian and from tribal dialects on the northwest coast, probably many Nootkan words were found in Chinook jargon.

6:20 The child will make inferences regarding the usage of language. Example:

If songs were used for informal amusement, in dances, in games, in potlatches, in secret prayers, in incantations and in ceremonies probably songs occupied an important place in the life of the Nootka.

6:30 The child will make inferences regarding the function of language. Example:
If language functioned as an estimate of the degree of civilization a tribe has attained, probably the language of the Nootka was considered poor by non-Indians since it could not have greater breadth than the ideas the Nootka themselves have been able to form.

7:00 The child will communicate to others, results of inquiry on Nootka language related to specific activities and events.

7:10 The child will communicate to others, inquiry findings into the structure of language. Example:

A dictionary of Nootka and Chinook words and their English meanings can be compiled.

7:20 The child will communicate to others, findings of inquiry into the usage of language. Example:

During class discussion and group work on the maritime fur trade, the child can use words taken from Chinook jargon - e.g. chuck-water.

7:30 The child will communicate to others, findings of inquiry into the function of language. Example:

The function of Noótka legends such as "The Transformer" and "Raven and Snipe", in the education of Nootka children can be explained.
APPENDIX F

OBJECTIVES FOCUSED ON THE CONCEPT OF WORLD VIEW AND UTILIZING THE ANALYTIC MODE OF INQUIRY
1:00 The child will engage in observation of documents, slides, pictures and simulated artifacts to obtain data on Nootka world view related to specific activities and events.

1:10 The child will demonstrate knowledge of data observed on the structure of world view. Example:

Facial painting for adornment, was universal among the Nootka. It was done by first applying a liberal coating of deer tallow. On top of this, dry ochre or charcoal was applied.

1:20 The child will demonstrate knowledge of data observed on the usage of world view. Example:

Among the Nootka Indians, the suspension of abalone-shell from pierced ears, and the wearing of abalone-shell rings or long smoothly finished bone pins through a hole in the septum of the nose, were used for personal adornment.

1:30 The child will demonstrate knowledge of observed data on the function of world view. Example:

Among some Nootka, there was a belief in a supernatural "Chief" who functioned as the provider of food and manufacturing materials.

2:00 The child will classify data on Nootka world view related to specific activities and events of the Nootka Indians.

2:10 The child will demonstrate ability to classify data relevant to the structure of world view. Example:

The Nootka "land of the dead" can be classified into two areas. One "land", under the guardianship of an unnameable Great Chief, was where those slain in battle were sent. The other "land" was controlled by the Spirit of Death and was underground. To this place the soul of sick persons wandered.
2:20 The child will demonstrate ability to classify data relevant to the usage of world view. Example:

Nootka religious beliefs can be classified into those that were used to explain the past, the present and the future.

2:30 The child will demonstrate the ability to classify data relevant to the function of world view. Example:

The Nootka shaman's functions can be classified as a healer, as a prophesizer, as a magician and as a caster-of-spells.

3:00 The child will demonstrate ability to comprehend definition of terms related to Nootka world view by using them in oral or written descriptions of specific activities and events.

3:10 The child will use appropriate terms to label world view according to structure. Example:

soul catcher, shaman, bathing ritual, spirit helpers.

3:20 The child will use appropriate terms to label world view used for specific activity. Example:

The shaman used the soul-catcher to suck out objects that were believed to cause disease in his patients. The shaman also used it to capture the wandering souls of sick persons.

3:30 The child will use appropriate terms to label world view functioning in specific ways. Example:

The function of the soul catcher was to aid the shaman in "curing" his patients.
4:00 The child will **contrast** Nootka world view in terms of two or more activities and events.

4:10 The child will contrast aspects of **world view** by identifying differences in **structure**. Example:

Prior to contact, Nootka personal adornments were made from natural products such as abalone shell and bone. With the coming of the white man, manufactured products became popular such as metal collars and brass buttons.

4:20 The child will contrast **world view** by noting differences in **usage**. Example:

The fur traders used spoons for eating but the Nootka used them for necklaces and for objects of personal adornment.

4:30 The child will contrast **world view** by noting differences in **function**. Example:

The Nootka believed that there were a multitude of deities whose function was to control the world. A supernatural "Chief" functioned as the provider of food sources and manufactured materials. The deities Moon and Sun functioned as providers of health and good luck.

5:00 The child will **generate and test hypotheses** explaining differences in Nootka world view related to specific activities and events.

5:10 The child will generate and test hypotheses regarding differences in **structure** of **world view**. Example:

At the beginning of the fur trade the Nootka believed the white men were Indians returning from the dead or creatures from the supernatural because of their manner of dress and the wonderful articles they possessed.
5:20 The child will generate and test hypotheses regarding differences in usage of world view. Example:

Although the metal knife played an important part in the preparation of food, at the beginning of the fur trade, the Nootka did not use metal knives to cut their salmon because they thought it would be offensive to their salmon deity.

5:30 The child will generate and test hypotheses regarding differences in function of world view. Example:

With the coming of the fur trade, pieces of metal were adopted for personal adornment because the Indians considered it attractive, and because it served as an indicator of the wearer's wealth, and prestige.

6:00 The child will make inferences based on findings by predicting the outcome in another time, place or for individuals in a similar setting regarding Nootka world view in relation to specific activities and events.

6:10 The child will make inferences regarding the structure of world view. Example:

If the Nootka were style conscious and easily influenced by the whims of fashion, probably the fur trader had difficulty predicting whether certain trade articles, such as beads and trinkets, would be popular for the season.

6:20 The child will make inferences regarding the usage of world view. Example:

If the Nootka believed that supernatural beings were sensitive to odours and uncleanness, probably the Indians used frequent bathing and fasting to achieve the purity they felt the spirits desired.
6:30 The child will make inferences regarding the function of world view. Example:

If the Nootka spent much of their free time in athletic games, guessing games and games of pure chance, probably games functioned as an important source of recreation.

7:00 The child will communicate to others, the results of inquiry on Nootka world view related to specific activities and events.

7:10 The child will communicate to others, inquiry findings into the structure of world view. Example:

A documented display of Nootka musical instruments can be made.

7:20 The child will communicate to others, findings of inquiry into the usage of world view. Example:

An explanation can be given of how the shaman's paraphernalia was used in curing of his patients.

7:30 The child will communicate to others findings of inquiry into the function of world view. Example:

The function of carved art motifs on Nootka storage boxes, clothing, screens, totem poles, etc. can be explained.
APPENDIX G

OBJECTIVES FOCUSED ON THE CONCEPT OF CULTURE CHANGE AND UTILIZING THE ANALYTIC MODE OF INQUIRY
1:00 The child will engage in observation of documents, slides, pictures, and simulated artifacts to obtain data on Nootka culture change related to specific activities and events.

1:10 The child will demonstrate knowledge of data observed on the structure of culture change. Example:

With the coming of the maritime fur-trade inter-tribal trade was enlarged and extended.

1:20 The child will demonstrate knowledge of data observed on the usage of culture change. Example:

With the coming of the maritime fur trade, some of the chiefs first in contact with the coastal traders used the fur trade to strengthen their economic and social positions and to manipulate the new source of wealth to their own advantage.

1:30 The child will demonstrate knowledge of observed data on the function of culture change. Example:

The fur trade brought increased wealth which functioned to strengthen existing social and economic systems among the Nootka Indians.

2:00 The child will classify data on culture change related to specific activities and events of the Nootka Indians.

2:10 The child will demonstrate ability to classify data relevant to the structure of culture change. Example:

The Nootka "borrowed" many elements from the white trader's culture that could be classified under the five aspects of culture - e.g. technology - guns; child rearing - writing; world view - fashion; language - English.

2:20 The child will demonstrate the ability to classify data relevant to the usage of culture change. Example:
With the coming of the fur trade, certain elements of Nootka culture remained in use, while other elements were discarded because the fur traders provided better ways and means for doing things. Nootka cultural elements can be classified into those that remained in use and those that were no longer used - e.g. with the introduction of iron blades, shell blades were no longer used for hunting.

2:30 The child will demonstrate the ability to classify data relevant to the function of culture change. Example:

The maritime fur trade brought culture changes to the Nootka Indians that can be classified according to those changes that functioned to enhance existing social and economic systems, e.g. increased wealth, and those changes that functioned to destroy existing social and economic systems - e.g. disease, liquor, increased warfare.

3:00 The child will demonstrate ability to comprehend definition of terms of Nootka culture change by using them in oral or written descriptions of specific activities and events.

3:10 The child will use appropriate terms to label culture change according to structure. Example:

metal collars, button blankets, borrowing, imitation.

3:20 The child will use terms to label culture changed used for a specific activity. Example:

With the coming of the fur trade the "button blanket" was used as a popular garment for formal wear.

3:30 The child will use terms to label aspects of culture change functioning in specific ways. Example:

The "copper or iron collars" worn by the chiefs functioned primarily as a symbol of prestige.
The child will contrast Nootka culture change in terms of two or more activities and events.

The child will contrast aspects of culture change by identifying differences in structure. Example:

After the fur traders arrived, the Indian population decreased significantly with the introduction of white man's diseases such as measles.

The child will contrast culture change by noting differences in usage. Example:

With the coming of the fur trade, potlatches were used more frequently and became more lavish than in the past.

The child will contrast culture change by noting differences in function. Example:

Before the fur trade, most of the hunter's time was spent in subsistence activities. After the fur trade he spent most of his time in an economic activity, killing sea otter for trade.

The child will generate and test hypotheses regarding the differences in Nootka culture change related to specific activities and events.

The child will generate and test hypotheses regarding differences in structure of culture change. Example:
With the coming of the fur trade the traditional bases of power were breaking down. Not only were the supernatural sanctions for the privileged secular status minimized, but the religious functions of privileged status were weakened because of a general undermining of inherited power.

5:20 The child will generate and test hypotheses regarding differences in usage of culture change. Example:

The Nootka Indians were eager to use the white trader's goods because they increased prestige in the native system and gave the Indians an opportunity to maintain in their own eyes, an equivalence with non-Indians.

5:30 The child will generate and test hypotheses regarding differences in function of culture change. Example:

The new wealth brought by the fur trade functioned to enhance previous cultural forms because of the significance of wealth and the way that it permeated every phase of native life. The importance of barter, of trade, of property exchange, of wealth and all its social functions served to minimize the novelty of commerce with Europeans.

6:00 The child will make inferences based on findings by predicting the outcome in another time, place or for other individuals in a similar setting regarding Nootka culture change in relation to specific activities and events.

6:10 The child will make inferences regarding the structure of culture change. Example:

If the maritime fur trade was confined to a seaborne commerce, probably the trade brought goods, new materials and new techniques without the disruptive effects of colonization.
6:20 The child will make inferences regarding the usage of culture change. Example:

If the Nootka used the non-Indians' clothing, and adopted their customs, language and habits, the Indians probably did so in an effort to imitate white men.

6:30 The child will make inferences regarding the function of culture change. Example:

If the fur trader functioned as a supplier of necessary items, probably the Indians would become dependent upon him.

7:00 The child will communicate to others, results of inquiry on Nootka culture change related to specific activities and events.

7:10 The child will communicate to others, inquiry findings into the structure of culture change. Example:

Models can be made of the Nootka houses before and after the fur trade. The building materials and the house construction can be shown.

7:20 The child will communicate to others, inquiry findings into the usage of culture change. Example:

A series of sketches with captions can be made on the differences in usage of Indian clothing with the coming of the fur trade. The focus can be on the changes caused by the introduction of the "two and a half point" blanket.

7:30 The child will communicate to others, inquiry findings into the function of culture change. Example:
An anthropological report can be written on the differences in function of the potlatch before and after the fur trade.
APPENDIX H

OBJECTIVES FOCUSING ON THE CONCEPT OF SOCIAL ORGANIZATION AND UTILIZING THE INTEGRATIVE MODE OF INQUIRY
4:00 The child will do a **running comparison** of social organization through participation in related activities and events in Nootka Indian lives.

4:10 Through a running comparison the child will identify elements of **structure** of social organization. Example:

The student will select the role of child, slave, commoner, woman or chief for a simulation.

4:20 Through a running comparison the child will identify elements of **usage** of social organization. Example:

In a simulation, the child will participate in the activities he would be engaged in if he was the slave.

4:30 Through a running comparison the child will identify elements of **function** of social organization. Example:

Through simulating a potlatch, the child will take part in activities which functioned to enhance the social status of the host.

5:00 The child will make comments or actions, expressing feelings and understandings which demonstrate that **integration** of affective and cognitive response to Nootka social organization is taking place.

5:10 In selecting the role of child, slave, commoner, woman or chief, the child will expresssfeeling and understanding of the identity of that person in Nootka social organization. Example:

A girl playing the role of a Nootka woman might say, "I wish I was a man so that I could go on the whale hunt too."
5:20 In selecting the role of child, slave, commoner, woman or chief, the child will express feeling and understanding of the usage of that person in Nootka social organization. Example:

A boy playing the role of slave might say, "I'll work hard and skin as many sea otter as I can, then the chief might set me free."

5:30 In selecting the role of child, slave, commoner, woman or chief, the child will express feeling and understanding of the function of that person in Nootka social organization. Example:

A boy playing the role of a chief giving a potlatch might say, "I'll give away five hundred blankets so I can become the most powerful chief."

6:00 The child will make inferences based on participation experience, predicting feelings and understandings regarding Nootka social organization in another time and place or for other individuals in similar setting.

6:10 The child will make inferences regarding feelings and understandings of structure of social organization. Example:

The child playing the role of a Nootka commoner at the time of the missionaries might say, "If I can figure out a way to get shark liver oil for lubrication in the saw mills then I can get ahead of Towick, my rival."

6:20 The child will make inferences regarding feelings and understandings of usage of social organization. Example:

The child, playing the role of a chief,
commenting on his activities in the tribe might say, "I wish the fur traders had not brought the guns. We lose so many men when we fight."

6:30 The child will make inferences regarding feelings and understandings of function of social organization. Example:

The child playing the role of chief commenting on his protection function might say, "If I'm going to save my people from enemy attacks, I think we had better move nearer to the fort."

7:00 The child will communicate to others feelings and understandings of Nootka social organization related to specific activities and events.

7:10 The child will communicate to others, feelings and understandings regarding the structure of social organization. Example:

In a simulation involving the preparation for a potlatch, the child can communicate the various roles of chief, commoner, woman, slave and child.

7:20 The child will communicate to others, feelings and understandings regarding the usage of social organization. Example:

In a diary entry of a slave the child can express feelings of pride in performing activities such as skinning a large number of sea otter in one day.

7:30 The child will communicate to others, feelings and understandings regarding the function of social organization. Example:

A child can take part in a dramatization of the role of a chief, after the coming of the fur trader, making the decision to relocate the village for protection.
APPENDIX I
OBJECTIVES FOCUSING ON THE CONCEPT OF TECHNOLOGY
AND UTILIZING THE INTEGRATIVE MODE OF INQUIRY
4:00 The child will do a running comparison of technology through participation in related activities and events in Nootka Indian lives.

4:10 Through a running comparison the child will identify elements of structure of technology. Example:

The student will make the tools necessary for a simulation of the sea otter hunt.

4:20 Through a running comparison the child will identify elements of usage of technology. Example:

In a simulation, the child will use the tools as he would if he was a sea otter hunter.

4:30 Through a running comparison the child will identify elements of function of technology. Example:

Through role playing the preparation of a Nootka family meal, the child will participate in activities which functioned in providing subsistence for the Nootka people.

5:00 The child will make comments or actions expressing feelings and understandings which demonstrate that integration of affective and cognitive response to Nootka technology is taking place.

5:10 By working with the tools, weapons, food, clothing, shelter, transportation, etc., of the Nootka Indian, the child will express feeling and understanding of the structure of technology. Example:

A child playing the role of a Nootka carver might say, "I wish I had a metal blade instead of this shell that I've been using for my D-adze."
By working with the tools, weapons, food, clothing, shelter, transportation, etc., of the Nootka Indian, the child will express feeling and understanding of the usage of technology. Example:

A child playing the role of a Nootka Indian might say, "It was a good idea to trade my sea otter pelt for this metal chisel. Now I can use it to carve cedar more easily and more neatly."

By working with the tools, weapons, food, clothing, shelter, transportation etc., of the Nootka Indian, the child will express feeling and understanding of the function of technology. Example:

A child playing the role of a Nootka Indian who is using a gun for hunting might say, "This gun makes it much easier for me to kill animals. Now I can provide my family with all the food we need."
APPENDIX J

OBJECTIVES FOCUSING ON THE CONCEPT OF CHILD
REARING AND UTILIZING THE INTEGRATIVE MODE OF INQUIRY
4:00 The child will do a running comparison of child rearing through participation in related activities and events in Nootka Indian lives.

4:10 Through a running comparison the child will identify elements of structure of child rearing. Example:

A child will learn one of the household skills a Nootka girl would be taught - e.g. preparing cedar bark for weaving, preserving cod, weaving mats.

4:20 Through a running comparison the child will identify elements of usage of child rearing. Example:

In a role play of a Nootka housewife, the child will use the skill he has learned to produce a finished product - e.g. cedar bark mat, button blanket, smoked cod.

4:30 Through a running comparison the child will identify elements of function of child rearing. Example:

Through dramatizing Nootka children's games, the student will participate in activities which functioned primarily as a means of teaching skills necessary for subsistence.

5:00 The child will make comments or actions expressing feelings and understandings which demonstrate that integration of affective and cognitive response to Nootka child rearing is taking place.

5:10 Through playing the role of a Nootka child, the student will express feeling and understanding of the structure of Nootka child rearing. Example:

A child playing the role of a Nootka girl might say, "I wish I was a boy so that I could learn exciting things like fishing
for salmon and herring, and hunting the sea otter and the seal."

5:20 Through playing the role of a Nootka child, the student will express feeling and understanding of the usage of Nootka child rearing. Example:

A student playing the role of a Nootka youth in a simulation of the sea otter hunt might say, "I am glad my father taught me how to use this gun. Now I can kill many sea otter."

5:30 Through playing the role of a Nootka child, the student will express feeling and understanding of the function of Nootka child rearing.

A child playing the role of a Nootka boy or girl learning to become a shaman might say, "I will practice hard and learn my songs, prayers and rituals so that I can get many spirit helpers who will aid me in becoming a good shaman."
APPENDIX K
OBJECTIVES FOCUSING ON THE CONCEPT OF LANGUAGE
AND UTILIZING THE INTEGRATIVE MODE OF INQUIRY
4:00 The child will do a running comparison of language through participation in related activities and events in Nootka Indian lives.

4:10 Through a running comparison, the child will identify the elements of structure of language. Example:

In the Nootka language most instruments such as tools end in "ik" - e.g. hissik means saw while kleetchaik means rudder. The child will learn some Nootka names for tools for use in a role play.

4:20 Through a running comparison, the child will identify the elements of usage of language. Example:

In a simulation of a fur trading session, the child will use some Chinook words that the Nootka Indians employed while dealing with non-Indians.

4:30 Through a running comparison, the child will identify the elements of function of language. Example:

In a dramatization of a spirit encounter, the child will employ the ritual words "hai! hai! hai!", which functioned to assure submission of the spirit and the enhancement of the Indian's spiritual power.

5:00 The child will make comments or actions expressing feelings and understandings which demonstrate that integration of affective and cognitive response to Nootka language is taking place.

5:10 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the structure of language. Example:
A child playing the role of a Nootka Indian who is trying to master the Chinook language might say, "I'm glad many Nootka words are found in the Chinook language. It certainly makes it easier to learn to speak Chinook."

5:20 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the usage of language. Example:

The child playing the role of a Nootka Indian who trades with non-Indians might say, "All the white men look the same to me. I will use the words, 'Boston Men' and 'King George Men' to help me tell them apart."

5:30 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the function of language. Example:

A child playing the role of a Nootka Indian might say, "I will speak the Chinook language with the white traders. Since none of the other people of my tribe can speak this language, I will be able to make the best deal and become the wealthiest."
APPENDIX L

OBJECTIVES FOCUSING ON THE CONCEPT OF WORLD VIEW AND UTILIZING THE INTEGRATIVE MODE OF INQUIRY
4:00 The child will do a running comparison of world view through participation in related activities and events in Nootka Indian lives.

4:10 Through a running comparison the child will identify elements of structure of world view. Example:

The Nootka Indians had many rituals associated with many aspects of life including the sea otter hunt, the whale hunt, the welcoming of the first game etc., The child will select a ritual and will prepare it for a role play.

4:20 Through a running comparison the child will identify elements of usage of world view. Example:

In a simulation, the child, assuming the role of a hunter, will use the rituals necessary for the preparation of the sea otter hunt.

4:30 Through a running comparison the child will identify elements of function of world view. Example:

Through a dramatization of the first salmon rites, the child will participate in activities which functioned primarily in providing sustenance.

5:00 The child will make comments or actions expressing feelings and understandings which demonstrate that integration of affective and cognitive response to Nootka world view is taking place.

5:10 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the structure of world view. Example:

A child playing the role of a Nootka Indian might say, "I wish I were a shaman, then I'd know all about the spirits and have more spirit helpers than anyone in my tribe."
5:20 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the usage of world view. Example:

A child playing the role of a Nootka Indian seeking spirit helpers might say, "I will beat my drum and use my songs to make the spirits come closer to me and tell me their secrets."

5:30 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the function of world view. Example:

The child playing the role of a Nootka chief who has received non-Indian clothing in trade for sea otter pelts might say, "I will wear this bright red coat with the brass buttons, put on a powdered wig and carry this shiny sword. When I am dressed like this, the people of my tribe will think that I am the best dressed, wealthiest and most powerful chief on the coast."
APPENDIX M
OBJECTIVES FOCUSING ON THE CONCEPT OF CULTURE CHANGE
AND UTILIZING THE INTEGRATIVE MODE OF INQUIRY
4:00 The child will do a running comparison of culture change through participation in related activities and events in Nootka Indian lives.

4:10 Through a running comparison, the child will identify elements of structure of culture change among the Nootka Indians. Example:

For a role play, the student will construct wood-carving tools as they would appear before and after the fur traders arrived.

4:20 Through a running comparison the child will identify elements of usage of culture change among the Nootka Indians. Example:

In a simulation of the sea otter hunt, before and after the fur traders arrived, the student will use the tools, weapons and techniques Indians of the time utilized.

4:30 Through a running comparison the child will identify elements of function of culture change among the Nootka Indians. Example:

By taking part in a simulation of the sea otter hunt before and after the fur traders arrived, the child will be participating in activities that changed from a primarily subsistence function, to an economic function.

5:00 The child will make comments or actions expressing feelings and understandings which demonstrate that integration of affective and cognitive response to Nootka culture change is taking place.

5:10 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the structure of culture change. Example:
A child, playing the role of a Nootka woman might say, "I like the cloth the white traders has brought. It is light, comfortable, warm and colourful. I'm going to make all my family's clothing for us."

5:20 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the usage of culture change. Example:

A child, playing the role of a Nootka chief, might say, "I am happy the white traders want sea otter pelts. I am no longer going to use these pelts to make robes. Instead, I think I will trade them for the many wonderful things the white man has to offer."

5:30 Through playing the role of a Nootka Indian, the child will express feeling and understanding of the function of culture change. Example:

A child playing the role of a Nootka hunter might say, "Before the fur traders arrived I spent most of my time hunting for food for my family. Now, I spend most of my time hunting for sea otter so that I can trade with the white man and grow rich."
APPENDIX N
AFFECTIVE OBJECTIVES FOCUSED ON ATTITUDE
TOWARDS SOCIAL STUDIES
1:00 The child will **receive** social studies inquiry experiences focused upon the Nootka Indians. Example:

The child will be willing to take part in social studies inquiry experiences.

2:00 The child will **respond** to social studies inquiry experiences focused upon the Nootka Indians. Example:

The child will wish to take part further in the simulation games.

3:00 The child will **value** social studies inquiry experiences focused upon the Nootka Indians. Example:

The child will demonstrate preference to taking part in social studies inquiry experiences as opposed to working in other subject areas.

4:00 The child will **organize** response to social studies inquiry experiences focused upon the Nootka Indians. Example:

The child will make statements regarding the nature of social studies inquiry experiences and give reasons for responding to them.

5:00 The child will **internalize** the value of social studies inquiry experiences focused upon the Nootka Indians.
APPENDIX O
A DESCRIPTION OF THE TEACHER-MADE-SIMULATION GAMES USED IN TREATMENT B
THE OTTER BOX

In this simulation the children assumed the role of a Nootka Indian engaged in hunting the sea otter and in trading the pelts. The children "hunted" four times, in 1783, 1795, 1810 and 1823, to note changes that had taken place.

Working in groups of four, the children assumed the role of a Nootka Indian - the hunter, the whaler, the warrior or the artist. The students studied their Role Cards for 1783. They discovered that in 1783 the Indians welcomed the fur trade because it brought the precious metals that had so many uses and functions such as making better tools, weapons and enhancing wealth, prestige and social status. Mainly, out of a desire for metal, the four Indians hunted the sea otter. Using their "primitive" nets, clubs stone-bladed tools etc., they went on a seven day hunt.

A brown "Otter Box" containing Hunt Result Cards for 1783 was given to each group of four students. Taking turns, the students reached into the box and selected a Hunt Result Card which described their success on that day's hunt e.g. "You spotted a sea otter but it was too far away for you to kill it" or "You were able to net and club one sea otter." The students received a Pelt Card for each successful catch and daily record of the number of animals taken was kept by each student for each hunt year indicating the number of animals taken and the reasons for the hunt results. For the year 1783 most students obtained only two or three pelts because of "primitive" equipment and because of lack of experience of some of the hunters. A class discussion of the hunt followed.

The children were then given a Cargo and Price List for 1783. The value of metal was high - two flat iron blades per pelt. From the Price List of sixteen items they selected those they most desired and traded their sea otter pelts. A class discussion of the items selected, plus their uses, and the changes they would produce, followed the trading session.

The same procedures, but using new Hunt Result Cards, Cargo and Price Lists, etc., were followed for the hunt in 1795, 1810 and 1823. The children kept their roles and "lived" through a forty year period by
studying each year's Role Card.

By 1795 they obtained metal tools and weapons and were able to kill more sea otter. By 1810 they spent more time hunting and with the use of the gun were able to obtain many sea otter pelts. The Indians became very wealthy and traded their pelts for a variety of goods including food and clothing. They became increasingly dependent on the fur trader to supply their family's needs. By 1823, however, due to over-hunting, the sea otter became almost extinct. Although the value of the pelts was very high, little trading was carried on since the Indians could obtain few if any pelts. To the dismay of the Indians the maritime fur trade was over.

To check the validity of the game, the students studied the historical documents from the journals of the maritime fur traders.

THE BROWN BAG

The Brown Bag was incorporated into the Otter Box Game. Following the hunt for 1810 each group of four students received a Brown Bag containing simulated artifacts - molasses, whiskey, beads, cloth, needles, rice, chisels, soap, sheet copper. These items were supposed to be some of the goods they received in trade. Each child decided which member of his family - himself, his wife, his children or his slaves would receive each item. The child described or demonstrated how the item was used and how it changed the possessor's way of life. A class discussion of the items followed.

THE LAND HUNT GAME

For this simulation, the children working in groups of four, played the role of Indians engaged in the hunt of fur-bearing land animals. This board game utilized dice, markers and pelt cards for indicating the number of animals taken. As the children played the game they followed instructions on certain squares or if they landed on a Chance or Tumpline Card square they selected the appropriate card. The cards and squares indicated the problems and the successes of the hunt e.g. "Your canoe over-turned and you lost a
pelt. Give up one pelt card", or "You trapped two beaver today. Take
two pelt cards!" The student that arrived first at the trading post
with his pelt cards received the best price and, therefore, was the winner.
A class discussion of the problems associated with the hunt, and the impor-
tance of the hunt to Indian families took place after the game.

THE SLIDE GAME

Working in groups of four, the students were given fifteen slides
and individual viewers. The slides were of goods obtained from the trading
post and included - pipes, candles, cloth, wool, dishes, pots, flour, salt,
sugar, bread, crackers, tobacco, traps, knives, scissors. The child deter-
mined which member of his family would use each item and how the item changed
their life. Each child recorded his conclusions on a Slide Summary Sheet.
A class discussion then followed on the effects the trade items had on Nootka
Indian Life.

END-OF-LIFE

The purpose of this exercise was to familiarize the children with
some of the negative effects of the fur trade. For each child to determine
how he ended his Indian "life", each group of four students was given six
End of Life Cards. Each child selected one card at random. Four of the
cards explained that the Indian was affected by liquor, was involved in
fights or was infected by non-Indian diseases - measles, T.B., or chicken
pox. These cards indicated the Indian and members of his family died or
were permanently impaired. The remaining two cards indicated the Indian
died of old age. A class discussion of the End of Life Cards and Indian
Population Statistics (1835-1963) followed this exercise.
APPENDIX P
A DESCRIPTION OF STUDENT-MADE-SIMULATION GAMES
USED IN TREATMENT C
THE CULTURE CHANGE GAME

This card game aimed at giving practice to learnings on culture change. The deck contained fifty cards divided into five categories derived previously in earlier social studies units: a) technology b) social organization c) language d) child rearing e) world view. There were ten cards in each category and each card contained a different sentence describing culture change as related to one of the above concepts e.g. "We use metal blades for our tools" (technology). The students read the sentence and determined what category the card belonged. Working in threes, the children started with five cards each. Taking turns to play, each student threw a card away and selected a new one. The children had to obtain three or more of a kind before the cards could be put down. The first student to clear his hand was the winner.

THE SEA OTTER HUNT GAME

The Sea Otter Hunt was a board game similar to The Otter Box and covered the same forty year period. The game traced changes in Nootka technology associated with the sea otter hunt. Working in groups of four, the students played the game with dice, markers and Chance, Trap and Pelt Cards. Many squares were marked Chance or Trap indicating that the appropriate card had to be selected. These cards showed hunting results, problems, etc. The children played the game four times, using a new Chance and Trap Card for each hunt.

For the hunt in 1783 the children, playing the role of Indians, used "primitive" tools and weapons and as a result, obtained only a few pelts. For the hunt in 1795 they used metal bladed tools and were able to obtain more pelts. In 1810 with the introduction of the gun the hunters experienced great success. By 1823, however, the hunters had little success because the sea otter was almost extinct due to overhunting.
THE TRADE AND POTLATCH GAME

This game was used in conjunction with the Sea Otter Hunt Game and tried to show how the sea otter pelt increased in value; what the Indians received in trade for their pelts and how their new wealth was used i.e. potlatching. Following the hunt for 1783 the children, playing the role of Indians, "traded" their pelt cards, receiving one chisel card for one pelt card. The children then held a potlatch to determine who had the greatest wealth in each group. For the hunt in 1799 the hunters received five chisel cards for one pelt card and a potlatch was held again. The same procedure was followed for the 1810 and the 1823 hunts except blanket cards replaced chisel cards. In 1810 they received ten blanket cards for each pelt card while in 1823 they received twenty-five blanket cards. At the end of the game a class potlatch was held where each group pooled their wealth to determine which group was the wealthiest and thus the most powerful.

THE FAMILY GAME

For this game the children assumed the roles of Indian family members who must select trade items that would be most useful to them. Working in groups of four, the students each received and studied a Role Card for the man, the woman, the child or the slave. From a bag of simulated artifacts, the children selected the trade items appropriate for their role. They then demonstrated or explained how they would use the item and how it would change their life.

THE CLASSIFICATION GAME

This game aimed at reinforcing learning on culture change associated with the five concepts of culture. Working in groups of four, the students classified fifteen slides of trade items according to the changes these items would produce in one of the five areas of Nootka culture: technology, social
organization, etc. The children were timed and the group with the greatest number of slides correctly classified was the winner.

THE DEATH GAME

The "Death Game" required a dice and a series of fifteen "Death Cards". Each card described some negative effect of the fur trade such as increased fighting and increased illness due to infection with white man's diseases.

Working in groups of four, the students took turns rolling the dice. If an odd number appeared, the student had to select a "Death Card" which he read aloud to the group. Usually, the possessor of the card "died" or was permanently impaired. The game was played until three of the four players had "died". The remaining player was the winner, and lived to an old age.
APPENDIX Q
CHILDREN'S COMMENTS ON TREATMENT A
Children's comments on this major organizing center which utilized predominantly the analytic mode of inquiry included:

"I like learning about Indians but I wish we didn't have to read those documents."

"It was fun looking at the slides with those small viewers."

"I like colouring the pictures best."

"I think teachers should use more of these things (simulated artifacts) to teach Social Studies. They make learning more interesting."
APPENDIX R
CHILDREN'S COMMENTS ON TREATMENT B
Children's comments on this major organizing center utilizing predominantly the integrative mode of inquiry and teacher-made-simulation included:

"What are we going to do today? I hope we're going hunting again."

"These games make learning about Indians a lot of fun."

"I really liked being an Indian only I felt kinda let down when I 'died' at the end."

"I felt bad when I didn't get as many sea otter on that last hunt. Everything was going so well till then."

"The Indians sure had a rough time."

"I think I learned better with these games. I don't like reading and answering questions all the time like we usually do in social studies."
APPENDIX S

CHILDREN'S COMMENTS ON TREATMENT C
Children's comments on this major organizing center utilizing predominantly the integrative mode of inquiry and student-made-simulations included:

"The Indians sure had a lot of problems. Maybe the fur traders shouldn't have come. Then maybe so many Indians wouldn't have died."

"You really have to know a lot about the Indians before you can make up the games."

"I like makin' up the games better than playing them."

"I like the card game. Let's play it over."

"It took alot of work to make up the games but it was fun."
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