

A REPORT ON THE DEVELOPMENT OF INSTRUCTIONAL
UNITS ENTITLED "LOGGING WITH THE A.N.D.
COMPANY, 1909-1960" AND "LOGGING WITH
PRICE (NEWFOUNDLAND): SUMMER OPERATIONS"

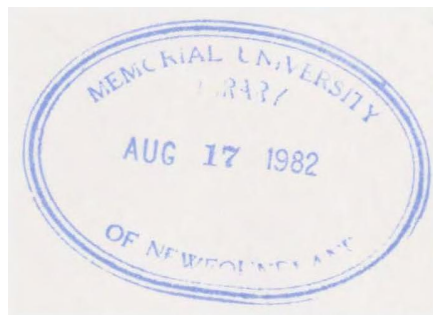
CENTRE FOR NEWFOUNDLAND STUDIES

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A Report on The Development
of Instructional Units Entitled
"Logging with the A.N.D. Company, 1909-1960" and
"Logging with Price (Newfoundland): Summer Operations"

by



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ABSTRACT

This report was submitted in conjunction with the slide/tape productions, Logging with the A.N.D. Company 1909-1960 and Logging with Price (Nfld.): Summer Operations.

The programs were originally produced to fulfill the need for Newfoundland instructional materials on logging in the Grade Six geography program.

In the initial production stages the programs were evaluated by professional foresters, former loggers, a classroom teacher, and the developer's faculty advisor.

For the Formative Evaluation the programs were tested with Grade Six classes at elementary schools in Buchans and Grand Falls. The testing results showed that the desired levels of learning had not been achieved. The developer and faculty advisor reexamined the programs and revisions were made.

In the Summative Evaluation the developer tested the programs with a Grade Five class in Goulds. The results were encouraging, but the desired level of learning was not fulfilled. Nevertheless, based on the testing results, the positive reactions of the audiences, and the suggested use of the programs by the classroom teacher in Goulds, the developer recommends that the programs be used as an integral part of the logging unit in the Grade Five geography program.

ACKNOWLEDGEMENTS

For the completion of this project the developer wishes to thank: Dr. Garfield Fizzard, project supervisor for his advice and encouragement; the Exploits Valley Integrated School Board for use of photographic facilities at the District Media Centre; the teachers and students at Grand Falls and Buchans Elementary Schools and St. Kevin's, Goulds for their cooperation in the testing; Mrs. Donna Jones, typist.

The developer is deeply grateful to the following: Price (Nfld.) for access to its picture collection and logging camps; the professional advice of foresters Gerard Griffin, Max Squires, and Harvey Taylor; the many active and retired loggers, including my father, who told their story of old time logging.

This project would not have been completed without the advice, patience, and cooperation of the narrator of the programs, my wife, Dianne.

TABLE OF CONTENTS

| Chapter | | Page |
|---------|---|------|
| I | INTRODUCTION | 1 |
| | Brief History of the Use of the Forest In Newfoundland . | 1 |
| | Forestry in the Curriculum | 10 |
| II | NEEDS ASSESSMENT | 12 |
| | Statement of Needs | 12 |
| | Alternative Solutions | 13 |
| | Survey of Available Materials | 13 |
| | Decision to Develop the Instructional Materials | 18 |
| III | LEARNER ANALYSIS | 21 |
| IV | TASK ANALYSIS | 23 |
| | Assumptions and Entry Behavior | 23 |
| | Behavioral Objectives | 24 |
| V | RATIONALE FOR CHOICE OF MEDIA | 26 |
| VI | DEVELOPMENT PROCEDURES AND FORMATIVE EVALUATION | 28 |
| | Initial Productions | 28 |
| | Evaluation by Content Specialists | 30 |
| | Evaluation by Media Specialist | 30 |
| | Evaluation by Learning Specialist | 31 |
| | Classroom Evaluation - Logging with the A.N.D. Company 1909-1960 | 33 |
| | Analysis of the Results | 35 |

| Chapter | | Page |
|---------|---|------|
| | Conclusion | 40 |
| | Classroom Evaluation - Logging with Price (Nfld.): Summer Operations | 41 |
| | Analysis of the Results | 43 |
| | Conclusion | 49 |
| | Review of the Results of the Classroom Evaluation ... | 50 |
| VII | SUMMATIVE EVALUATION | 52 |
| | Logging with the A.N.D. Company 1909-1960 | 52 |
| | Analysis of the Results | 53 |
| | Conclusion | 58 |
| | Logging with Price (Nfld.): Summer Operations | 59 |
| | Analysis of the Results | 60 |
| | Conclusion | 64 |
| VIII | CONCLUSION AND RECOMMENDATIONS | 66 |
| | Conclusion | 66 |
| | Recommendations | 69 |
| | BIBLIOGRAPHY | 72 |
| | APPENDICES | 75 |
| | Appendix A: Pretest-Posttest Logging with the A.N.D. Company 1909-1960 | 76 |
| | Appendix B: Pretest-Posttest Logging with Price (Nfld.): Summer Operations | 79 |
| | Appendix C: Pretest-Posttest Logging with the A.N.D. Company 1909-1960 | 83 |

| Chapter | | Page |
|-------------|---|------|
| Appendix D: | Discussion Statements | 86 |
| Appendix E: | Pretest-Posttest Logging with Price (Nfld.): Summer Operations | 88 |
| Appendix F: | Discussion Statements | 91 |
| Appendix G: | Slide/Tape Production "Logging with the A.N.D. Company 1909-1960" (Under Separate Cover) | 93 |
| Appendix H: | Slide/Tape Production "Logging with Price (Nfld.): Summer Operations (Under Separate Cover) | 94 |

LIST OF TABLES

| Table | | Page |
|-------|---|------|
| 1 | Test Items and Corresponding Behavioral Objectives | 34 |
| 2 | Percentage of Students With Percentage of Items Correct on Posttest | 35 |
| 3 | Item Analysis | 37 |
| 4 | Comparison of Pretests | 38 |
| 5 | Comparison of Posttests | 39 |
| 6 | Comparison of Gain Scores | 40 |
| 7 | Test Items and Corresponding Behavioral Objectives | 42 |
| 8 | Percentage of Students With Percentage of Items Correct on Posttest | 44 |
| 9 | Item Analysis | 46 |
| 10 | Comparison of Pretests | 47 |
| 11 | Comparison of Posttests | 48 |
| 12 | Comparison of Gain Scores | 49 |
| 13 | Percentage of Students With Percentage of Items Correct on Posttest | 55 |
| 14 | Item Analysis | 57 |
| 15 | Percentage of Students With Percentage of Items Correct on Posttest | 61 |
| 16 | Item Analysis | 63 |

CHAPTER I

INTRODUCTION

One of the aims of the Social Studies Curriculum in elementary schools of Newfoundland is to have the students learn to know their community, province and country. The importance of the aims is sometimes difficult to achieve because of the lack of readily accessible materials. This report is a description of the development of instructional materials on an important aspect of the economic life of Newfoundland - logging operations associated with the paper mill in Grand Falls.

In this chapter the use of the forest in Newfoundland is briefly described, followed by a consideration of the place of forestry in the social studies curriculum in elementary schools.

Brief History of the Use of the Forest in Newfoundland

Early Use of the Forest

The abundance of fish was the major attraction that brought fishermen from coastal Europe to the shores of Newfoundland (Prowse, 1895).

By the early sixteenth century these fishermen set out for Newfoundland each spring, and set up shore bases in coves along the east coast of the island. The forest, which covered much of the coastal areas, provided the fishermen with the means of building warves, flakes and other local necessities for the fishing season.

A considerable number of trees were used in this way, as many of the structures were of temporary nature, with the fishermen frequently using the facilities for only one season and rebuilding in a different location the following season.

The forest also provided the fuels for the fires of the fishermen during their stay on the island.

Some of the migrating fishermen took up permanent residence on the island and became forefathers of most of the present population on the island. These settlers used the timber from the coastal forest to build their homes, sheds, warves, stages and boats. They also used the forest as a source for firewood.

The Sawmill Industry 1800's to 1903

Small sawmill operations began in Newfoundland around the middle of the nineteenth century (Hiller, 1980). The products from the mills were used mostly for the local market. By the 1860's-1870's, sawmills were set up at various points in Notre Dame Bay. The operators of these mills were gaining access to the timber that grew at the head of the bays and at the mouths of rivers.

The trans-island railway, which was built between 1881 and 1898, made the interior forest accessible with the result that sawmills were built in such places as Gambo, Benton, and Glenwood. (Report of the Royal Commission on Forestry, 1955). By the late nineteenth century sawmills were built at Gander Bay, Norris Arm, and Botwood. Much of the lumber was used for the local market, but increasingly it was used for export. Indeed, the latter part of the nineteenth century was one of the most prosperous periods for the export of lumber from Newfoundland.

One of the more adventuresome sawmill operations began in 1900 on the shores of Red Indian Lake (Report of the Royal Commission on Forestry, 1955). The sawmill was started by a Scotsman, Lewis Miller, who had a successful sawmill operation in Sweden where the wood supply was diminishing. Miller was attracted to the interior of the province because of the favorable report he received on the supply of white pine. A branch line from the railway was built to Miller's sawmill, and the operations ran smoothly for a few years; but by 1903 Miller realized that there was not a sufficient supply of white pine to keep the mill running economically.

Miller sold his operations in 1903, but the building of the branch line of the railway, the sawmill and the community of Millertown had focused a great deal of attention on the interior of the province, the interior with its water resources and abundance of black spruce and fir.

The Grand Falls Mill

The activity of the interior attracted Harry S. Crowe, a Nova Scotian, to the area. (Report of the Royal Commission on Forestry, 1955). With the help of financial backers, Crowe proceeded in 1903 to acquire timber holdings, including the Millertown operations. In a short space of time Crowe had extensive holdings in the Exploits Valley, enough he felt that would attract investors to the region.

Meanwhile, the Harmsworth Brothers, the owners of the Daily Mail and several other newspapers in England, were seeking a secure supply of newsprint. At that time, they depended upon continental European manufacturers for their newsprint, and they were subject to price increases they could neither resist nor control. The Harmsworth's sent their representative, Mayson Beeton, to North America to investigate the possibilities of setting up a newsprint mill. Eventually as a part of his tour, Beeton visited the Exploits Valley in 1903. Beeton was impressed with the potential of the area with its water supply and vast stands of black spruce and fir trees, ideal for newsprint production. He returned to England and encouraged the Harmsworth Brothers to build a pulp and paper mill in Grand Falls, Newfoundland.

The Harmsworth's purchased some of the timber rights owned by Harry S. Crowe, including the Millertown operations. Negotiations were held with the government in St. John's and finally in 1905 the Anglo-Newfoundland Development Company (A.N.D.) was incorporated. Construction of the mill at Grand Falls began in 1905 and production of newsprint began in December 1909. The Grand Falls venture became one of the most successful and stable financial investments in Newfoundland, and it became one of the mainstays of the economy.

Other Forest Developments from 1907 to the Present

The Grand Falls mill proved to be a successful operation, but it was not the only paper mill in the Exploits Valley. In 1912 A.E. Reed Ltd. opened a pulp mill at Bishop's Falls. (Hiller, 1980). The Reed mill was neither as big nor as successful as the A.N.D. Company mill. In 1916 the A.N.D. Company purchased the Reed mill and it was fully absorbed into the A.N.D. Company by 1928. Pulp from the Bishop's Falls mill was pumped to Grand Falls by a pipeline until the A.N.D. Company closed the Bishop's Falls mill in 1952.

A small pulp mill was built at Campbellton in 1912 but after a few years of operations the dam broke and the mill was closed. (Report of the Royal Commission on Forestry, 1955).

A Swedish company started to build a pulp mill at Glovertown but by 1921, after financial difficulties, the incomplete mill and its timber limits were acquired by the A.N.D. Company. In 1925 a pulp and paper mill was opened in Corner Brook, and in 1938 the mill and its timber limits were purchased by its present owners, Bowaters. The Corner Brook mill continues to be the nucleus of the Humber Valley economy.

In late 1969 construction began on a linerboard mill in Stephenville, but financial difficulties led to a government takeover of the mill in 1972. (The Georgian, November 29, 1978). The provincial government created a Crown Corporation to finish and operate the mill. The mill became a drain on the provincial treasury with the result that the mill was closed on August 26, 1977. The mill was sold to Abitibi-Price in late 1978 and is being converted to a papermill. Production is expected to begin in 1981.

The sawmill industry in Newfoundland has remained virtually a cottage industry with small mills scattered around the province. Attempts have been made to establish larger, mechanized sawmills, but such ventures have ended either in bankruptcy or shut down of the operations.

Loggers in the Pulpwood Industry

The pulpwood logging industry actually began with a pulp mill at Black River, Placentia Bay in 1897-1900, but little is known about that operation. (Report of the Royal Commission on Forestry, 1955).

The logging industry has been centered around the Grand Falls mill, where it started in 1909 and around the Corner Brook mill where it began in 1925. There are many similarities between the two woods operations, some loggers with the A.N.D. Company having gone to the west coast to start up the operations.

From 1909 to the early 1960's most of the loggers were seasonal workers, fishermen who worked in the logging camps when the inshore fishery curtailed each fall. The extra income in the form of cash meant the fishermen could purchase the necessities for their families until fishing began in the spring. The less successful the fishery, the more they depended upon the income in the woods.

The camps were isolated and for many years access to them was difficult. The primitive transportation systems in Newfoundland meant that the loggers would stay in the camps a couple of months before going home. Some of the loggers would return for more work while others would not return until the following year.

The wages, the working conditions, the camps and the food were poor for many years.¹ Although unions began as early as 1937, the loggers were not well organized for a variety of reasons including the fact that logging was a part time job for most of the men.

Between the late 1930's and the 1950's there were many changes in the industry which affected the loggers. Roads made the camps more accessible, and there were improvements in the types of camps and camp life. Trucks were being used more and more for the transportation of the logs, goods, equipment and men. Technological improvements, such as chain saws and skidders, began to appear on the logging scene in the 1950's.

By this time many loggers were relying more and more on logging as their sole means of income. There was a growing demand for better wages and fringe benefits as well as improvements in camp life and working conditions. In the late 1950's the loggers signed up in a new union, the International Woodworkers of America. (I.W.A.) This union sought changes for the loggers from the A.N.D. Company and Bowaters, but the negotiations failed and a strike was called.

1

Much of the information on the life of the Newfoundland loggers as presented in this project was obtained in personal interviews the developer conducted with loggers both retired and active.

In the early months of 1959 there was trouble in the logging camps. Loggers on strike occupied company camps, company men were forced out of the camps by angry striking loggers, logging roads were blocked and vehicles forced to turn back. Police reinforcements were brought to Grand Falls to cope with the growing confrontations. Finally, in a scuffle at Badger between police and striking loggers, a policeman was killed. The violent killing of the policeman sent shocks of anger throughout Newfoundland. The legitimate demands of the loggers were lost in the public outcry against the violence.

The Newfoundland government under Premier Smallwood quickly decertified the loggers union, the I.W.A.. The government filled the vacuum with its own union, the Newfoundland Brotherhood of Woodworkers. (N.B.W.W.) The strike was called off and the N.B.W.W. negotiated a new contract on behalf of the loggers.

Within two years the N.B.W.W. faded from the scene, and was replaced by the United Brotherhood of Carpenters and Joiners of America, Loggers Local. In the 1960's and 1970's the loggers became more professionally organized and many of the standard industrial contract procedures, wages, fringe benefits and working conditions became a part of the job. Technology in the logging industry and fulltime employment meant a work force of a few thousand compared to earlier decades when up to 12,000 men would work in the woods parttime.

The modern Newfoundland logger is a skilled industrial worker. He still works hard, but he relies more and more on the newer technology of logging. His wages, working conditions, fringe benefits are similar to other industrial workers in the country. Camp life improves with practically every new contract. For the most part, the camps are not as isolated as previously. Loggers who live in communities not far from the camps commute daily while the more distant loggers go home on the weekends.

Forestry in the Curriculum

In the curriculum of the schools of Newfoundland, forestry is first studied in Grade Five Geography, which uses as the text the Geography of Newfoundland by Summers and Summers (1972). In that text the chapter on logging has maps and pictures on various aspects of the whole forest industry. There are some pictures on logging and there are a few references to old and modern logging. The chapter gives an overall perspective on the use of the forest in Newfoundland with no in depth study.

Forestry is also dealt with in Grade Six, which uses as the text Canada: This Land of Ours by Wiley, Welsh, et al (1970). In this text logging in the pulp and paper industry is covered in four pages, and most of the information is in the form of captioned pictures. Some references are made to the differences in old and modern logging. There are pictures of modern logging camps as well as pictures of some of the equipment that is used.

Grade Four students study their local community in the social studies program, and there is no text. The program is initiated by the teacher, and it is possible that in some logging communities the students would study the logging industry.

In the texts of the Newfoundland schools, then, there is little information on the logging industry of the province. This deficiency is especially regrettable in light of the contribution logging has made to the economy of the province.

The forest industry is one of our major resources in Newfoundland. In this century the pulp and paper industry has been one of the main corner stones of our provincial economy. The paper mills at Grand Falls and Corner Brook are the nucleus of the economic prosperity of central and western Newfoundland. These mills depend upon the loggers to supply the logs for newsprint production. There is very little information in our elementary school textbooks on old and modern pulpwood logging in Newfoundland. If more information on logging was available to the schools, the students would have a better opportunity to learn of the significance of logging to the past and present economy of the province.

CHAPTER II

NEEDS ASSESSMENT

Statement of Needs

The developer determined the need for instructional materials on the Newfoundland logging industry, past and present, on the basis of informal discussions held with elementary school teachers. Approximately ten teachers from various central Newfoundland schools were interviewed. All of them expressed the view that they would like to have instructional materials to enable them to have their students in Grade Five and/or Grade Six study the logging industry in more depth than was possible when their materials were limited in Grade Five to Geography of Newfoundland by Summers and Summers (1972) and in Grade Six to Canada: This Land of Ours by Wiley, Welsh, et al (1970).

The teachers were not aware of any instructional materials that dealt specifically with the past and present pulpwood logging operations in Newfoundland.

Alternative Solutions

To fulfill the needs of the teachers, the developer had the following choices:

- (i) to find materials prepared on logging and suitable for Grade Five and Six. This was the preferred solution. However, if such materials could not be found, the next alternative, in order of preference, was as follows.
- (ii) to procure prepared materials that were unsuitable in their existing condition and to modify them to meet the specific needs of the teachers and students. If this alternative is not feasible, the developer must adopt the third solution.
- (iii) to produce instructional materials specifically to meet the needs.

Survey of Available Materials

In order to make a decision on either of the first two alternate solutions, it was necessary to make a search of the available instructional materials. The availability of Canadian instructional materials is improving, but it has been

the experience of the developer that selection aids to publicize the materials are in need of improvement.

Nevertheless, the developer checked all available selection aids including Circular 15 Canadian Curriculum Materials (Ontario, Ministry of Education, 1974) and Basic Booklist for Canadian Schools - Elementary Division (The Canadian Library Association, 1968). The developer checked the vertical files and Newfoundland sections of various public libraries. Also, catalogues of Canadian publishing companies were checked.

As a result of the search, the materials described below were found and examined.

Print Materials

At Grand Falls, Newfoundland: From Forest to Newsprint by Abitibi-Price. (n.d.)

This pamphlet briefly describes all the aspects of the company's operations at Grand Falls. This was rejected because it is too brief.

Books of Newfoundland by J.R. Smallwood (1967).

Short descriptions of logging and lumbering in Newfoundland are included. They also include a speech by Joseph R. Smallwood in Ottawa. The speech describes the

Newfoundland Government's role in the loggers strike of 1959.

It was rejected because of the speech which deals with a specific issue and the other information is too brief.

However, it could be used as background or supplementary materials for teachers.

Forestry in Newfoundland by G. Page (n.d.)

This book by the Newfoundland Forest Research Centre covers such topics as the forest land resources, forest protection, management and research. Old and modern pulpwood logging is also described. It was rejected because it is too technical or advanced for students; however, it is an excellent source for teachers.

Making Pulp and Paper at Corner Brook by H.J.B. Gauge (1968).

This booklet describes the whole of Bowaters operations at Corner Brook from the forest to shipping of the finished product. It was rejected because the information on logging is too brief.

Report of the Royal Commission on Forestry, (1955).

This report on the forestry includes a history of logging in the pulp and paper industry in Newfoundland.

It was rejected because it is too technical and advanced for students; however, it is an excellent source for teachers.

"Turmoil in the Woods". A Report on the Dispute Between the International Woodworkers of America and the Anglo-Newfoundland Development Company by Anglo-Newfoundland Development Company (1959).

This pamphlet describes the 1959 loggers strike from the A.N.D. Company's point of view. It was rejected because it covers only a specific incident and therefore, does not meet the need of providing comprehensive information. However, it could be used as supplementary materials by students and teachers.

Non-Print Materials

Forest Industries in B.C., Part I, Logging by Scholar's Choice (1975).

A captioned filmstrip that describes the British Columbia Logging industry. It was rejected because of the vast difference in Newfoundland and British Columbia Logging.

Log Drive by National Film Board of Canada (1957).

This 16 mm. film shows the annual pulpwood river drive in Quebec. It does not meet the need because it covers only one specific operation. It is, however, good supplementary material.

Making Pulp and Paper at Corner Brook by Scholar's Choice (1974).

A captioned filmstrip that describes the production of newsprint at the Corner Brook mill. It was rejected because it does not deal with the topic, but is a good supplementary material.

Manouane River Lumberjacks by National Film Board of Canada (1962).

A 16 mm. film that shows the life of a logger in Quebec during the winter operations. It was rejected because it covers only one specific operation. It is good supplementary material.

Newsprint in Quebec by Scholar's Choice (1976).

A captioned filmstrip that describes the manufacture of newsprint in Quebec from the forest to the ship. It was rejected because the logging segment is too brief. It is good supplementary material.

The Production of Newsprint by L. Gilliam (n.d.)

A sound filmstrip that describes the various steps in the manufacturing of newsprint. It was rejected because the production does not deal directly with the logging topic, but it is a good supplementary material.

Pulpwood-From the Forest to the Ship by W. Chaulk (1972).

A sound filmstrip that describes how pulpwood is harvested for export. It was rejected because the production deals with pulpwood logs that are exported, but it is a good supplementary material.

Decision to Develop the Instructional Materials

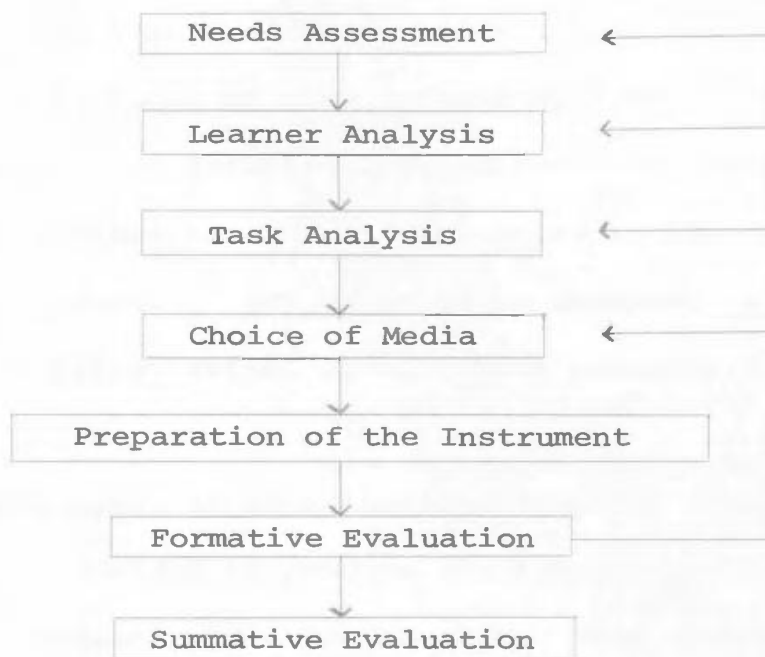
Having reviewed the available materials on logging, the developer decided that there were no existing materials that met the needs and none that could be modified to meet the needs. The only alternative left to the developer, then, was to produce the materials himself.

The developer decided to produce two units, one on old time logging and one on modern logging. The information on old time logging in Newfoundland is now history, and once recorded it will not change. The story of old time logging exists mainly in oral form, and it needs to be recorded while there are still old time loggers to provide the information.

Modern logging are the operations of present, and in a few years it will be necessary to update and revise the information. As two separate units, the materials could be used as entities in themselves, or they could be used consecutively for comparative studies.

It was decided to develop the materials around the logging operations of the paper mill at Grand Falls. This decision was based on several factors. First, the Grand Falls operations were the original large scale logging practices related to a paper mill in the province; second, the present logging operations of the Grand Falls mill are representative of logging practices in Newfoundland; third, the developer had relatively easier access to the historical documents and photographs and to the logging camps of the Grand Falls operations.

To develop the instructional materials the developer decided on a model to act as a guide and an outline for the development process. The process is as follows:



The Needs Assessment has been established in the beginning of this chapter, and the remaining steps are described in the following chapters.

CHAPTER III

LEARNER ANALYSIS

It was decided to develop the materials to be used in either Grade Five or Grade Six.

The students in Grade Five study a unit on logging, but their textbook Geography of Newfoundland by Summers and Summers (1972) contains little detailed information. In Grade Six the students study another brief unit on logging in the Canadian pulp and paper industry. But again their textbook Canada: This Land of Ours by Wiley, Welsh, et al (1970) contains little information.

The developer, in consultation with five elementary school teachers, decided to produce the instructional materials for Grade Six students. The rationale for this decision was that the more mature Grade Six students would have some knowledge of logging from Grade Five, and they would more easily cope with detailed study of logging.

The average chronological age of Grade Six students is eleven years of age.* In the six years of working with elementary students, it has been the experience of the developer that students at this age are generally interested and enthusiastic about school work.

*Government of Newfoundland and Labrador, Department of Education
Correspondence November 9, 1980.

With training and guidance by teachers, students in Grade Six are capable of doing interviews, research at home, in the school, at public libraries and elsewhere.

An examination of the textbooks and supplementary instructional materials for Grade Six students reveals that pictures, filmstrips, films, and models are important sources of visual information for students at this level. The developer has observed the importance of field trips as a meaningful learning experience for students at this grade and age level.

The developer's teaching experience has brought him in contact with students from kindergarten to vocational schools. The developer's conclusion is that the most positive and enthusiastic attitude towards school and learning combined with learning capabilities and skills is found in the elementary grades.

CHAPTER IV

TASK ANALYSIS

Assumptions and Entry Behavior

As indicated in Chapter II and Chapter III, the instructional materials on old and modern logging were developed for use in Grade Six.

Most Grade Six students in Newfoundland have studied logging in their Grade Five Geography program. The chapter on logging in the Grade Five textbook does not have a great deal of information, but the developer assumed that from this experience most Grade Six students would know that the forest is a major resource of Newfoundland. The students would know that the forest industry is concentrated around the paper mills at Grand Falls and Corner Brook.

Some students would have a greater knowledge than others of logging, for a variety of reasons: they may live in a logging community; a close relative might have been a logger or contractor; they may have visited the Logging Museum at Beothuck Park near Grand Falls; they may have visited a modern logging camp; they may have read about the industry; or they may have been exposed to detailed information on logging by a previous teacher.

Behavioral Objectives

The two units, on the old and the modern logging operations are based on logging associated with the paper mill at Grand Falls. The following behavioral objectives were stipulated for the two units.

Old Time Logging

At the end of the instructional unit on old time logging, the student would be able to:

1. identify the timber used in the pulp and paper industry.
2. identify the timber limits of the A.N.D. Co..
3. identify the original owners of the Grand Falls mill.
4. identify Millertown as the basis for the A.N.D. Co.'s woods operations.
5. identify the role of horses in the woods.
6. identify the peak work force period.
7. identify the main cutting tool for many years.
8. identify the major means of moving logs to the mill.
9. identify the name of the spring work.
10. identify the name of the winter work.
11. identify a scale.
12. identify the role of horses and tractors.
13. identify the role of tug boats.
14. identify the name of the fall and early winter work.
15. describe the loggers behavior in the camps.
16. identify the locations of the camps vis-a-vis the nearest community.
17. identify the nationality of the loggers.
18. identify the length of the cooks' work day.
19. identify the other major occupation of loggers.
20. identify walking as a major means of getting to the logging camps.
21. identify the early beds.
22. identify how long loggers usually worked in the woods each year.
23. identify a requirement for loggers after 1937.
24. indicate what the loggers usually did at night.
25. identify the main means of communications the loggers had with their families.

Modern Logging

At the end of the instructional unit on modern logging, the students would be able to:

1. indicate that Price (Nfld.) does not use the same logging system throughout its logging operations.
2. identify the number of wood harvesting systems.
3. identify the lengths of logs delivered to the mill.
4. identify the role of rivers in modern logging.
5. identify the role of the railway in logging.
6. identify the scaling methods.
7. identify the role of men and machines.
8. describe how logs are delivered to the mill.
9. describe when equipment can be used.
10. identify the company's policy towards change.
11. identify the use of chain saws.
12. identify the role of mechanics.
13. identify the purpose for woods roads.
14. describe butt diameter scaling.
15. describe the use for skidders.
16. describe the use for slashers.
17. identify how loggers get to work each morning.
18. identify the conveniences in the camps.
19. indicate when loggers go home.
20. identify the type of food at the camps.
21. describe the modern logger.
22. describe the role of the cook.
23. indicate how loggers get to the camps.
24. indicate how long loggers stay in the camps.
25. indicate the loggers union status.

CHAPTER V

RATIONALE FOR CHOICE OF MEDIA

The behavioral objectives of the programs stipulated that the students would be required to identify specific details of the logging industry. To teach these details without accompanying pictures would make it difficult for the students to develop mental images of the concepts. Pictures are an important part of the learning process for elementary school students, as is apparent from an examination of elementary school textbooks.

In the conversations with the developer, the teachers emphasized not only the need for more information on logging, but the need for accompanying pictures. The teachers indicated that they preferred the information in a medium other than printed material.

To produce the visual instructional materials, the developer had the choice of television, motion film, or still pictures. Video taping and motion film are widely used media, but for this project the limited production capabilities and the economics made them neither practical nor realistic for the developer.

The visuals on logging in the past were available only in black and white photographs. Visuals on modern logging could be obtained by visiting the logging camps of Price (Nfld.). The most economical format for these visuals was slide film.

The developer was capable of copying the black and white photographs and able to visit the modern logging camps. The slides would require explanations, so accompanying cassette audio tapes would be necessary.

Slide projectors and cassette tape recorders are widely used in Newfoundland schools, so producing the instructional materials in a slide/tape format was a practical medium for school use. The experience of the developer has been that the sound slide/filmstrip medium is not only economical but it is popular with students and teachers.

Hence, the decision was made to produce two sound slide sets - one on logging with the Anglo Newfoundland Development Company 1909-1960 and one on logging with Price (Newfoundland).

CHAPTER VI

DEVELOPMENT PROCEDURES AND FORMATIVE EVALUATION

Initial Productions

In previous chapters the developer concluded that there was a need for slide/tape programs on old and modern pulpwood logging suitable for use with Grade Six students. The programs, as indicated in Chapter One, were based on the operations of the Grand Falls mill.

Logging with the A.N.D. Company 1909-1960

The research on this program began in the summer of 1975. The developer read as much material as could be found on old time logging, but most of the information came from former loggers. Their story of old time logging was summarized in the behavioral objectives, and based on the behavioral objectives, a storyboard on logging with the A.N.D. Company 1909-1960 was developed.

The developer searched through hundreds of black and white photographs at Price (Nfld.) at Grand Falls. The

developer tried to illustrate each behavioral objective with an appropriate photograph contemporary to the period, but in some cases the developer had no choice but to accept alternate photographs. In three cases the developer had to take photographs at the Loggers Museum at Beothuck Park, near Grand Falls. The original photographs, in print format, were reproduced as 35 mm. slides.

Logging with Price (Nfld.): Summer Operations

To illustrate the modern logging process at Price (Nfld.), it was decided to photograph the operations only in the summer. This decision was based primarily on the fact that it would have been extremely difficult for the developer to visit the camps at the other times of the year. The restriction to summer illustrations was not a severe limitation as the basic operations are the same throughout the year.

The developer visited the logging camps in the summers from 1975 to 1978. Slide photographs of the operations were taken, based on the behavioral objectives and the outline of the storyboard. The objectives and storyboard underwent a major change in 1978 because highly mechanized wood harvesting was discontinued at Price (Nfld.).

Evaluation by Content Specialists

The developer consulted forest engineers at Price (Nfld.) Woodlands for expert advice on the contents of the programs. Logging with A.N.D. Company 1909-1960 was based on printed documents and oral information by former loggers and was organized with the advice of Malcolm Squires, former Chief Forester at Price (Nfld.).

Logging at Price (Nfld.): Summer Operations was based on information on the operations as outlined by Gerard Griffin, a former forester at Price (Nfld.). Mr. Griffin viewed the two programs and suggested changes in the choice of terminology, more technical details in a few areas and the elimination of certain minor operations of pulpwood logging. Changes were made according to the suggestions, and the programs were reviewed with no further changes required.

Evaluation by Media Specialist

The programs were viewed by the developer's supervisor and the developer. In Logging with the A.N.D. Company 1909-1960, the developer's supervisor saw the need for four additional slides.

In Logging with Price (Nfld.): Summer Operations

the developer's supervisor suggested rearrangement of the program in order to give impetus to the dynamic aspect of the industry. The supervisor saw the need for more slides in a few cases, and the need to eliminate several slides.

The recommendations of the faculty advisor were implemented, and the altered sets were viewed by the content specialist who was in full agreement with these changes.

Evaluation by Learning Specialist

The two sets were viewed by Mrs. Doris Young an experienced elementary school teacher at Grand Falls Academy Elementary. The following summarizes Mrs. Young's written and oral opinions:

Logging with the A.N.D. Company 1909-1960

Mrs. Young stated that she was very pleased with this production. It was, she said, informative, interesting and well organized, and the information provided was not readily available elsewhere. She was satisfied that the vocabulary and production length was appropriate and considered the slides to be very impressive. Mrs. Young stated the information on logging was suitable for Grade Six because logging is dealt with in Canadian Geography at that level. She also stated

that she thought it could stimulate further research and said that she would recommend the production to other teachers. It was, she said, an excellent presentation and it would be a valuable addition to any school library.¹

Logging with Price (Nfld.): Summer Operations

Mrs. Young said that she found the production informative, interesting and well organized with the narration appropriate for elementary school students.

Mrs. Young stated that she considered the production appropriate for Grade Six students because of the logging segment in the geography text of that grade. She expressed the opinion Newfoundland teachers would be pleased with the production because the schools of the province tend to emphasize events elsewhere while neglecting our local resource production. The program she said would fill a void because the information provided is presently not available in this form.

Mrs. Young said the two productions showed an obvious comparison between the old and new. The productions, she said, could stimulate students to discuss the woods operations with former or past loggers.²

1. Oral communication with the developer.
2. Oral communication with the developer.

Classroom Evaluation-Logging with A.N.D. Company 1909-1960

Instrumentation

The developer designed a pretest/posttest for the program based on the behavioral objectives as outlined in Chapter IV. The pretest and posttest (see Appendix A) were identical, and they contained ten true or false items and fifteen multiple choice items. The relationship of the test items and the behavioral objectives is outlined in Table 1.

Procedure

The developer chose an average Grade Six class in Buchans and Grand Falls. The students in Buchans were the Experimental Group, and the students in Grand Falls were the Control Group. The developer administered the testing of the program. The Experimental Group were given the pretest followed immediately by the presentation of the slide/tape production and concluded with the posttest. The Control Group were given the pretest followed immediately with the posttest. The results of the pretests and posttests were tabulated.

Table 1

Test Items and Corresponding Behavioral Objectives

| Test Item # | Behavioral Objective # |
|-------------|------------------------|
| 1 | 15 |
| 2 | 1 |
| 3 | 5 |
| 4 | 6 |
| 5 | 7 |
| 6 | 16 |
| 7 | 17 |
| 8 | 18 |
| 9 | 8 |
| 10 | 2 |
| 11 | 3 |
| 12 | 9 |
| 13 | 10 |
| 14 | 19 |
| 15 | 4 |
| 16 | 20 |
| 17 | 11 |
| 18 | 12 |
| 19 | 21 |
| 20 | 22 |
| 21 | 13 |
| 22 | 23 |
| 23 | 24 |
| 24 | 25 |
| 25 | 14 |

Analysis of the Results

Percentage of Students With Percentage of Items Correct

For each student in the Experimental Group, the number of items correct on the posttest was calculated as shown in Table 2.

The developer had decided that an acceptable level of achievement would be 70% of the students achieving 70% or more of the test items correct. However, as shown in Table 2 only 20% of the students achieved 70% or more of the items correct; hence, the Experimental Group had not achieved the desired level of performance.

Table 2

Percentage of Students With Percentage of Items Correct on Posttest

| % of Students | % of Items Correct |
|---------------|--------------------|
| <hr/> | |
| 0 | 95 or more |
| 4 | 90 or more |
| 8 | 85 or more |
| 12 | 80 or more |
| 16 | 75 or more |
| 20 | 70 or more |
| 32 | 65 or more |
| 40 | 60 or more |
| 64 | 55 or more |
| 72 | 50 or more |
| 28 | Less than 50% |

Item Analysis

An item analysis was conducted on the pretest and posttest scores of the Experimental Group with the results shown in Table 3.

For each question the number of successful students on the pretest and posttest scores was tabulated.

Also tabulated was the percentage of successful students for each question on the posttest scores. Table 3 shows that for 40% of the questions 70% or more of the students answered the questions correctly.

The difference between the number of successful students on the pretest and posttest scores was analysed, and the degree to which the difference was significant was tested by chi square. Table 3 shows that for the Experimental Group there was a significant growth of knowledge in six of the twenty-five test items.

Table 3
Item Analysis

| Question | # of Successful Students | | % of Successful Students on Posttest | Pretest-Posttest Difference χ^2 |
|----------|--------------------------|----------|--------------------------------------|--------------------------------------|
| | Pretest | Posttest | | |
| 1 | 9 | 21 | 84 | 4.80* |
| 2 | 10 | 6 | 24 | 1.00 |
| 3 | 16 | 25 | 100 | 2.56 |
| 4 | 10 | 14 | 56 | 0.67 |
| 5 | 19 | 22 | 88 | .238 |
| 6 | 10 | 17 | 68 | 1.79 |
| 7 | 9 | 7 | 20 | .25 |
| 8 | 12 | 24 | 96 | 4.00* |
| 9 | 16 | 14 | 56 | .133 |
| 10 | 7 | 9 | 36 | .25 |
| 11 | 3 | 23 | 92 | 15.38*** |
| 12 | 12 | 15 | 36 | .357 |
| 13 | 2 | 10 | 40 | 5.31* |
| 14 | 4 | 14 | 56 | 5.55* |
| 15 | 15 | 10 | 40 | 1 |
| 16 | 7 | 16 | 64 | 3.15 |
| 17 | 10 | 21 | 84 | 3.8 |
| 18 | 4 | 18 | 72 | 8.9** |
| 19 | 16 | 23 | 92 | 1.25 |
| 20 | 8 | 5 | 20 | .71 |
| 21 | 20 | 19 | 76 | .05 |
| 22 | 6 | 10 | 40 | 1 |
| 23 | 16 | 20 | 80 | .444 |
| 24 | 8 | 9 | 36 | .111 |
| 25 | 3 | 2 | 8 | .333 |

*p. < .05

**p. < .01

***p. < .001

Comparison of Means

The third test of the instructional package was the comparison of the performance of the Experimental Group, which saw the instructional program, and the performance of the Control Group, which did not see the program.

As shown in Table 4, the pretest Experimental Group had a mean of 10.08, and the Control Group had a mean of 9.21. The "t" value of 1.45 indicated that there was no significant difference in the pretest scores of the two groups. The means of the pretest scores, then, show that the two groups were similar in their knowledge of the material.

Table 4
Comparison of Pretests

| Group | N | M | SD | t |
|--------------|----|-------|------|-------|
| Experimental | 25 | 10.08 | 1.98 | 1.45* |
| Control | 29 | 9.21 | 2.38 | |

*df = 52, $p < .05$

The results of the posttests as shown in Table 5 indicated that the Experimental Group had a mean of 14.96 and the Control Group had a mean of 8.83. The "t" value of 8.43 indicated a significant difference between the scores of the two groups, with the Experimental Group obtaining the greater level of achievement.

Table 5
Comparison of Posttests

| Group | N | M | SD | t |
|--------------|----|-------|------|-------|
| Experimental | 25 | 14.96 | 3.23 | 8.43* |
| Control | 29 | 8.83 | 2.05 | |

*df = 52, $p > .001$

The final comparison of the two groups was the comparison of their means of gain scores. The gain score was calculated as the difference between the pretest score and the posttest score for each student in each group. Table 6 shows that Experimental Group

had a mean of 4.98 and the Control Group had a mean of .38.

The "t" value of 8.80 indicated that there was a significant difference between the two groups. The Experimental Group achieved a greater score than the Control Group.

Table 6

Comparison of Gain Scores

| Group | N | M | SD | t |
|--------------|----|------|------|-------|
| Experimental | 25 | 4.98 | 2.80 | 8.80* |
| Control | 29 | .38 | 1.47 | |

*df = 52, $p > .001$

Conclusion

An examination of the posttest scores and gain scores indicates clearly that the Experimental Group scores were significantly better than the Control Group. The instructional program was viewed only by the Experimental Group, thus it was concluded that the program had a positive affect on the growth of knowledge for the Experimental Group.

However, the results for the Experimental Group in the percentage of students with percentage of items correct, and item analysis showed that the growth in knowledge was not as positive as the comparison of posttest and gain scores.

Classroom Evaluation-Logging with Price (Nfld.): Summer Operations

Instrumentation

The developer designed a pretest/posttest for the program based on the behavioral objectives as outlined in Chapter IV. The pretest and posttest (See Appendix B) were identical, and they contained ten true or false items and fifteen multiple choice items. The relationship of the test items and behavioral objectives is outlined in Table 7.

Table 7

Test Items and Corresponding Behavioral Objective

Test Item #

Behavioral Objective #

| | |
|----|----|
| 1 | 3 |
| 2 | 17 |
| 3 | 4 |
| 4 | 19 |
| 5 | 1 |
| 6 | 5 |
| 7 | 18 |
| 8 | 6 |
| 9 | 20 |
| 10 | 7 |
| 11 | 8 |
| 12 | 9 |
| 13 | 21 |
| 14 | 22 |
| 15 | 10 |
| 16 | 11 |
| 17 | 23 |
| 18 | 12 |
| 19 | 13 |
| 20 | 14 |
| 21 | 15 |
| 22 | 24 |
| 23 | 16 |
| 24 | 25 |
| 25 | 2 |

Procedure

For this program the developer conducted the experiment with the same two classes that had been chosen for the previous program. The testing with the Experimental and Control Groups was conducted on different days, but in each case the group were exposed to old time logging in the morning and modern logging in the afternoon.

For this program, the students in Buchans remained the Experimental Group, and the students in Grand Falls remained the Control Group. The developer administered the testing of the program. The Experimental Group were given the pretest followed immediately by the presentation of the slide/tape production and concluded with the posttest. The Control Group were given the pretest followed immediately with the posttest. The results of the pretests and posttests were tabulated.

Analysis of the Results

Percentage of Students With Percentage of Items Correct

As indicated in the former program, only the Experimental Group's posttest scores were calculated and the acceptable level of achievement would be 70% of the students achieving 70% or more of the items correct. Table 8 shows that 48% of the students achieved 70% or more of the items correct. The Experimental Group had not achieved the desired level of performance.

Table 8

Percentage of Students With Percentage of Items Correct on Posttest

| % of Students | % of Items Correct |
|---------------|--------------------|
| 0 | 100 |
| 4 | 95 or more |
| 4 | 90 or more |
| 16 | 85 or more |
| 32 | 80 or more |
| 36 | 75 or more |
| 48 | 70 or more |
| 60 | 65 or more |
| 64 | 60 or more |
| 72 | 55 or more |
| 80 | 50 or more |
| 20 | Less than 50% |

Item Analysis

An item analysis was conducted on the pretest and posttest scores of the Experimental Group. As shown in Table 9, for each question the number of successful students in the pretest and posttest scores was tabulated. The percentage of successful students on the posttest scores shows that for 48% of the questions, 70% or more of the students answered the questions correctly.

The difference in the successful students on the pretest and posttest scores was compared and tested by chi square. Table 9 shows that there was a significant growth of knowledge in one of the twenty-five test items.

Table 9
Item Analysis

| Question | # of Successful Students | | % of Successful Students | Pretest-Posttest Difference |
|----------|--------------------------|----------|--------------------------|-----------------------------|
| | Pretest | Posttest | on Posttest | $\times 2$ |
| 1 | 4 | 14 | 56 | 5.6* |
| 2 | 16 | 19 | 76 | .28 |
| 3 | 25 | 25 | 100 | 0 |
| 4 | 22 | 24 | 96 | .09 |
| 5 | 19 | 12 | 48 | 1.56 |
| 6 | 13 | 18 | 72 | .8 |
| 7 | 14 | 12 | 48 | .15 |
| 8 | 6 | 7 | 20 | .14 |
| 9 | 24 | 24 | 96 | 0 |
| 10 | 16 | 18 | 72 | .118 |
| 11 | 19 | 22 | 88 | .238 |
| 12 | 20 | 19 | 76 | .05 |
| 13 | 21 | 22 | 88 | .05 |
| 14 | 15 | 21 | 84 | 1 |
| 15 | 18 | 19 | 76 | .05 |
| 16 | 10 | 11 | 44 | .09 |
| 17 | 10 | 10 | 40 | 0 |
| 18 | 3 | 7 | 20 | 1.6 |
| 19 | 8 | 11 | 44 | .5 |
| 20 | 12 | 17 | 68 | .87 |
| 21 | 11 | 16 | 64 | .93 |
| 22 | 11 | 16 | 64 | .93 |
| 23 | 9 | 16 | 64 | 1.9 |
| 24 | 21 | 21 | 84 | 0 |
| 25 | 7 | 14 | 56 | 2.27 |

*p. < .05

Comparison of Means

The instructional program was also tested by analysing the performance of the Experimental Group and Control Group. The Experimental Group viewed the program whereas the Control Group did not.

The pretest scores show in Table 10 that Experimental Group had a mean of 14.2, and the Control Group had a mean of 13.07. The "t" value of 1.27 indicated that on the pretest scores there was no significant difference between the two groups; they were similar.

Table 10

Comparison of Pretests

| Group | N | M | SD | t |
|--------------|----|-------|------|-------|
| Experimental | 25 | 14.2 | 4.08 | 1.27* |
| Control | 29 | 13.07 | 2.37 | |

*df = 52, $p < .05$

In Table 11, the tabulations show that on the posttest the Experimental Group had a mean of 16.64, and the Control Group had a mean of 13.55. The "t" value of 3.18 indicated that there was a significant difference between the means of the two groups, with the Experimental Group showing the greater level of achievement.

Table 11

Comparison of Posttests

| Group | N | M | SD | t |
|--------------|----|-------|------|-------|
| Experimental | 25 | 16.64 | 4.53 | 3.18* |
| Control | 29 | 13.55 | 2.43 | |

*df = 52, $p < .01$

For this program the means of the gain scores of the two groups were compared and the gain was calculated as the difference between the pretest score and the posttest score for each student in each group. Table 12 shows that the Experimental

Group had a mean score of 2.44, and the Control Group had a mean score of .48. The "t" value of 3.22 showed that the Experimental Group score was significantly greater than the Control Group score.

Table 12

Comparison of Gain Scores

| Group | N | M | SD | t |
|--------------|----|------|------|-------|
| Experimental | 25 | 2.44 | 2.66 | 3.22* |
| Control | 29 | .48 | 1.77 | |

* df = 52, p. < .01

Conclusion

A review of the posttest scores and gain scores shows that the Experimental Group had significantly better results than the Control Group. Only the Experimental Group viewed the program; hence, it was concluded that the growth in learning was due to the exposure to the instructional program.

But, the results for the Experimental Group in the percentage of students with percentage of items correct, and the item analysis indicated that the growth in learning was not as good as the results obtained in the comparison of the posttest and gain scores.

Review of the Results of the Classroom Evaluation

The developer and faculty advisor met to analyze the results obtained in the field testing of the programs. The pretest and posttest gain scores were significant for both programs, but the expected level of learning in both programs had not been achieved for the percentage of students with percentage of items correct and item analysis. The programs were reviewed to try to discover the causes of the difficulties with a view to making the necessary changes and retesting the programs.

Working with the A.N.D. Company 1909-1960

The developer and faculty advisor first viewed the program. The next step was to compare the behavioral objectives and the test items to the information received from the program. While the objectives themselves were considered acceptable, it was

decided to make alterations in 13 of them to make them more explicit. In the pretest/posttest, modifications were made in 11 of the 25 items (See Appendix C). The changes in some cases meant only the addition or deletion of a word while in other cases the questions were rephrased. It was decided to add two visuals to the program to emphasize concepts with which the students appeared to have difficulty. The audio text for the program was scrutinized, and words, phrases and sentences that were considered unnecessary or misleading were deleted. In several cases the audio text was rewritten to incorporate the clearer and more concise descriptions.

Logging with Price (Nfld.): Summer Operations

The developer and faculty advisor followed the same format for analyzing this program as they did for "Logging with the A.N.D. Company 1909-1960". The behavioral objectives were considered acceptable, but one objective was reworded to make it clearer. In the pretest/posttest, three items were rephrased while minor alterations were made in five items to make them clearer (See Appendix E). The visuals for the program did not require changes, but in the audio text, words, phrases, and sentences that were unnecessary or misleading were deleted. In several cases an additional sentence was required to make the description clearer.

The necessary changes were made in the two programs and preparations were made for classroom evaluation.

CHAPTER VII

SUMMATIVE EVALUATION

Logging with the A.N.D. Company 1909-1960

Instrumentation

As indicated in the conclusion of the previous chapter, the developer, in consultation with his faculty advisor, made some modifications in the pretest/posttest. The revised pretest and posttest (See Appendix C) were identical, and they contained ten true or false items and fifteen multiple choice items. Although there had been modifications in the pretest/posttest, the relationship of the test items and the behavioral objectives remained consistent with Table 1 (See p.34).

Procedure

To test the revised program, the developer chose only a Grade Five Experimental Group at St. Kevin's Academy, Goulds. The developer decided to test the revised program in Grade Five because the Grade Five students would have not yet studied logging. The Grade Six students in the Formative Evaluation had studied logging in the Grade Five program, and this may have been a factor in the high pretest scores by many of the students.

The students in the Formative Evaluation lived in areas that were surrounded by the logging industry, hence the developer tested the revised program in Goulds, a non-logging area. The developer administered the testing of the program.

The testing procedure for this program began with the first period in the morning. The students were given a brief introduction to the project and the purposes of the testing. The group was administered a pretest, followed by the viewing of the slide/tape program and concluded with the posttest. The results of the pretest and posttests were tabulated.

Analysis of the Results

In the Formative Evaluation the scores were tabulated and analyzed according to the percentage of students with percentage of items correct, item analysis, and comparison of means. The results showed that there was a significant difference in the means of the Experimental Group and the Control Group, but the results were unacceptable for the Experimental Group in the percentage of students with percentage of items correct and in the item analysis.

The developer decided to delete the comparison of the means testing for the Summative Evaluation. The decision was based on the positive results of this form of analysis in the Formative Evaluation, and the pressure of the time frame in

which the evaluation was conducted. It was decided that comparison of means would be used in the Summative Evaluation only if the other two measures - percentage of students with percentage of items correct and the item analysis - were less positive in the Summative Evaluation than in the Formative Evaluation.

Percentage of Students With Percentage of Items Correct

The posttest results for each student in the Experimental Group were tabulated. As previously stated, the acceptable level of achievement was established at 70% of the students achieving 70% or more of the items correct. Table 13 shows that 60% of the students answered 70% or more of the items correctly, hence the desired level of achievement had not been achieved. Yet, the improvement from the Formative Evaluation had increased significantly.

In the Formative Evaluation only 20% of the students had achieved 70% or more of the items correct, but the 60% of the students in the Summative Evaluation represented a 200% improvement. In the Formative Evaluation 28% of the students scored less than 50%, whereas in the Summative Evaluation only 4% of the students scored less than 50% and this is another indicator of positive growth.

Table 13

Percentage of Students With Percentage of Items Correct on Posttest

| % of Students | % of Items Correct |
|---------------|--------------------|
| 0 | 90 |
| 8 | 85 or more |
| 28 | 80 or more |
| 40 | 75 or more |
| 60 | 70 or more |
| 60 | 65 or more |
| 76 | 60 or more |
| 88 | 55 or more |
| 96 | 50 or more |
| 4 | Less than 50% |

Item Analysis

The item analysis was conducted on the Experimental Group's pretest and posttest scores. For each test item data was compiled on the following: the number of successful students in the pretest and the posttest, the percentage of students successful on the posttest scores, and the difference between the number of successful students in the pretest and the posttest, with the significance of the difference tested by chi square.

In Table 14 the percentage of successful students in the posttest column shows that for 56% of the items 70% or more of the students answered the questions correctly. In the Formative Evaluation 40% of the items had been answered correctly by 70% or more of the students.

The difference between the pretest and posttest scores, as analyzed by the chi square, showed that there was a significant difference or growth in learning for ten of the twenty-five test items. In the Formative Evaluation the growth had taken place in six of the twenty-five test items.

In Question 6, Item Analysis, the students pretest scores were higher than their posttest scores. The decline may be attributed to the citing of a specific distance in the test item, contrary to the generality used in the narration.

Table 14
Item Analysis

| Question | # of Successful Students | | % of Successful Students | Pretest-Posttest Difference |
|----------|--------------------------|----------|--------------------------|-----------------------------|
| | Pretest | Posttest | on Posttest | χ^2 |
| 1 | 16 | 24 | 96 | 1.06 |
| 2 | 6 | 8 | 32 | .285 |
| 3 | 20 | 23 | 92 | .227 |
| 4 | 3 | 11 | 44 | 4.57** |
| 5 | 17 | 20 | 80 | .5 |
| 6 | 14 | 8 | 32 | 1.63 |
| 7 | 12 | 12 | 48 | 0 |
| 8 | 14 | 20 | 80 | 1.05 |
| 9 | 20 | 24 | 96 | .36 |
| 10 | 13 | 16 | 64 | .333 |
| 11 | 2 | 18 | 72 | 12.8*** |
| 12 | 4 | 21 | 84 | 11.15*** |
| 13 | 5 | 20 | 80 | 8.69*** |
| 14 | 8 | 18 | 72 | 3.84* |
| 15 | 13 | 15 | 60 | .142 |
| 16 | 7 | 17 | 68 | 4.16* |
| 17 | 11 | 23 | 92 | 4.23* |
| 18 | 4 | 20 | 80 | 10.6** |
| 19 | 11 | 21 | 84 | 3.12 |
| 20 | 7 | 16 | 64 | 3.41 |
| 21 | 5 | 14 | 56 | 4.1* |
| 22 | 10 | 13 | 52 | .416 |
| 23 | 20 | 23 | 92 | .227 |
| 24 | 13 | 21 | 84 | 1.88 |
| 25 | 2 | 9 | 36 | 4.16* |

*p. < .05

**p. < .01

***p. < .001

Student Responses

At the conclusion of the posttest, the developer held an oral discussion with the students about the program. The discussion was based on a list of statements (See Appendix D), and the students comments were noted by the developer.

Many of the students expressed the opinion that they now knew more about old time logging. They understood the narration, although they expressed reservations about the comprehension of some of the logging terminology. The students found the slides very helpful in assimilating the information, and they thought it would be more difficult to comprehend the information without the visuals. The Experimental Group in Goulds would have liked an even longer program, and they felt that other Grade Five students would find the program informative and interesting.

Conclusion

The program on the A.N.D. Company had been revised for the Summative Evaluation. There were changes in the visuals, narration, the test, grade level, and location of the testing. The testing of the program, with only an Experimental Group, followed the same procedure as in the Formative Evaluation

except that the means were not tabulated primarily because of the success in the Formative Evaluation.

The testing results showed that the percentage of students with percentage of items correct had not reached the desired level of achievement, but the rate of improvement from the Formative to the Summative Evaluation was substantial.

The item analysis results showed that the percentage of successful students on the posttest scores and the difference between the pretest and posttest scores had improved, but the success rate was not as good as the percentage of students with the percentage of items correct.

Finally, the students reactions to the program were very positive. While the students did not achieve the desired levels of achievement, their less than successful academic achievements were partially nullified by the students enthusiastic interest in the program.

Logging with Price (Nfld.): Summer Operations

Instrumentation

The pretest/posttest for this program was modified, and the revised pretest and posttest were identical. The tests (See Appendix E), contained ten true or false items and fifteen multiple choice items. The pretest/posttest had been modified,

but the relationship of the test items and the behavioral objectives remained consistent with Table 7 (See p.42).

Procedure

This program was tested with the Grade Five class at St. Kevin's Academy, Goulds. The developer administered the testing of the program.

Whereas "Logging with A.N.D. Company 1909-1960", was tested in the morning, "Logging with Price (Nfld.): Summer Operations" was tested beginning with the first period in the afternoon. The students were given a brief introduction to the program and the purposes for the testing. The class was given the pretest, followed by the viewing of the program and concluded with the posttest. The results of the pretest and posttest were tabulated.

Analysis of the Results

The comparison of means for this program were significant in the Formative Evaluation and as outlined previously in this chapter, the developer decided to delete this segment of the testing in the Summative Evaluation.

Percentage of Students With Percentage of Items Correct

The posttests results for the Experimental Group in this program were tabulated. The acceptable level of achievement as cited earlier was 70% of the students achieving 70% or more of the items correct.

Table 15 shows that 40% of the students had achieved 70% or more of the items correct. This result showed a slight decrease from the Formative Evaluation in which 48% of the students had achieved a score of 70% or better.

Table 15

Percentage of Students With Percentage of Items Correct on Posttest

| % of Students | % of Items Correct |
|---------------|--------------------|
| 0 | 85 or more |
| 28 | 80 or more |
| 32 | 75 or more |
| 40 | 70 or more |
| 60 | 65 or more |
| 88 | 60 or more |
| 92 | 55 or more |
| 96 | 50 or more |
| 4 | Less than 50 |

Item Analysis

For the item analysis the Experimental Group's pretest and posttest scores were analyzed and data were compiled on the following: the number of successful students in the pretest and the posttest, the percentage of students successful on the posttest scores, and the difference between the number of successful students in the pretest and the posttest, with the significance of the difference tested by chi square.

In Table 16, for 40% of the items 70% or more of the students answered the questions correctly. In the Formative Evaluation the students had been successful in 48% of the items.

For the chi square analysis Table 16 shows that there was an increase in twenty-one of the twenty-five test items, but the increase in learning was not significant. In the Formative Evaluation there had been a significant increase in learning for one test item.

Table 16
Item Analysis

| Question | # of Successful Students | | % of Successful Students on Posttests | Pretest-Posttest Difference χ^2 |
|----------|--------------------------|----------|--|--|
| | Pretest | Posttest | | |
| 1 | 15 | 20 | 80 | .722 |
| 2 | 12 | 17 | 68 | .866 |
| 3 | 15 | 20 | 80 | .722 |
| 4 | 12 | 14 | 56 | .154 |
| 5 | 16 | 15 | 60 | .06 |
| 6 | 15 | 21 | 84 | 1 |
| 7 | 15 | 21 | 84 | 1 |
| 8 | 17 | 15 | 60 | .125 |
| 9 | 14 | 17 | 68 | .312 |
| 10 | 12 | 13 | 52 | .076 |
| 11 | 15 | 21 | 84 | 1 |
| 12 | 19 | 20 | 80 | .05 |
| 13 | 11 | 16 | 64 | .928 |
| 14 | 13 | 18 | 72 | .812 |
| 15 | 16 | 15 | 60 | .06 |
| 16 | 13 | 11 | 44 | .166 |
| 17 | 12 | 21 | 84 | 2.41 |
| 18 | 9 | 16 | 64 | 1.38 |
| 19 | 7 | 14 | 56 | 2.27 |
| 20 | 12 | 16 | 64 | .571 |
| 21 | 14 | 17 | 68 | .312 |
| 22 | 12 | 17 | 68 | .866 |
| 23 | 16 | 17 | 68 | .058 |
| 24 | 15 | 19 | 76 | .941 |
| 25 | 17 | 18 | 72 | .055 |

Student Responses

At the conclusion of the posttest, the developer held an oral discussion with the students about the program. The discussion was centered on a list of statements (See Appendix F), and the students comments were noted by the developer.

The general opinion expressed by the students was that they now knew a great deal more about modern logging. Again they found the narration acceptable, but the logging terminology was not easy to grasp in the one session. The students said it would have been even harder to comprehend the information if there had been no slides. The students would have liked a longer production, and they expressed the opinion that other Grade Five students would find this program interesting and informative.

Conclusion

The program of the Price operations like the program on the A.N.D. Company was revised for the Summative Evaluation. Changes were made in the visuals, the narration, the test, the grade level, and the location of the testing area. Only an Experimental Group was tested, and the analysis of the means was deleted because of the success in the Formative Evaluation.

The data showed that the percentage of students with the percentage of items correct, percentage of successful students on the posttest scores, and the difference between the pretest and posttest scores had not been successful. In fact, these results

showed a decline from the Formative Evaluation results.

However, the test results were not indicative of the students attitude towards the program. The students, contrary to their performance on the tests felt that they learnt a great deal about modern logging from the program. The students found this program informative and interesting, and like the old time logging program, worthy of recommendation for use with other Grade Five students.

CHAPTER VIII

CONCLUSION AND RECOMMENDATIONS

Conclusion

An examination of the statistics in the Summative Evaluation indicates that there was neither an unqualified success nor an unqualified failure. The program, Logging with the A.N.D. Company 1909-1960, had more favorable results than the program, Logging with Price (Nfld.): Summer Operations. The failure of the programs to achieve the desired objectives may be due in part to the testing procedure.

For the Formative Evaluation the programs were tested in June, 1979. The students in Buchans had studied logging in Grade Five and Grade Six, but at the time of the testing the formal teaching and learning of the school year had been completed. The students were very interested in the programs, but the programs were a treat for the students, a source of entertainment in a routine end of the year school day.

In the Summative Evaluation the programs were tested in November, 1980. The Grade Five students at Goulds had not yet encountered the unit on logging in Newfoundland. The students

were very attentive and interested in the programs, but the programs did not relate to the present unit they were studying.

The common weakness in the Formative and Summative Evaluations is that both programs were tested out of context. The programs were not tested as an integral segment of the unit on logging. When programs are used in this manner, students may be able to generalize the concepts; but they cannot be expected to acquire a great deal of detailed information in a single isolated viewing. The total instructional package should achieve the desired objectives and one segment should not be the crutch or salvation for the unit.

Prior to the classroom evaluations, the developer pre-viewed the programs with foresters and teachers, and their positive reaction was an indication that the classroom evaluation process would be successful. In the development stages the developer was very confident about the potential success of the programs and did not foresee any negative repercussions due to testing of the programs out of context of the unit of study. After the analysis of the results, the developer concludes that the programs in all probability would have been more successful if they were tested or used in the manner outlined by the classroom teacher in the Summative Evaluation.

The classroom teacher said that she would first introduce the topic by relating the information presently under study to what has been covered already in the program or text. She then would give as much background as she could to the importance of logging in Newfoundland. Next she would show the programs to the students and discuss them with the students. Finally she would cover the information on logging in the text. Also the teacher said that there was a possibility that she would re-show the programs to the students before she gave them a test on the unit. The major concepts of logging would be tested rather than an isolated sector or program. The classroom teacher of the Experimental Group at St. Kevin's Elementary, Goulds said that the programs used in the way indicated would be an asset to the instructional program on logging in Newfoundland.

The developer concludes that there are other possible weaknesses in the programs and the testing process, and these weaknesses may have been factors that led to the less than expected results. The test items were based on research on the logging industry, and the test items covered all of the important aspects of that industry. The high pretest scores for some of the items indicate that these items cover information that is of general knowledge. These test items should be either eliminated or reworded to provide a greater challenge to the students.

The developer believes that the testing of the two programs with the same class on the same day was a source of interference for the students. The students in the testing of the modern logging made decisions based on the knowledge of old time logging. Also some of the questions in the modern logging were easier to answer if one could recall the correct answers in the old time test.

The instructional programs produced by the developer did not achieve the desired objectives; hence, the failure of the experiment, but the enthusiastic reception given to the programs by students, teachers, foresters, and general audiences indicates potential success. The developer concludes that this success could be achieved if the programs were used as integral part of a teaching unit on logging in Newfoundland.

Recommendations

The research and photography for this internship project began in the summer of 1975. The program, Logging with the A.N.D. Company 1909-1960, is recorded history; hence, its usefulness should not diminish with time. The program, Logging with Price (Nfld.): Summer Operations, outlines the present pulpwood logging operations; therefore, periodic revision and updating will be necessary.

Besides the need for a future revised modern logging operations, the developer concludes there are potential instructional programs within the programs of this project. The developer recommends that a future project deal with the evolution of the wood harvesting methods from 1905 to the present. As well the developer recommends a project that would examine in greater detail the camp life and working conditions for loggers between 1905-1960.

The developer's original intention was to produce the materials for the Geography program that is taught to Grade Six students. The results of the Formative Evaluation, the curriculum, and the learning capabilities of Grade Five students were factors that led to the testing of the revised programs with Grade Five students. The Grade Six students study Canadian geography and the Grade Five students study Newfoundland geography. The programs could be used with either grade level, but the developer recommends that the first choice for the use of the programs should be with Grade Five students.

The developer has shown the programs to Grade Nine students and to two adult audiences. In oral discussions with the three groups, the developer discovered that the viewers found the programs interesting and informative. The younger viewers liked the programs because they knew so little about logging whereas the older viewers found the programs, especially the old time logging

interesting because it revived forgotten memories and experiences. The audiences did not find the level of information or the style of the programs too elementary.

The developer concludes that the programs could be used beyond the elementary grades curriculum requirements, but for whom the programs may be used will depend upon the teacher, the audience, and the intended outcome.

Finally the developer recommends that wherever possible, future instructional programs be tested within the context of the program of studies.

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A P P E N D I C E S

A P P E N D I X A

PRETEST-POSTTEST

LOGGING WITH THE A.N.D. COMPANY 1909-1960

Appendix A

Logging with the A.N.D. Company 1909-1960

Part A

In the space provided indicate whether the following statements are true or false.

1. Newfoundland loggers had a reputation as fighters and trouble makers in the logging camps. 1.....
2. The Grand Falls mill was started because of the large supply of pine and birch in the area. 2.....
3. Horses were a vital part of the logging industry. 3.....
4. Most of the loggers worked in the woods during the summer. 4.....
5. The bucksaw was the main cutting tool for many years. 5.....
6. The logging camps were usually not far away from Grand Falls. 6.....
7. Many of the loggers were foreigners. 7.....
8. The cooking staff worked only during the meal hours. 8.....
9. Most of the logs were brought to the mill by trucks. 9.....
10. The only timber rights and the A.N.D. Company had were from Grand Falls to Red Indian Lake. 10.....

Part B

Circle the correct answer.

1. The A.N.D. Company was owned by: A. Canadians B. the British
C. Americans D. the French
2. Getting the logs to the mill was known as: A. the log haul
B. The drive C. the sack D. the run
3. The work in the camps during the winter was known as:
A. the haul off B. the freeze up C. the lift and carry
D. the muscle maker

Logging with the A.N.D. Company 1909-1960

4. When the loggers were not working in the woods, they usually worked at: A. the railway B. construction sights C. the fishery D. mining
5. Before the mill started at Grand Falls there was a large saw mill operation at: A. Badger B. Windsor C. Bishop's Falls D. Millertown
6. The usual way to get to the logging camps was by: A. walking B. horse carriage C. bus D. truck
7. Measuring the amount of wood cut by a logger was called: A. tally B. a scale C. a cut check D. an estimate
8. Most of the logs were carried out of the woods by: A. oxen and horses B. trucks and tractors C. dogs and oxen D. horses and tractors
9. In the early camps the men slept on: A. portable cots B. bow beds C. sleeping bags D. air mattresses
10. A majority of the loggers worked in the woods: A. full time B. seven days a week C. part time D. 40 hours a week
11. Tug boats were mainly used for: A. pulling supply boats B. pulling log booms C. pulling barges D. pulling logs into the rivers
12. In order to get a job in the woods after 1937 a logger had to be: A. strong B. unemployed C. a member of a union D. school dropout
13. At night in the camps the loggers usually: A. had lots of fights B. went to bed early C. had a party D. told ghost stories
14. The loggers usually kept in contact with home by: A. pay phone B. going home on weekends C. mail D. telegram
15. The yearly harvest of trees was called the: A. slash B. thanksgiving C. cut D. harvest

A P P E N D I X B

PRETEST-POSTTEST

LOGGING WITH PRICE (NFLD.): SUMMER OPERATIONS

Appendix B

Logging with Price (Nfld.): Summer Operations

Part A

In the space provided indicate whether the statements are true or false.

1. All logs are delivered to the mill in four ft. lengths. 1.....
2. The loggers have to walk to work each morning from the camp. 2.....
3. The Exploits River is still an important logging river. 3.....
4. Most loggers go home on the weekends. 4.....
5. The company's logging operations are the same in all camps. 5.....
6. The railway transports a large amount of the logs to the mill at Grand Falls. 6.....
7. The logging camps lack many modern conveniences. 7.....
8. A single method is used to scale wood. 8.....
9. Food at the camps is similar to home style cooking. 9.....
10. The logging industry is still mostly dependent on muscle power rather than machines. 10.....

Part B

Circle the correct answer.

1. Logs are transported to the mill by: A. the railway and trucks
B. trucks and boats C. rivers and trucks D. the railway and rivers
2. Logging equipment can be used: A. only in good weather conditions
B. only during the summer C. almost year round
D. only during the summer and fall

Logging with Price (Nfld.): Summer Operations

3. Loggers are: A. overworked and poorly paid B. paid too much for the work they do C. skilled workers who receive good wages D. not as good as they used to be
4. The cooks and their helpers: A. have the easiest jobs in the camp B. cook and get the fire wood C. prepare all the meals in the cookhouse D. have to deliver the lunches to the work sights
5. Logging at Price (Nfld.): A. has not changed very much over the years B. is old fashioned compared to other parts of Canada C. is constantly changing and improving D. will close down because of the spruce budworm
6. Chain saws are: A. too dangerous for winter logging B. the best and cheapest way to harvest trees C. usually owned by the loggers D. (have) always been used in logging
7. The loggers: A. are taken to the logging camps on special buses B. are taken to the logging camps by boat and helicopter C. must get to the logging camps on their own D. use only trucks to get to the logging camps
8. When equipment breaks down: A. mechanics try to repair the equipment on the spot B. it is taken to Grand Falls for repairs C. the operators must get it going again D. it is taken back to the camp for repairs
9. Woods roads: A. are built and maintained by the provincial government B. are usually very rough C. are vital parts of the logging industry D. are for trucks only
10. Butt diameter scaling: A. was the old way to measure wood B. tells the volume of wood in a tree C. can only be done with big trees D. is not really accepted as a good way to measure
11. Skidders: A. are used to peel bark off the trees B. cut down trees C. drag trees from the cutting area D. are used to move equipment down steep hills
12. Loggers stay in the camps: A. for two week periods B. usually from Monday to Friday C. just each working day D. only during the spring and summer

Logging with Price (Nfld.): Summer Operations

13. A slasher: A. cuts down small trees B. helps to make new roads C. cuts trees into various lengths D. is used to cut the trees into chips
14. Loggers: A. do not have a union B. are union members C. do not have to join the union D. are trying to form a union
15. The company: A. operates all its camps the same way B. uses two systems to harvest wood C. does not care how the wood is cut D. uses four systems to harvest wood

A P P E N D I X C

PRETEST-POSTTEST

LOGGING WITH THE A.N.D. COMPANY 1909-1960

Appendix C

Logging with the A.N.D. Company 1909-1960

Part A

Indicate, in the space provided, whether the following statements are true or false.

1. Newfoundland loggers had a reputation as fighters and trouble makers in the logging camps. 1.....
2. The Grand Falls mill was started because of the large supply of pine and birch in the area. 2.....
3. Horses were a vital part of the logging industry. 3.....
4. Most of the loggers worked in the woods during the summer. 4.....
5. The bucksaw was the main cutting tool for many years. 5.....
6. The logging camps were usually located two or three miles from a settlement. 6.....
7. Many of the loggers were not Newfoundlanders. 7.....
8. The cooking staff worked only during the meal hours. 8.....
9. Most of the logs were brought to the mill by rivers. 9.....
10. The A.N.D. Company cut logs for its mills from Millertown to Terra Nova. 10.....

Part B

Circle the correct answer.

11. The A.N.D. Company was owned by: A. Canadians B. the British
C. Americans D. the French
12. Getting the logs to the mill each spring was known as: A. the log haul
B. the drive C. the sack D. the run
13. The work in the camps during the winter was known as: A. the haul off
B. the freeze up C. the lift and carry D. the muscle maker

Logging with the A.N.D. Company 1909-1960

14. When the loggers were not working in the woods, they usually worked at: A. the railway B. construction sights C. the fishery D. mining
15. Before the mill started at Grand Falls there was a large saw mill operation at: A. Badger B. Windsor C. Bishop's Falls D. Millertown
16. To get to the logging camps loggers usually: A. had to get a ride on a horse B. had to take a bus to the camps C. had to do a great deal of walking D. had to go by canoe
17. Measuring the amount of wood cut by a logger was called: A. a tally B. a scale C. a cut check D. an estimate
18. During the haul off most of the logs were carried out of the woods by: A. oxen and horses B. trucks and tractors C. dogs and oxen D. horses and tractors
19. In the early camps the men slept on: A. portable cots B. bow beds C. sleeping bags D. air mattresses
20. Most of the loggers usually worked in the woods: A. 12 months of the year B. 9 months of the year C. a few months of the year D. 7 months of the year
21. Tug boats were mainly used for: A. pulling supply boats B. pulling log booms C. pulling barges D. pulling logs into the rivers
22. In order to get a job in the woods after 1937 a logger had to be: A. a contractor B. a union member C. a foreman D. a non-union member
23. At night in the camps the loggers usually: A. had lots of fights B. went to bed early C. had a party D. told ghost stories
24. The loggers usually kept in contact with home by: A. telephone B. going home on weekends C. letters D. telegrams
25. The loggers work in the woods during the fall and early winter was called: A. the drive B. the slash C. the cut D. the haul off

A P P E N D I X D

DISCUSSION STATEMENTS

Appendix D

Discussion statements for Logging with the A.N.D. Company 1909-1960

1. I knew a great deal about old time logging before I saw the production.
2. I knew a great deal about old time logging after I saw the production.
3. I understood the descriptions given.
4. I believe other students my age would enjoy this production.
5. The slides helped me see the way things were done in old time logging.
6. I think this production should have been shorter, longer or it was just right.
7. I found this production interesting.

A P P E N D I X E

PRETEST-POSTTEST

LOGGING WITH PRICE (NFLD.): SUMMER OPERATIONS

Appendix E

Logging with Price (Nfld.): Summer Operations

Part A

In the space provided, indicate whether the statements are true or false.

1. All logs are delivered to the mill in four or eight ft. lengths. 1.....
2. The loggers have to walk to work each morning from the camp. 2.....
3. Rivers are still important for moving logs in modern logging. 3.....
4. Most loggers remain in the camps on the weekends. 4.....
5. The company uses the same system for logging in all of its operations. 5.....
6. The railway transports a large number of the logs to the mill at Grand Falls. 6.....
7. Today's logging camps are not very comfortable. 7.....
8. Two methods are used to scale wood. 8.....
9. Food at the camps is similar to home style cooking. 9.....
10. The logging industry is still mostly dependent on muscle power rather than machines. 10.....

Part B

Circle the correct answer.

11. Logs are transported to the mill by: A. the railway and trucks
B. trucks and boats C. rivers and trucks D. the railway and rivers
12. Logging equipment can be used: A. only in good weather conditions
B. only during the summer C. almost year round D. only during the summer and fall
13. Loggers are: A. overworked and poorly paid B. paid too much for the work they do
C. skilled workers who receive good wages D. not as good as they used to be
14. The cooks and their helpers: A. have the easiest jobs in the camp
B. cook and get the fire wood C. prepare all the meals in the camp
D. have to deliver the lunches to the work sight

Logging with Price (Nfld.): Summer Operations

15. Logging at Price (Nfld.): A. has not changed very much over the years B. is old fashioned compared to other parts of Canada C. is constantly changing and improving D. is done only during the winter
16. Chain saws are: A. too dangerous for winter logging B. the best and cheapest way to cut trees C. not used in modern logging D. (have) always been used in logging
17. The loggers: A. are taken to the logging camps by C.N. buses B. are taken to the logging camps by boat and helicopter C. must get to the logging camps on their own D. use only company trucks to get to the logging camps
18. When the equipment breaks down: A. mechanics try to repair the equipment on the spot B. the operator must fix the machine C. the foreman must fix the machine D. the equipment is immediately towed back to the camp for repairs
19. Woods roads: A. are built and maintained by the provincial government B. are usually very rough C. are a vital part of the logging industry D. are paved
20. Butt diameter scaling: A. was the old way to measure wood B. tells the volume of wood in a tree C. is used to take bark off the trees D. is not really accepted as a good way to measure
21. Skidders: A. are used to peel bark off the trees B. cut down trees C. drag trees from the cutting area D. are used to move equipment down steep hills
22. Most loggers live in the camps: A. for two week periods B. from Monday to Friday C. just each working day D. for a month at a time
23. A slasher: A. cuts down small trees B. helps to make new roads C. cuts trees into 4 ft. or 8 ft. lengths D. is used to cut the trees into chips
24. Loggers: A. do not have a union B. are union members C. do not have to join the union D. are trying to form a union
25. To harvest its wood the company uses the following number of systems: A. two B. three C. four D. one

A P P E N D I X F

DISCUSSION STATEMENTS

Appendix F

Discussion statements for Logging with Price (Nfld.): Summer Operations

1. I knew a great deal about modern logging before I saw the production.
2. I knew a great deal about modern logging after I saw the production.
3. I understood the descriptions given.
4. I believe other students my age would enjoy this production.
5. The slides helped me see the way things are done in modern logging.
6. I think this production should have been shorter, longer or it was just right.
7. I found this production interesting.

Appendix G

Slide/Tape Production

"Logging with the A.N.D. Company 1909-1960"

Under Separate Cover

Appendix H

Slide/Tape Production

"Logging with Price (Nfld.): Summer Operations"

Under Separate Cover

① 5016 58 Pocket

