THE RELATIONSHIP BETWEEN RESOURCE-BASED LEARNING AND INFORMATION LITERACY

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The Relationship Between Resource-Based Learning and Information Literacy

by

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ABSTRACT

Trends and changes in education are a common part of this field of study and routinely affect the practitioners to the point of confusion. What may be an applicable and advantageous strategy today is often deemed inappropriate at some later date. The strap was once a highly touted form of discipline that has since been viewed as unacceptable and counter productive. So it seems to be with the myriad of educational strategies constantly heralded as the latest saviours of our educational system. More attention needs to be paid to determining the relationship between past and present strategies so that the transition from one to the other, if necessary, is as smooth and acceptable as possible. Practitioners are hardly finished with developing an understanding for one methodology when another, similar strategy is often heaped upon them. It is, in my opinion, important that all are aware of the similarities between the old and the new to help dispel the concerns and frustrations that practitioners have when it comes to implementation.

This project serves to ease the transition between the traditional Resource-Based Learning strategies and the more recent emphasis on Information Literacy. It provides an examination of both theories and their accompanying strategies along with relevant examples for the Newfoundland and Labrador School Curriculum. It also provides the reader with ways to overcome some of the more commonly indicated barriers to the implementation of such strategies.

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CHAPTER ONE

AN OVERVIEW

Rationale

There is much confusion and trepidation with regard to the implementation of resource-based learning strategies in today's schools. The literature shows that many are apprehensive about attempting something new while others argue that the support structures necessary for successful implementation are non-existent. This necessitates the continued study of this area in an attempt to develop strategies for the successful implementation of resource-based programs while at the same time providing practical examples of successful forays so as to alleviate the apprehensions that some have with regard to this area. Moving from one successful strategy to another may often provide confusion for the practitioner so it is vital that attempts be made to study the relationship between the old and the new. Such study will break down the barriers and provide guidance for those who often find it difficult to keep up with the ever changing educational field.

Purpose of the Project

My desire in completing this project was to take a body of work and create something that was not only practical and of use to the everyday classroom teacher but also manageable for the resource person in the school. By this I mean that any resource person should be able to take this piece of work and use it not only to dispel the fears others have about trying to develop and implement resource-based projects but also to provide them with examples of such implementation. It should be noted that both units have been used in the class and for the unit developed using the guidelines of the Information Literacy Model, some examples of the students

work have been included.

While the information contained in the literature review would serve to show others how to overcome impediments that are within teachers' control or not to dwell on challenges that are beyond their control, it shall relate the notion that as we progress in the field of education, change does not always mean something new and different. A reworking of an old way of doing things so that it fits today's environment should encourage others in the teaching profession that the changes are not that substantial. Resource-Based Learning to Information Literacy is not as big a leap as some people might believe.

For the practical portion of this project it was my desire to complete a pair of curriculum units which would serve as examples to the possibilities in resource-based learning. While they do not strictly adhere to the tenets of information literacy and resource-based learning, they allow for a comparison of two possible strategies in dealing with topics in our school system today. It is my contention that the strategies outlined in this paper simply serve as guidelines which are developed and modified to suit an individual teachers specific needs. As stated many times, learners are individuals and as such need to have their interests and attitudes taken into account when developing resource-based units. I have implemented both of these units and modifications are always necessary to contend with unforeseen circumstances.

The first unit is a component of the Cultural Heritage 1200 course that has been a part of the revised high school program since its inception in 1983. After being assigned the course in my first year as a teacher, I was amazed at the failings of the course and its outline to delve into the many facets of Newfoundland Culture. Many colleagues have continually commented on the text

and its shortcomings and have, in a way, been forced to develop the course along a resource-based motif. An initiative was undertaken on the part of those teachers in the region to meet and develop a series of units that would assist in delivering a resource-based course. This particular unit is simply an interpretation of a set of activities that have worked for the aformentioned teachers in the past. Our cooperative planning sessions involved discussion on what types of activities would allow the students to participate to the fullest extent and how they would allow for the student to present their opinions in an organized manner.

The Cultural Heritage unit can be most closely equated with the traditional resource-based learning strategy as one determines a set of objectives, gathers, analyzes, evaluates, and utilizes a wide variety of resources to deliver those objectives. At the same time, the activities are heavily laden with cooperative learning activities as well as displays and presentations for evaluation purposes.

The second unit came about as a result of my investigation into the notion of information literacy. After receiving a new position as teacher-librarian for a large Grade 7-12 school in Eastern Newfoundland, I began to work with teachers to develop units which emphasized integration of technology into the curriculum. Two grade eight social studies teachers came to me with the intention of working to put together some materials on France for the next unit. I had just finished reviewing the articles on information literacy and resource-based learning and was intrigued by the notion of diverse ends. I though it would be unique if the students were to work in groups to create a display on France with each group doing something totally different. The three of us spent an hour of preparation time devising a set of activities that would work with

the strenghts of different students. The model and flag activities were designed for students who seemed to favour more hands on work while the essays were aimed at those students who had a talent for writing. The fact that this unit was implemented as the final project for the year enabled the classroom teachers to make this judgement.

What came about as a result of this collaboration was the enclosed unit on the Country of France. Its basic elements are of such a generic nature that I believe they can be transposed to any number of topics in the present curriculum. Environmental Science students doing work on various ecosystems to English Literature students reading To Kill A Mocking Bird could be encourage to complete a similar analysis with each group focusing on a different element.

Organization of the Report

This project is organized in the following manner: chapter one provides an overview of why the project was developed and my rationale for its importance. Chapter two is a literature review of the relevant information regarding the topics of Resource-Based Learning and Information Literacy with particular emphasis on the barriers to successful implementation of these strategies. It also provides an examination of possible solutions. Chapter three provides a general rationale for the curriculum units that are based on the theory presented in chapter two. This chapter contains a unit developed using the traditional resource-based learning guidelines. Finally, chapter four contains a unit develop using the Information Literacy model as espoused by the more recent writers in the field.

CHAPTER TWO

AN ANALYSIS OF THE RELATIONSHIP BETWEEN RESOURCE-BASED LEARNING AND INFORMATION LITERACY: STRATEGIES AND BARRIERS TO IMPLEMENTATION

As we progress through time the theory and arguments surrounding the profession of education have undergone massive alterations as new concepts are developed and the role of both the educator and the learner are envisioned in a new light. Two concepts central to the enhancement of the learning environment today are Information Literacy and Resource-Based Learning. While both have their distinctive traits as espoused by the literature, an in depth analysis of that literature sees the two concepts as inseparable. It is within this light that I will discuss the relationship between both concepts as detailed in the literature with the end result being an examination of what is involved in both, their interrelationship, and why, when all agree of the necessity for these two elements in today's educational sphere, barriers exist which prevent a full realization of the goals and objectives.

> Today's information society transcends all political, social, and economic boundaries. The global nature of human interactions makes the ability to use and access information critical. Differences in cultural orientation toward information and symbol systems makes the management of information complex and challenging. Current and future reform efforts should address the rapidly changing

nature of information and emerging information technologies.

(Breivik, 1992)

It is this statement, echoed by numerous writers, which guides educators into new spheres of thought on how to deliver a substantially enriching program to students which allows them to keep pace with the changing world. The notions espoused by Locke and Skinner concerning the nature of learning no longer are applicable to the realm of education today. As such the methodologies once practiced under the auspices of these theories are archaic and detrimental to the fundamental learning process of students today.

It is now the common notion that students are not passive recipients of knowledge but rather active participants in the whole learning process. Wittrock (1989) argued that more emphasis on students' cognitive processes is necessary because the students have a very active role in the learning process. In fact his writings are replete with concepts such as generative, active construction, and building relations. Others such as Brown and Palincsar (1982) stressed the notion of metacognition and how learners control their thinking.

Once cognizant of the fact that students are not passive in the learning process it became important for educators to develop effective strategies to make learning a more student centered activity rather than a teacher centered activity. By teacher centered I refer to the colloquial chalk and talk method of delivering a program of studies. Facilitating this drive to discover new ways of creating learner centered activities was the technological revolution and its implications for the classroom teacher.

Resource-based learning is a natural by-product of this thought for it directly put the

impetus for learning into the laps of the students and created facilitators out of the teachers. It encouraged the students to assume more responsibility for locating and accessing the material on which they will base their learning (Breivik, 1992). McHenry, Stewart, and Wu (1992) saw resource-based learning as going beyond the classroom lectures and textbooks to draw on a wide range of information sources and formats, both within and outside libraries. Farmer (1992) argued that the challenges of the Information Age and of resource-based learning demand that teachers develop strategies that help students become evaluators, critical readers, and users of information. Weisburg and Toor (1995) stressed that resource-based learning should prepare students for selecting, interpreting, and using a flood of ideas. In fact, the Learning Resources Program implemented in British Columbia in the early 1990's emphasized a program centered on active learning, inclusion of all students, acceptance of diverse student needs and abilities, continuos progress and more learner focused goals. (Tarasoff and Emperingham, 1994). Even the Library Bill of Rights is often interpreted to enforce the notion that the media professionals and teachers will work closely together to integrate instructional activities in classroom units designed to equip students to locate, evaluate and use a broad range of ideas effectively (EL, 1996).

As the definitions stated, resource-based learning involves the student more actively in his or her learning. The teacher actually acts more as a facilitator of the learning process guiding, monitoring, and evaluating student progress (Learning to Learn, 1991). Grandy (1993) concurred with this idea when he stated that it is " a student centred process not a teacher centred one" (p. 23). The teacher will provide the student with units of study that would require the

utilization of various resources available in the school setting. As the students work, the teacher would assist and evaluate when necessary but not provide the typical textbook type lectures to get students to learn. Wolinetz (1991) asserted that rather than learning mechanically from teachers, pupils will learn through participation in well structured units which actively involve them in the educational process. Breivik (1992) summed up the importance of resource use by claiming that only when the faculty require students to use a wide variety of resources as part of class assignments do students receive the message that the ability to locate, evaluate and effectively use information is critical to learning.

Many of these concepts and ideas will emerge further as the discussion into the relationship between resource-based learning and information literacy progresses. Regardless of the definition held, resource-based learning has become a vital component of today's teacher's repertoire of methodologies. An examination of the components of resource-based learning will be necessary before a comparison to information literacy can be made.

In Learning to Learn (1991), resource-based learning was deemed to incorporate the following features:

- Students actively participate in their learning
- Learning experiences are planned based on instructional objectives
- Learning strategies and skills are identified and taught within the context of relevant and meaningful units of study
- A wide variety of resources is used
- Locations for learning vary

- Teachers employ many different instructional techniques
- Teachers act as facilitators of learning; continuously guiding, monitoring, and evaluating student progress
- Teachers work together to implement resource based learning across grade levels and subject areas

Weisburg and Toor (1995) envision the basic tenants of resource-based learning in a similar manner:

- Variety of Resources
- Collaborative planning and teaching (a scope and sequence of information skills)
- Resources are used for a purpose
- Group Work
- Diverse and shared end products

Up to now little mention has been made of the complimentary and, in my view, extremely similar , relationship between resource-based learning and information literacy. An examination of a couple of models for resource-based learning will enhance the comparison.

The Learning to Learn Model

One of the first models detailed in the Learning to Learn document (1992) is the SUCCEED model. While a complete description is contained in Appendix A, a cursory examination will suffice for later comparison to information literacy models.

The SUCCEED model is composed of seven steps that an independent learner will utilize in their drive to understanding:

S - Select and focus topic and information needs

U - Uncover potential sources of information. Learn how to access them

C - Collect, examine, and select suitable resources

C - Compile relevant information from selected sources

E - Evaluate, interpret, analyze, and synthesize the information

E - Establish and prepare an appropriate format and present the information

D - Determine the effectiveness of the whole process

The Effective Model

The second model is termed the EFFECTIVE model (Learning to Learn, 1992) and while it is structured more for the planning of resource-based units, its similarities to the model for independent learning is remarkable. A complete description of the stages is contained in Appendix b, however the short examination below suits the needs of this paper.

E - Establish general goals and objectives from curriculum guides

F - Focus on learners to determine their prior knowledge and skills

F - Formulate specific objectives for the resource based learning experience

E - Establish instructional strategies, techniques, and learning activities

T - Timetable access to resources, facilities, and personnel

I - Implement the plan

V- Verify that learning is occurring

E - Evaluate student achievement and the instructional process

Both of these models would appear to mirror the explanation for the value of resource-based learning as provided by Breivik (1992) in her article "Education for the Information Age" when she argues that instead of relying on text books and lectures, resource-based learning prepares students for lifelong learning by having them learn from the wide range of information resources that fill their daily lives, such as newspapers, television, journals, online data bases, government documents, experts, and local agencies. It is within this simple statement that the relationship to the notion of information literacy begins to emerge.

Information Literacy

Defined by Brock (1994) as the ability to recognize an information need and to locate, understand, evaluate and use the needed information effectively, information literacy appears to be the direction that media professionals and all educators are being encouraged to follow. It is my contention that many have been adhering to this philosophy not under the heading of information literacy but rather under the notion of resource-based learning. In fact, some simply see one as a means to the others. Hancock (1993) argued that information literacy is a potential tool of empowerment for all learners, reached through a resource-based learning approach. Eisenberg and Small (1993) see resource-based learning as a body of work promoting the use of library media resources, personnel, and services in an educational setting while at the same time fostering a certain approach to the use of information in education. A more in depth analysis of the basic elements of this concept may serve to better illuminate the close relationship between resource-based learning and information literacy.

The importance of information literacy as an element of the educational process is clearly

understood and emphasized by a variety of individuals. Breivik and Senn (1993) made reference A State University of New York report (cited in Brevek & Senn, 1993)entitled Suny 2000: College Expectations, advocated "the goal of information literacy for all high school graduates, not merely those with eminent plans to attend college," in order to avoid any form of a two tiered society. Eisenberg and Small (1993) reiterated this notion when they claimed that although the timeliness, applicability, and overall value of sources may change, information skills should provide the means for personal development as an information user.

With this in mind, it is necessary to delve into the basic elements or components of information literacy strategies to fully comprehend the similarities of the two fields of thought. Hancock (1993) described information literacy as an individual's ability to:

- recognize a need for information.
- identify and locate appropriate information sources.
- know how to gain access to the information contained in those sources.
- evaluate the quality of the information obtained.
- organize the information.
- use the information effectively.

These strategies are simply reflections of those elements argued to be the basis of many resource-based learning activities. In fact, they repeat many of the elements outlined in the SUCCEED and EFFECTIVE models of independent and resource-based learning.

Another model which is touted as being a pathway to information literacy is the

Information Intermediary Process established by Brock (1994). Once again a detailed analysis is located in appendix C. This model envisions the learning process as a six stage event:

- Defining the problem.
- Developing information seeking strategies.
- Locating information.
- Gathering and assessing information.
- Synthesizing information.
- Evaluating and refining results.

The parallels between the concept and strategies of information literacy and resource-based learning are obvious. Both stress the importance of establishing goals or knowing what problem has to be solved, both incorporate the necessity for strategies which will allow the learner to fully access information sources, and both stress the importance of built in mechanisms to evaluate or verify the results of the activities. If both strategies appear to be the same on the surface why then is there a necessity to create a new concept (information literacy) when resource based-learning is generally held to be an effective method of delivering an educational program? I believe the answer is two fold.

First, the ever advancing technological breakthroughs play a significant role. Eisenberg and Small (1993) state the matter very succinctly when they say:

> As we move from an industrial society into the information age,
> we recognize vast increases in the amount and availability of
> information through traditional publishing channels, computerized

> data bases, and telecommunications, leading to an 'explosion' of information. Not only has the sheer amount of available information increased but users are offered improved access and delivery mechanism for information ranging from traditional print based sources to more recently developed electronic sources. (p. 268)

Blodgett and Repman (1995) also herald the emerging technologies as the main catalyst in the development of a new way of viewing resource-based learning. They see the information explosion and instant transmission of information as having made a significant impact on the delivery of educational programs and school library media centres. They even argue that the impact is far greater than the simple technological changes of the past which came with the advent of the microfilm and microfiche. Ann Irving (1992) in her article, "Information Skills across the Curriculum," contended that as information technology becomes more common place in schools, a new emphasis will be placed upon teachers to encourage the development of information skills. She argues that the new National Curriculum will offer a better balance between knowledge (subjects) and skills (learning processes), and the skills for learning are information skills.

The emerging technologies have therefore played a significant role in turning the emphasis toward the concept of information literacy. Yet I contend that another factor, while evident in the literature on resource based learning, enjoys a much greater role in the concepts of information literacy.

The notion of partnerships seems to receive particular attention when it comes to delivering information skills to today's students. The literature on resource-based learning does

indeed make reference and emphasize the importance of partnerships in the learning process but such references usually revolve around the concept of cooperative planning and teaching. In Learning to Learn (1991) reference is made under the section on personnel that the district, principal, teacher, and learning resource teacher are all partners of sorts in the implementation and delivery of resource-based learning programs.

Tarasoff and Emperingham (1994) stress the importance of cooperative planning in that it helps to identify the skills and processes students need to learn for accessing resources, thinking about ideas and information, and communicating them. In the document Learning to Learn (1991), the Cooperative Model for Planning and Teaching is encouraged to ensure that learning strategies and skills are integrated into the curriculum. However, when ones examines the literature concerning information literacy, a marked increase in the importance of partnerships is immediately understood.

Donham van Deusen (1995) reiterates the notion of important partnerships between teachers and teacher-librarians in the area of cooperative planning but clearly she gives it an information literacy emphasis and context specific importance:

> They must sit down together, roll up their sleeves and work at matching the information skills agenda to the expectations in the disciplines to see how these can be integrated so that information skills reside within the context of the content area curriculum. (p. 17)

Tierney (1992) also emphasized the importance of the context when she argued that

teacher-librarians are convinced that information skills need to be taught within a meaningful course context with the goal being an improvement of the students' knowledge of their subject areas through improved information skills.

Breivik and Senn (1993) not only stress the importance of partnerships but in doing so make reference to the interdependence of the two areas of resource-based learning and information literacy. It is their contention that to meet the educational challenges of today, many partnerships are necessary to provide the ongoing resource-based learning that will assure high school graduates being information literate. Not only do they stress the partnerships among teachers in the co-development of curricular units but they also emphasize a number of other partnerships as well:

- Partnering with principals.
- Partnering with community members.
- Partnering with public libraries.
- Partnering with business.

Each of the partnerships adds something to the whole process of establishing information literacy as a fundamental aspect of education today. Principals help to model partnering for others to see and act as a proponent of information literacy, the community can assist in showing the value of cooperation, and business can allow for the application of skills learned in an actual real-life setting. Community members, public libraries, and businesses all allow for the examination of resources outside of the traditional school setting.

Closer to home, partnerships such as "Parents Participating: Children Achieving" and "A

District Computer Training Program," have been instrumental in fostering an improvement in student achievement (Stemnet, 1997). In a document entitled, Partners in Education: Working and Growing Together (Stemnet, 1997), the following quote seems to sum up the idea of partnerships and their importance to education:

> The belief that ' it takes a whole village to raise a child ' is the inspiration for new programs involving educational partnerships. Rethinking attitudes towards learning and bridging the gaps between education and the workplace are crucial if students are to accept that learning has relevance to their future. Education and training institutions need to collaborate with each other and with the workplace and government, sharing information and resources to develop a more responsive education system. Further integration and networking between education and other organizations in the community are essential to create, develop and maintain a lifelong learning culture.

Whether a means to an end (development of lifelong learners) or a complimentary set of strategies to enhance the learning experience, one cannot argue of the relationship between the two. A more fundamental question involves an attempt to understand why resource-based learning or information literacy is not at the forefront of practiced teacher strategies? The second part of this paper will attempt to answer this question.

In her report, Recommendations from the provincial forum on resource based learning and teaching, Hannis (1994) defined resource-based learning as " occurring when students are

actively involved in their own learning using a wide variety of resources" (p. 92). This definition would appear a bit simplistic along side of Waddles' definition, as cited in Ray (1994), "teachers and librarians working together in partnership with the principal and students to plan, teach, and evaluate units which more fully employ the media resources and skills available" (p. 19). Lighthall (1990) also viewed resource based learning as something **more** than students active in their own learning.

> In this new scenario the classroom teacher and the teacher librarian work together to create units of study which use and exploit the full range of resources (both book and non-book, both human and Material) in the school library resource centre, and which incorporate a school wide scope and sequence of research and study skills. (p. 29)

Although there are certain differences in each of the previous statements, fundamental basics do permeate each. Those being the participation of teachers, teacher-librarians, and administrators in the process. If this is what resource-based learning involves, what then does it need to succeed and why is it not always available? As mentioned earlier the reliance on a variety of partnerships is central to success in this area. Understanding the nature of these partnerships is vital to addressing the problems surrounding the lack of acceptance of this concept.

Barriers to Successful Implementation

Much of the literature agrees that there are certain basic factors which are necessary to the successful implementing of a resource-based learning strategy: teacher collaboration, teacher-librarians, a supportive administration, and funding. Items such as the number of available

resources and space will be dealt with under the issue of funding for the two are directly linked to the availability of money.

The literature suggests that resource-based learning is dependent on the teacher and teacher-librarian getting together, establishing objectives for a unit and then developing the resources necessary to meet the objectives (Ray, 1994). Grandy (1993) claimed that teachers must be willing to collaboratively plan and implement instructional materials for the sake of information literacy. Lighthall (1990) saw it as a sort of evolution whereby the teacher-librarian has moved from the keeper of books to someone who interacts with the classroom teacher to plan, develop, and implement units through the effective use of all media.

However, such collaboration is not without its own problems. Meyer and Newton (1992) discovered that some teachers had reservations about collaboration. Teachers felt that having to work with another person who might not share their expectations and teaching styles would inhibit them from using the strategy. This fear or avoidance of collaboration also extends to the teacher-librarian.

Some teachers still see the teacher-librarian as the keeper of books and do not recognize their (librarian) role in the learning process. If teachers hold this archaic and antiquated view of teacher-librarians then they may think them unqualified to participate in the planning process (Ray, 1992). Even if teachers do understand and appreciate the role of the teacher-librarian in the learning process, there is still the issue of a teacher's rapport with the teacher-librarian. Respondents in Meyer and Newton's (1992) study indicated that the librarian's personality and rapport with the staff would affect the use of cooperatively planned resource-based learning. In

other words, if teachers got along with the resource teacher then there was a greater chance of implementing resource-based learning strategies than if they did not get along. The media specialists themselves also had some reservations about their, and the resource centre's participation in the development and evaluation of resource-based learning units. There is a feeling that this association would take away from the resource centre as a place to get away from the pressures of the class and that it, along with the teacher-librarian, would be feared more than teachers (Ray, 1994) .

The teacher-librarian, outside of the collaborative role mentioned above, has other important functions to perform if resource-based learning strategies are to succeed. For instance it is their job to make the resource centre an inviting place for students to visit. Olson (1994) held that students must be made to feel welcome and not rushed or reminded of overdue books every time they enter or they will associate negative feelings with such visits and simply stop coming.

The literature seems to stress that teacher-librarians have to assume the central role if resource-based learning is to succeed.

> Teacher-librarians must take a leadership role in helping administrators and other teachers recognize and value the school library program as an indispensable part of a student's learning experience. (Poustie, 1995, p. 26)

Hannis (1994), in her report, also reiterated this point by stating that "teacher-librarians, who are teachers with expertise in information literacy, must act as a catalyst to implement

resource-based learning and teaching" (p. 94). Along with acting as the initiator of resource based learning programs, there is a strong emphasis on the role of the teacher-librarian in the beginning phases of curriculum development. Lighthall (1990) asserted that teacher-librarians need to be given places on curriculum or textbook committees because the resource centre should help to bring about change, not simply react to it. Ray (1994) also saw the role of the teacher-librarian as the one that should be included when ant decisions are made concerning curriculum planning.

> If the school is considering new textbook adoptions, the specialist can advise if there are materials in the collection to enhance the new material. If new technologies are being considered, the Specialist can accumulate reviews and evaluations to help the Committee make its choices. (p. 21)

There is a problem with this reliance on the teacher-librarian as a core figure in resource based learning- what if you do not have one? Researchers agree that all schools must have a teacher-librarian. In fact Ray (1994) made reference to a set of guidelines for North Carolina which states that each school should have at least one full-time librarian and one half-time library assistant in each school in the state. This coincided with the research that shows that "a full-time professional and a full-time clerical are the minimum staffing complement to ensure effective services to students and teachers" (Lighthall, 1990, p. 30). Compare this with Newfoundland's allocation of one teacher-librarian for every 1000 pupils (Wolinetz, 1991). What this means, in reality, is that for a school board which has 4000 students and 12 schools,

each school would get approximately a one-third time resource teacher. If the resource centre is understaffed, the teacher-librarian will have to spend too much time at the clerical work and not enough time working with teachers (Lighthall, 1990).

With this ratio of teacher-librarians to students there are many regions in this province which would not have such an individual unless the position were taken from somewhere else. Often times in our system, the teacher-librarian is a one-third or one-quarter time resource person and the rest of their time is filled with being a classroom teacher. It is becoming ever increasingly difficult to offer a good resource-based learning program without the specialist in place to assist and guide teachers through the process. As was said earlier, the teacher-librarian must act as the catalyst for the process to be implemented but if you do not have such a person, where does the onus for implementation fall? Probably onto the individuals considered to be central to the effective implementation of any resource-based learning strategy, the administrators.

In much of the research reviewed, the role of the administrators in the implementation of resource-based learning is seen as the most fundamental and important aspect (Lighthall, 1990; Meyer and Newton, 1992; Ray, 1994). The exact nature of this role is examined in a couple of areas: funding, scheduling, and in-service/professional development.

In the area of funding, Lighthall (1990) stressed that administrators must provide as much practical support as possible in the form of funding for facilities, collections, and staff. She goes on to say that "generous and ongoing funding is necessary to create quality programs and educational excellence" (p. 30). Obviously this level of funding is going to be contingent on the amount of funding that comes from school boards and governments and there is some question as

to the adequacy of that present level of funding. Ray (1994) also concurred with this notion of the importance of funding from the administration. He stated that "critical to putting this vision into practice is a commitment by the principal to adequate finds."(p. 23).

The issue of scheduling is one that needs the direct cooperation of the administration if it is to be successful. Meyer and Newton (1992) discovered that one of the most common concerns expressed by teachers when it came to the implementation of resource-based learning units was the demand on their time. Resource-based learning does involve a great deal of time, in fact the initial investment of time in planning is very high (Grandy, 1993). In order to alleviate the concerns teachers have about increased demands on their time, and thereby encourage the effective use of resource-based learning strategies, administrators must play a part. Administrators have the capability to ensure that teachers have adequate preparation time to work on the development of resource-based learning units (Ray, 1994). This factor is considered so vital that its exclusion would be detrimental to the whole process.

> This process will be long in getting established if the workload of developing resource-based learning units is added to present duties. Teachers have full plates already...must be given large amounts of release time to plan and develop resource based learning instructional packages. (Grandy, 1993, p. 24)

However, the availability of time must be tempered with the knowledge that information literacy is not something to be taught as an add on to the present curriculum. Farmer (1992) stressed that information literacy must be throughly integrated into the design of courses and

reflected in the objectives. An effective information literacy program should not compete with the use of class time but instead compliment it and promote productive student learning.

This being said, administrators can further support the availability of preparation time by conveying to both students and teachers what is expected of them. The administration can create the expectation that both students and staff are to avail themselves of the resource centre as well as the expectation that teachers and teacher-librarians will work together to initiate resource-based learning (Lighthall, 1990). The Meyer and Newton study (1992) discovered that the schools which experienced the best implementation of resource-based learning strategies were the ones where the principals expectations for the use of this program were high.

The administration of schools also has control over the amount of time that teachers and teacher-librarians are provided with to in-service and gain professional development concerning resource based learning. Ray (1994) stated that "staff development or in-service programs can be very helpful in clarifying the resource-based concept for teachers and librarians" (p. 24). In Learning to Learn (1991) it was recognized that "professional development programs for teachers are crucial if these changes in philosophy, skills, and instructional techniques are to be realized" (p. 27).

In our own province restrictions on substitute days and professional development days have resulted in the elimination of many opportunities to engage in activities which would see development of important skills and strategies. As the literature shows, without this time to learn about the program and work on its implementation, it is surly to fall by the wayside as yet another technique that would be worth utilizing if only we had the time.

The issue of flexible scheduling must also be carried over to the resource centre and the role of the teacher-librarian while in the centre. Ray (1994) claimed that if teacher-librarians are locked into regularly scheduled skills classes, they will not have the time to plan integrated instructional units. Lighthall (1990) viewed the role of the administrator in this situation as essential:

> The most important contribution administrators can make in this regard is to recognize that a rigidly scheduled school library resource centre, where the teacher-librarian's time is taken up with library classes, cannot respond to curricular needs; and so they provide for flexible scheduling of the school library resource centre. (p. 30)

This leads to the last topic for examination, funding. The money to pay for any program is without a doubt the most vital factor in that program's existence. References have already been made to the role of the administrator in securing the money needed to ensure proper staffing levels in the resource centre as well as the need for funds to guarantee time off for professional development and in-service programs. What has not been addressed is the money required for the collections of materials itself.

The Home and School Federation in Newfoundland was adamant about the need for funding in the area of materials when it claimed that resource based teaching is unlikely to succeed unless school resource centres are enlarged and each school has a basic collection of material (Wolinetz, 1991). Hannis (1994) recommended that the school staffs ensure that funding is

allocated to support the selection and management of resources. This level of funding is dependent on the level of support that resource-based learning programs receive from both provincial and local governments. Meyer and Newton (1992) alluded to the governmental role and funding for materials in the following way:

> Both provincial and system policies supported resource base learning. All schools had attractive, well stocked learning centres with full-time teacher-librarians and half-time technical support. (p. 16)

As mentioned earlier, in times of fiscal restraint, money for programs such as this may be long in coming. In fact the Department of Education and Training for Newfoundland, since 1976, has provided $8.00 per pupil for the purchase of library materials. Under the present day financial scheme, bulk funding is allocated to schools and then divided up among various departments. It is obvious that with inflation and the rise in the cost of books this money does not go as far as it once did. Wolinetz (1991) maintained that $20.24 would be needed today to purchase books that $8.00 bought in 1976. Under this kind of financial regime, resource centres will be severely strained when trying to meet the needs of any resource based learning program and, in many cases, will fail to meet those needs.

If acquiring the money for materials is becoming ever increasingly difficult, then money for facilities is probably non-existent. In Learning to Learn (1991) it was emphasized that the space to implement resource-based learning strategies is needed so all schools should have a resource centre and storage facilities. Traditional classrooms do not provide the space necessary for the

displays and activities which resource-based learning requires (Wolinetz, 1991). All the literature makes references to places other that the classroom where much of resource-based learning will take place yet with a dwindling supply of funds how is this possible?

In schools where space may not be available in the resource centre for all activities, it was recommended that other areas of the school be used (Learning to Learn, 1991). Such alternative space is becoming less a reality in our school system with the closure of schools and the ever increasing class sizes. As more and more schools close due to viability guidelines the students are moved to other schools where the demands for the limited amount of space increase. It will be quite impossible to find extra space in any school if the goal of government is to fill each to its capacity.

The issues revolving around the topic of resource-based learning and information literacy are obvious. Studies have concluded that it is a vital component to today's educational system as the demands of the real world dictate that information literate students are desired. All the literature agreed that resource-based learning should be a fundamental part of a teacher's repertoire of strategies but the ability to include this strategy is fraught with difficulties.

Barriers to the successful implementation of resource-based learning programs exist in many areas. Teachers, themselves, possess apprehensions about demands on their time and the role of the teacher-librarian. Administrators are reluctant to devote space and funds for a program whose benefits they may not appreciate.

Successive governments who erode the funds from the educational system

eliminate the prerequisites necessary for the successful implementation of resource-based learning. In-service and professional development days, resource materials, and limited space due to school closures all have detrimental consequences for the students of today.

CHAPTER THREE

CURRICULUM UNIT ONE

CURRICULUM UNIT FOR

CULTURAL HERITAGE 1200

THE NEWFOUNDLAND FISHERY:

PAST AND PRESENT

Resource List
for
Curriculum Unit
on
The Newfoundland Fishery

1. *Northern Cod Science Program.* Department of Fisheries and Oceans, 1991.

2. *Groundfish Survey.* Department of Fisheries and Oceans.

3. *Today's Atlantic Fisheries.* Department of Fisheries and Oceans, 1989.

4. Power, G. *The Stinted System.* Newfoundland Lifestyle, 43-45.

5. *Northern Cod Under Attack.* Government of Newfoundland and Labrador, 1989.

6. *The Science of Capelin.* Department of Fisheries and Oceans, 1991.

7. *Conflict in the Management of a Northwest Atlantic Transboundary Cod Stock.* Department of Fisheries, 1989.

8. Jenkins, L. *The Labrador Floater Fishery in the Twentieth Century.*

9. *The Atlantic Seal Hunt: A Canadian Perspective.* Department of Fisheries and Oceans, 1984.

10. Momatiuk, Y., & Eastcott, J. (1994). *The Decline and Fall of Northern Cod.* Nature Canada, Winter 1994.

11. *The Harp Seal.* (1982). Underwater World.

12. Phillips, T. (1989). *Farming The Sea: Aquaculture in Newfoundland.* The Newfoundland Herald, July 22, 110-111.

13. *The Appetitie of Seals.* The Science of Cod.

COMMUNICATIONS BRANCH
DEPARTMENT OF FISHERIES & OCEANS
NORTHWEST ATLANTIC FISHERIES CENTRE
P.O. BOX 5667, ST. JOHN'S, NF, A1C 5X1

VIDEO CATALOGUE

1. THE NATIONAL FILM BOARD OF CANADA
   "10 DAYS...48 HOURS"
   - 85 MIN. 58 SEC.
   - THE LIFE OF TRAWLERMEN ABOARD OFFSHORE DRAGGERS.
   - THE FAMILY LIFE OF A TRAWLERMAN.

2. THE ATLANTIC SALMON FEDERATION
   "GET HOOKED ON CATCH AND RELEASE"
   - 18 MIN.
   - EDUCATIONAL PROGRAM ON THE RELEASE OF ATLANTIC SALMON.
   - RECREATIONAL FISHERY.

3. CBC-TV/FIFTH ESTATE
   "THE OCEAN RANGER DISASTER"
   - FEBRUARY 15, 1982.

4. THE NATIONAL FILM BOARD OF CANADA
   "THE ATLANTIC SALMON" - 1981
   - 27 MIN. 07 SEC.
   - LIFE CYCLE OF THE ATLANTIC SALMON.
   - SPORTS AND COMMERCIAL FISHERY IN ATLANTIC CANADA.
   - ENVIRONMENTAL ISSUES.

5. AD VANTAGE PRODUCTION LTD.
   "CANADA-FRANCE: OUR FISH OUR BOUNDARIES"
   - TERRITORIAL DISPUTE BETWEEN CANDA AND FRANCE.

7. CBC-TV/LAND AND SEA (1985)
   "THE WESTMAN ISLANDS"
   - ICELAND FISHERMEN.

8. CBC-TV/LAND AND SEA (1985)
   "CAUGHT IN THE MIDDLE"
   - ATLANTIC SALMON FISHEY DISPUTE BETWEEN RECREATIONAL AND COMMERCIAL FISHERMEN.

9. CBC-TV/LAND AND SEA (1985)
   "SALMON ENHANCEMENT"
   - ST. MARY'S BAY SALMON ENHANCEMENT PROJECT: ROCKY RIVER.

10. CBC-TV/COUNTRY CANADA
    "AQUACULTURE: BAIE D'ESPOIR"
    - JANUARY 10, 1988.
    - DOCUMENTARY CLIP ON THE FUNDING OF THE AQUACULTURE SITE.

22. DEPT. FISHERIES AND OCEANS
"ONE FISH-TWO FISH: SCIENCE AND THE FISHERY"
- STOCK ASSESSMENT.
- 21 MIN. 59 SEC.

23. DEPT. FISHERIES AND OCEANS/NFLD REGION
"FISH HABITAT MANAGEMENT IN NFLD AND LABRADOR"
- 9 MIN. 30 SEC.
- MANAGEMENT POLICY FOR NFLD AND LABRADOR.

24. DEPT. FISHERIES AND OCEANS
"UN POISSON-DEUX POISSONS: LA SCIENCE ET LES PECHES"
- 1989.

25. DEPT. FISHERIES AND OCEANS
"STEWARDS OF OUR OCEANS"
"LA PROTECTION DE NOS OCEANS"
- OVERVIEW OF DEPARTMENTAL PROGRAMS AT DFO.

29. NY/NJ SEA GRANT
"IF FISH COULD TALK"
- MARINE DEBRIS ISSUE IN NEW JERSEY, USA.

31. NY/NJ SEA GRANT
"THE GREAT GARBAGE CHASE"
- AV ANIMATION FOR YOUNG CHILDREN

32. CBC-TV/LAND AND SEA
"GARDEN OF THE ATLANTIC: SABLE ISLAND"
- DECEMBER 21, 1987.
- MARINE DEBRIS PHENOMENA ON THE ISLAND.

34. DEPT. EXTERNAL AFFAIRS
"LES PECHES VULNERABLES" (1988)
- OVERFISHING.

36. DEPT. FISHERIES AND OCEANS (1991)
"SQUARE MESH CODENDS"
"CUL-DE-CHALUT A MAILLAGE CARRE"

37. DEPT. FISHERIES AND OCEANS (1991)
"THE NEWFOUNDLAND BLUEFIN TUNA FISHERY"
- ATLANTIC DEVELOPMENT PROJECT.

38. THE NATIONAL FILM BOARD OF CANADA
"RIVERS TO THE SEA"
- 46 MIN. 85 SEC.

39. DEPT. FISHERIES AND OCEANS
"TODAY'S ATLANTIC FISHERY" (1989)
- LICENSING, FLEET ALLOCATION, ZONES.
- OVERVIEW OF DFO IN ATLANTIC CANADA.

40. DEPT. FISHERIES AND OCEANS
"LES PECHES DE L'ATLANTIQUE" (1989)

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NORTHWEST ATLANTIC FISHERIES CENTRE
P.O. BOX 5667, ST. JOHN'S, NF, A1C 5X1

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Acid Rain, DFO, Ottawa, 1984. (English/French)

Analysis of Price Formation in Port Markets in Atlantic Canada, (Economic Commercial Analysis Report No. 3), DFO, Ottawa, January 1990.

Angler's Guide 1991, DFO, Nfld. Region.

Annotated Fish Product Export Market Opportunities Guide 1988-89, External Affairs, May 1989 (English/French).

Atlantic Fisheries Restructuring Act: Annual Report 1990-1991, DFO, Ottawa, 1991 (English/French).

Atlantic Fisheries Adjustment Program Existing Initiatives, DFO, Ottawa, May 1990.

Atlantic Salmon Management Plan 1989, DFO, Ottawa, May 1989.

Atlantic Salmon Research: Southern Avalon Peninsula, DFO, Nfld. Region.

Canada. Department of Fisheries and Oceans. Annual Report. 1986-1987; 1987-1988; 1989-1990, DFO, Ottawa. (English/French)

Canada. Department of Fisheries and Oceans. Newfoundland Region. Annual Review 1986, DFO, Nfld. Region.

Canada/Newfoundland Inshore Fisheries Development Agreement, DFO, Nfld. Region.

Canada's Fish Habitat Law, DFO, Ottawa, 1991 (English/French)

Canada's Recreational Fisheries: An Overview and a description of Department of Fisheries and Oceans programs, DFO, Ottawa, 1987 (English/French)

Canada's Fish Inspection Program, DFO, Ottawa.

Canada's Fishing Industry, DFO, Ottawa, 1986 (English/French).

Canada's Oceans: An Economic Overview and A Guide to Federal Government Activities, DFO, Ottawa, 1987. (English/French)

Canada's 200 Mile Fishing Zone, DFO, Ottawa.

Fish Habitat and Mining, DFO, Ottawa, 1988. (English/French)

Fish Habitat and Dredging, DFO, Ottawa, 1985. (English/French)

Fish Habitat and Forestry, DFO, Ottawa, 1985. (English/French)

Fish Habitat: The Foundation of Canada's Fisheries, DFO, Ottawa, 1987. (English/French)

Fisheries Management: A Proposal for Reforming Licensing and Allocation Systems, DFO, Ottawa, 1991. (English/French)

Fisheries and Oceans Research Centres: Economic and Technological Benefits: Economic and Commercial Analysis Directorate, DFO, Ottawa, 1988. (English/French)

Fisheries Management in Canada 1880-1910 (Canadian Manuscript Report of Fisheries and Aquatic Sciences 2105), DFO, Scotia-Fundy Region, 1991.

Fisheries Prices Support Board Canada. Annual Reports, 1988-89, 1989-90, DFO, Ottawa, (English/French).

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Fragile Fishery: Sustainable Development and the Northwest Atlantic Fishery, External Affairs & International Trade Canada

Guide to Canadian Hydrographic Service Charts and Publications, DFO, Ottawa, 1991.

Guide to Longline Mussel Culture in Newfoundland, DFO, Nfld. Region, 1988 (Aquaculture in Newfoundland - Publication No. 1).

Handling and Processing Female Capelin in Newfoundland (Fishing for Quality - Publication No. 3)., DFO, Nfld. Region, 1986. (English/French)

Handling and Processing Salt Cod (Fishing for Quality - Publication No. 4), DFO, Nfld. Region.

Handling, Holding and Transporting Live Snow Crab in Newfoundland (Fishing for Quality - Publication No. 2), DFO, Nfld. Region, 1984.

Handling Snow Crab Onboard Open Decked Vessels, DFO, Nfld. Region, 1989.

Help Save Marine Life: Pick-it-Up & Bring-it-Back, DFO and Environment and Plastics Institute of Canada, 1990.

Important Message for all Boaters, DFO, Ottawa, 1990. (English/French)

Increased Penalties: Amended Fisheries Act, DFO, Ottawa, (English/French).

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Report of the Federal/Provincial Consultation Group on the Future of the Canadian Saltfish Corporation, DFO, Nfld. Region, 1991 (English/French).

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Salmon on the Exploits: An Enhancement Success Story, DFO, Nfld. Region, 1989.

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Selected Fish Products From Canada, DFO, Ottawa, 1985. (English/French)

Summary: Fish Habitat Management Policy, DFO, Ottawa, Revised 1990. (English/French)

Today's Atlantic Fisheries, DFO, Ottawa, 1989 (English/French).

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Vessel Upgrading, Inshore Fisheries Development Agreement, Canada/Newfoundland Inshore Fisheries Development.

Vessel Replacement Rules for Inshore Groundfish Vessels in Eastern Canada, DFO, Ottawa, 1989 (English/French)

What is a Whale? DFO, Nfld. Region and Whale Research Group, MUN.

Canada/Newfoundland. Inshore Fisheries Development Agreement. Project Summary

1. Cod Holding Pens.
2. Experimental Shrimp Fishery in Trinity Bay - 1989, 1990.
3. The Utilization of Discards from Crab and Shrimp Processing, 1990.
4. Newfoundland Sea Urchin Roe Potential For Development, 1990.
5. Under Running System.
6. Harvesting Deepwater Turbot and Grenadier, 1990.
7. Pelagic Fish Handling, 1990.
8. Redfish Harvesting by Inshore Draggers Using Midwater Trawls, 1990.
9. The Cod Tongue Cutter.
10. Herring Roe-on-Kelp Production in Newfoundland, 1991.
11. Iceland Scallop Fishing, St. Pierre Bank, 1991.
12. The Mince Refiner.
13. Male Capelin Utilization, 1991.
14. Cod Roe, 1991.

POSTERS

Atlantic Canadian Species / Especes du Canada Atlantique
Canada 200 Mile Fishing Zone and NAFO Fishing Boundaries /
Canada Zone de Peche de 200 Milles et Limites de Peche de l'Opano
Capelin
Charting the Future
Common Whales of Newfoundland
Discovering the Oceans Secrets
Freshwater Canadian Species / Especes du Canada Eauxdouces
Gulf of Maine / Le Golfe du Maine
Gulf of St. Lawrence / Le Golfe du Saint-Laurent
Northwest Atlantic Fisheries Organization Convention Area
Pacific Canadian Species / Especes du Canada Pacifique
Rare and Endangered Canadian Fish / Poissons du Canada Rares et Menaces
Seals of Newfoundland and Labrador
Surface Oceanography Northwest Atlantic
The Basking Shark of Newfoundland
Understanding the Living Resources
Whale Tails of Newfoundland and Labrador
Whales of Newfoundland and Labrador

INTENDED LEARNING OUTCOMES

FOR

CURRICULUM UNIT ON THE NEWFOUNDLAND FISHERY

At the end of this unit the student will:

1. Through group work and cooperative learning, demonstrate an understanding for the importance of the fishery in both an historical and present-day context.

2. By using their textbook and worksheets, be able to provide fundamental details about the three main historical fisheries (Bank, Inshore, Labrador) and demonstrate this knowledge through the completion of crossword puzzle(s).

3. Learn about some of the technology used in the fishery by completing a matrix using materials in the resource center and those provided by the teacher.

4. Be able to participate in group discussions about the positive and negative elements of the latest fishing technology.

5. Through the reading of newspaper and other print articles, the student will show sensitivity and understanding to the problems which face the Newfoundland Fishery today.

6. Be able to present arguments for or against over fishing as a major problem for the Newfoundland Fishery.

7. Show an understanding for both the historical and present-day importance of the annual seal hunt.

8. By utilizing video, newspaper, and other resources, develop an opinion as to the necessity of the annual seal hunt.

9. Be able to demonstrate this opinion in the form of a display and presentation.

10. Develop the ability to adopt others' opinions in the formulation of their own opinions and arguments.

11. Learn and practice letter writing as an accepted way of presenting one's opinion to the public.

CURRICULUM UNIT

LESSON PLANS

1. The Importance of the Historical Fishery

2. The Three Historical Fisheries
   - Activity Sheets (3) on Types of Fisheries
   -Crossword Puzzle

3. A Downturn in the Historical Fishery

4. The Importance of the Fishery Today

5. Techniques of Today's Fishery
   -Resource Center Activity
   -Handout on Different Techniques

6. The Problems of the Fishery Today
   -Hidden Implications of the Fisheries Crisis
   -The Sorry State of Our Atlantic Fishery
   -If Only the Fish Would Come Inshore

7. Over fishing (Causes and Implications)

8. The Seal Hunt: Its Importance, Its End and How it Affected The Fishery.

LESSON # 1: THE IMPORTANCE OF THE HISTORICAL FISHERY

Objective 1: The student will demonstrate, verbally, an understanding for the historical importance of the Newfoundland fishery.

Objective 2: The student will be able to accept and perform an assigned role in group work.

Instructional Strategies

1. Break the students up into groups of three and tell them they have to decide who will do the following tasks:
   - Recorder: writes down responses
   - Presenter: reads out responses when called upon
   - Organizer: keeps the group on task

* Remind them that although they each have an individual role, they must work together to generate responses.

2. Explain to them that it is their task to generate as many answers as possible to the following question:
   Why was the fishery so important to people 100-200 years ago?(What did it provide for them?)

3. Provide them with the following resources:
   - Pages 3-5 of "Labrador Floater Fishery"
   - Pages 1&2 of the "Northwest Atlantic Fisheries Management Divisions"
   - "The Beginning of the Newfoundland Fishery"
   - Pages 130-132 in the text book

4. Give them about 30 minutes or until they have a few responses on paper, then call on the different groups to provide you with responses. Create a master list on the board- Inform students to jot down the ones that are not on their list.

5. If they omit anything you think should be there, add them as you see fit. (Remember that responses should be in an historical context)

Evaluation

(a) Students will present verbally to the class their opinions as to why the fishery was important to the prople of Newfoundland

LESSON # 2: THE THREE HISTORICAL FISHERIES

Objective 1: The student will demonstrate the ability to summarize information from the text onto worksheets.

Objective 2: The student will demonstrate simple recall by the completion of a crossword puzzle on the material

Instructional Strategies

1. Provide the students with the first worksheet " The Inshore Fishery" and allow them to get into their cooperative learning groups. This time, however, each student will record the information on their own sheet.

2. Using pages 134-143, tell them to go through the text and fill in the appropriate sections of the sheet. Explain to them that it may be necessary to define or describe some of the items they are putting on their worksheets.

3. After 20-30 minutes or when they appear to be finished, go through the responses (correct or add anything that you feel is important).

4. Provide them with the second sheet (your choice) but explain to them this time they have to work on their own.(Make note of those who struggle with this independent work)

5. Go over the sheet as before, correcting and adding as you go.

6. Finally, provide students with the last sheet and have them complete this one in their groups as with the first one. Correct and add as before.

Evaluation

(a) Work sheets will be collected in and graded as to quality of summarization of text material.
(b) Use the provided crossword puzzle as a mini quiz.

Activity Sheet
on
Types of Fisheries

Using your text and suggested resources, fill in the following sheets on the three different fisheries.

Inshore Fishery

Reason(s) of Importance:

Locations:

Problems:

Techniques/Tools:

Yearly Lifestyle:

Labrador Fishery

Reason(s) of Importance:

Locations:

Problems:

Techniques/Tools:

Yearly Lifestyle:

Bank Fishery

Reason(s) of Importance:

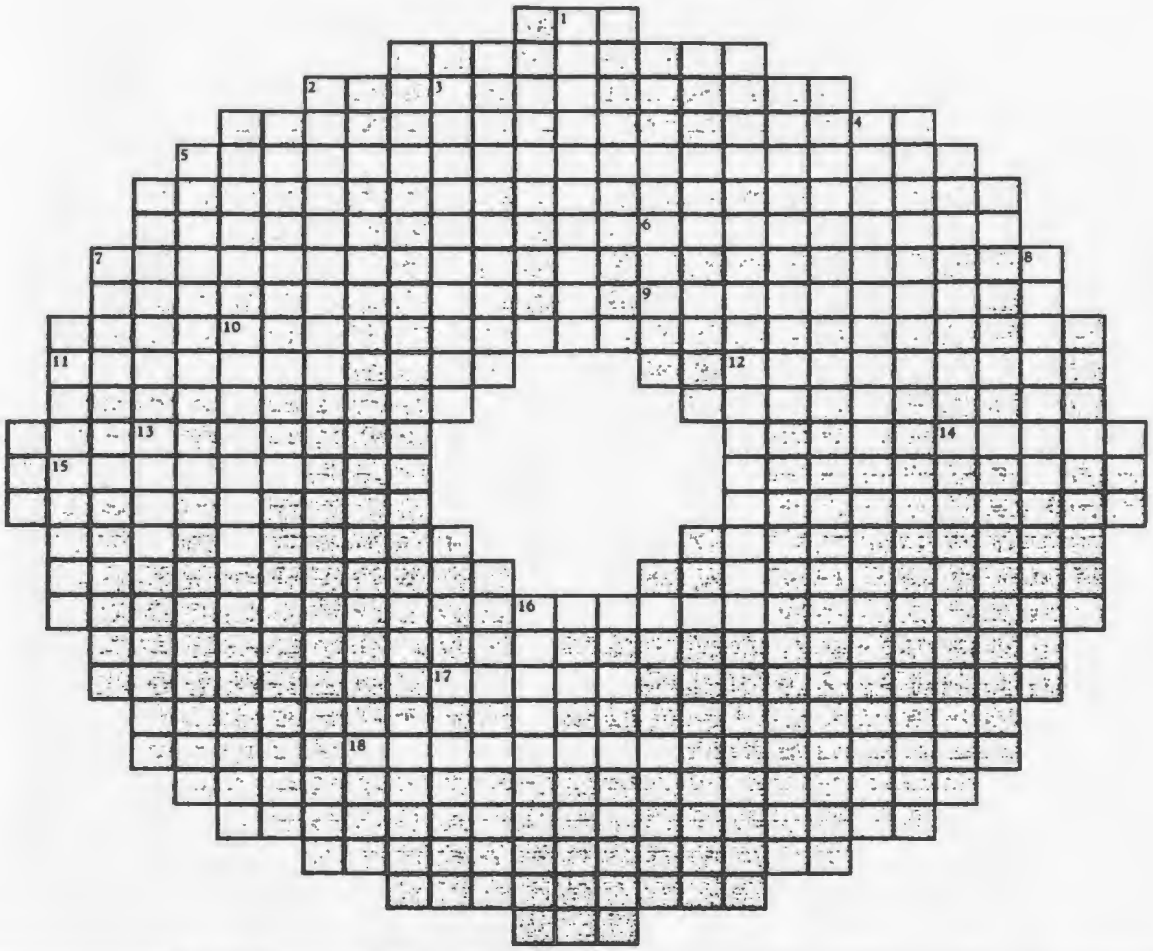
Locations:

Problems:

Techniques/Tools:

Yearly Lifestyle:

Cultual Heritage: The Fishery



ACROSS

5. Ship from 80-120 ft. long which carried 24 men and 10 dories
6. A strong fishing line having many lines frequently spaced and bearing baited hooks
7. Men who organized the Labrador fishing operations
9. The importance of the inshore fishery was quality and...
11. Large heavy lines with lead sinkers in the shape of small fish
12. inshore fishermen might participate in this activity during March and April
14. Competition from this country was a problem for the Labrador Fishery
15. Raised platforms used to dry fish
16. Men in the Bank fishery were paid on...? This meant they were paid on the basis of what was caught
17. Shed used by fishermen to do repairs
18. The schoonermen who worked the Labrador Fishery

DOWN

1. An open boat with deepsides that carried three to five men
2. the main problem with the Bank Fishery was that it was this...
3. Fishermen who worked the inshore of the Labrador Fishery
4. The Labrador fishery started July 20 in this location
8. Type of fishing net used by inshore and Labrador fisheries
10. Boat weighing about 10-30 tons used in the inshore fishery
12. Large open boats 20-60 ft. long
13. The men of this fishery were the only ones who could not participate in the seal hunt
16. one problem with the Labrador Fishery was that the season was...

LESSON # 3: A DOWNTURN IN THE HISTORICAL FISHERY

Objective 1: The student will be able to research a topic in the resource center.

Objective 2: The student will state how diversification is necessary when the traditional source for work disappears.

Objective 3: The student will demonstrate the basics of writing an essay.

Instructional Strategies

1. Have the students go to the resource center to write a couple of paragraphs on the following topics:
   - subsistence farming
   - forestry
   - mining

2. Allow students to work in their groups and suggest the following questions to guide their research:
   - When did these things begin to develop in Newfoundland and Labrador?
   - Where did they begin?
   - Why did they begin?

* Pages 116-124 in the text can provide some background.

3. It is the last question that will be central to the class discussion. After the research is done, use it to guide a discussion of how, when hard times befell Newfoundlanders, they had to seek out other ways to make a living.

4. Explain to them the concept of diversification and why it is important to not depend totally on just one industry.

Evaluation

(a) Have the students take the information researched and that from the discussion and write a short essay about one way the people of Newfoundland diversified and why?

(b) Create a checklist of sources where students can search for information and make note of how many sources each student accesses.

LESSON # 4: THE IMPORTANCE OF THE FISHERY TODAY

Objective 1: The student will create a display to show the many things that an industry supports both directly and indirectly.

Objective 2: The student will use pictures and graphics to explain a point of view.

Instructional Strategies

1. You will require an number of magazines which contain many different pictures (Chatelaine, People, Time, etc.). Scissors, tape or glue, and bristle board will also be needed.

2. Explain to students that a picture is worth a thousand words so for this activity all their explanations must be done by pictures. Have them, in their groups, think of all the things which the fishery of today supports (Grocery stores) and tell them to cut out as many pictures as possible to represent these things.

3. Create a display entitled ' Why the Fishery is Important' and post it around the classroom.

4. Give them back their sheets from lesson 1 and ask them to compare their ideas on paper with those on the board. Ask them to consider what items are different and what ones are the same about both sets of information.

5. Ask the presenter* of each group to randomly explain what some of the pictures represent as well as their discoveries from part 4.

* Make sure the students are switching roles as they engage in different group activities

Evaluation

(a) Mark the display on originality, creativity, number of items.

LESSON #5: TECHNIQUES OF TODAY'S FISHERY

Objective 1: The student will explain the methods utilized by today's fisherman to harvest fish.

Objective 2: The student will begin to compile a list of factors which may have caused the fishery to collapse.

Instructional Strategies

1. Explain to students that they will be going to the resource center to research information for the handout on " Different fishing techniques".

2. Although the basic information will be included for each technique, each group will choose one to do a presentation on.

3. Expand on the one chosen and create a visual display for the class.

4. Inform them to make sure they include information concerning the positive and negative effects of the chosen technology. Some of these effects may be the groups' opinion.

* A resource is included should anyone run into problems researching.

5. There is a video from DFO on Cod Trap Construction. If used, be sure to generate a question sheet to assist students in following the video.

* Make note if some see technology as a problem for the fishery. A class discussion on the issue could prove useful at this point.

Evaluation

(a) The displays can be evaluated for originality, creativity, and content.
(b) Create a question sheet based on the video and grade it after students have viewed the video and asnswered the questions.

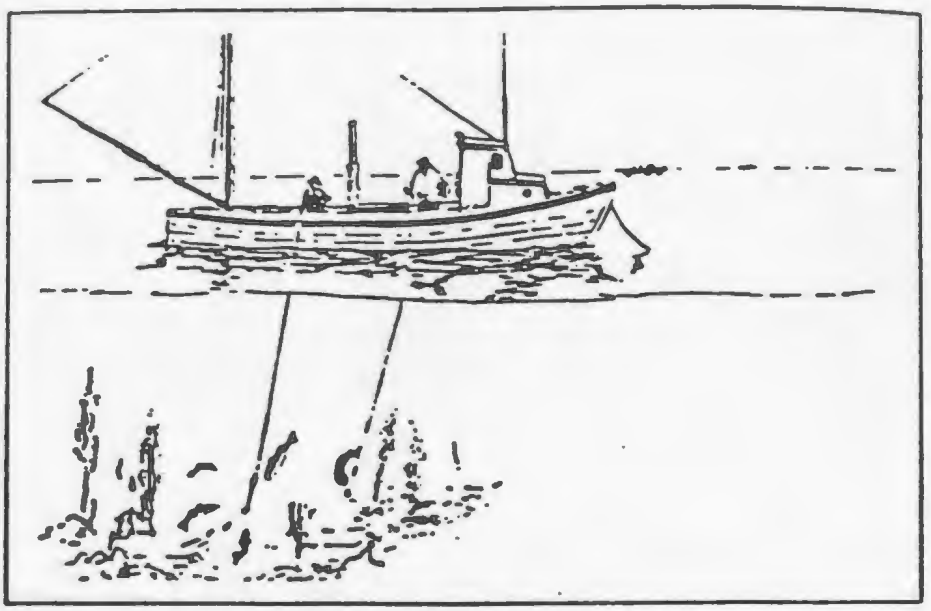
Resource Center Activity
on
Techniques of Fishing

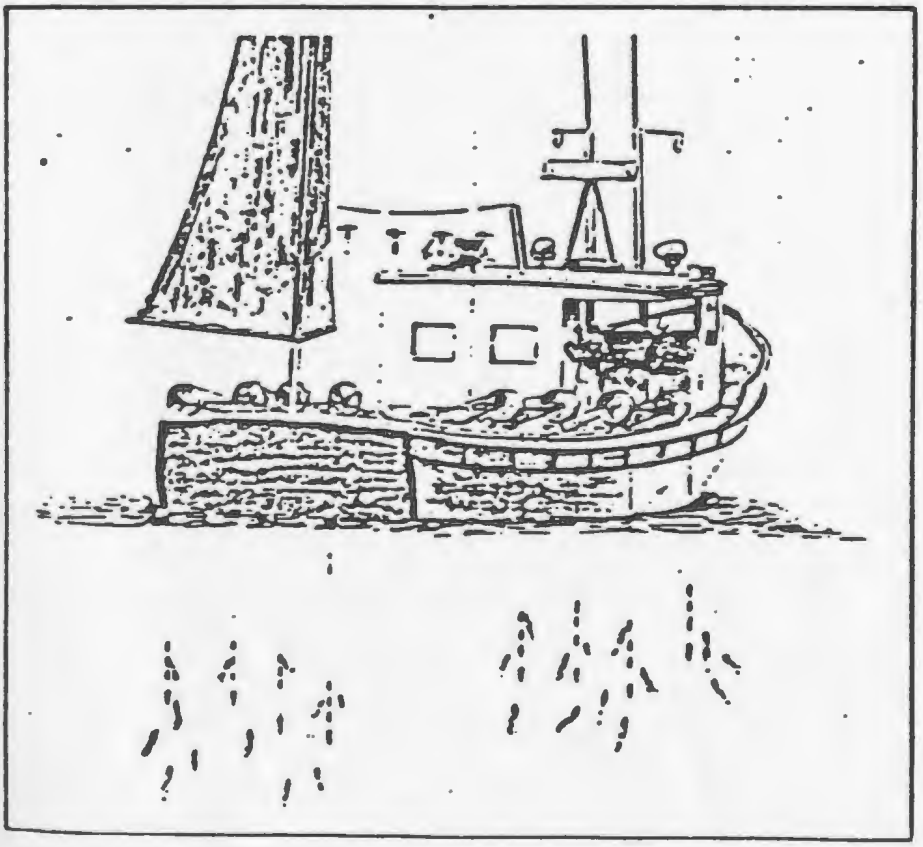
Using the materials available to you in the resource center (file folders, Encyclopedia, etc.) fill in the following chart on the various techniques used by fishermen.

Technique	Description	Advantages	Disadvantages
Handlining/ Jigging			
Jigging Machines			
Cod Trap			
Gillnet			
Side Trawl			
Stern Trawl			
Otter Trawl			
Longlining			
Purse Seining			

Handlining and Jigging

Handlining and jigging are two of the oldest forms of fishing and are still common, single-line methods used by many inshore fishermen on the Atlantic coast. Handlining utilizes a line to which a weight and baited hook is attached. Jigging operations involve the use of lure-like hooks attached to a line which is 'jigged', or moved up and down in a series of short movements in the water at a level where fish are present. The motion attracts the fish, which are hooked as they move close to the lure. The line is then hauled onboard and the fish removed. In some cases, fishermen use manual jigging reels which reduce the labour involved in the process. Handlining and jigging are primarily used to catch groundfish, although pelagics, squid and other species are sometimes caught.



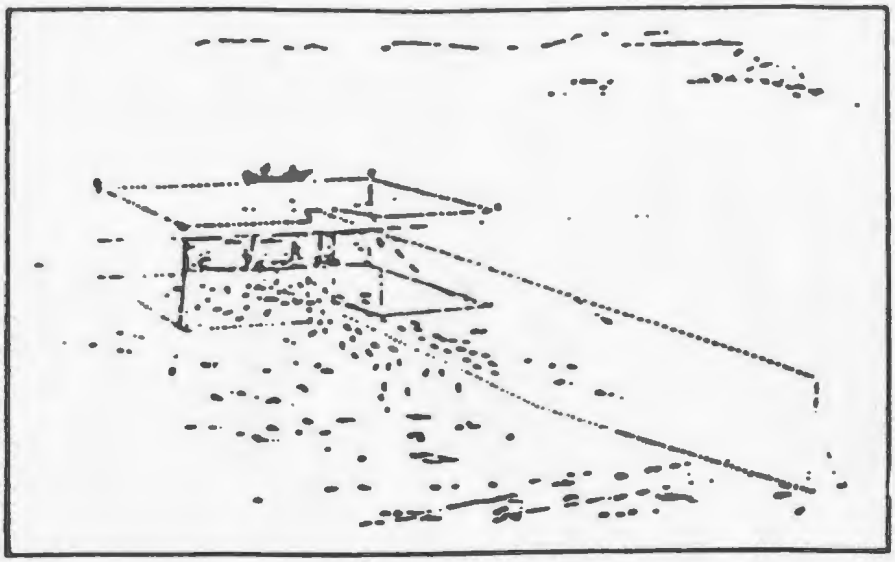


Jigging Machines

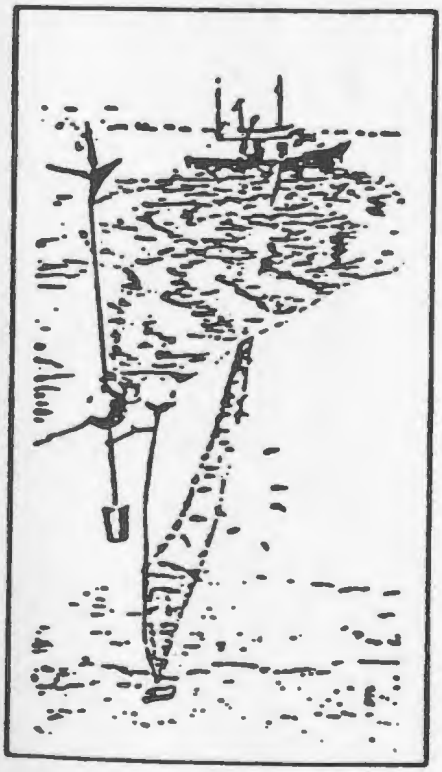
Jigging machines have recently become a popular form of fishing for groundfish and squid. These machines work on the same principle as jigging by hand but are made less labour intensive by the use of electric or hydraulic motors which automatically move the line up and down in a jigging motion and retrieve the line when fish are hooked.

Cod Traps

Cod trap fishing is somewhat similar to weir fishing and is primarily used in Newfoundland. The traps resemble open-topped box nets, measuring 11-22 metres around the perimeter, with a vertical opening or 'door' on one side. The trap is set on the ocean bottom, usually close to the shore, with the door facing shallow water. It is buoyed on the top and anchored on each corner to maintain its position. A long net fence or 'leader' extends from shallow water into the mouth of the trap. When the cod, feeding on fish such as capelin along the seashore, confront the leader, they instinctively shift direction, swimming through the open doors into the trap. Once inside, they tend to swim in circles, trying to avoid the leader, and so fail to locate the doors.



Fishermen then close the doors and bring the trap to the surface, hauling it across the boat. The fish are concentrated in one corner of the trap and collected with a dip net. One cod trap vessel may tend up to four or five traps, although three or four are more common.



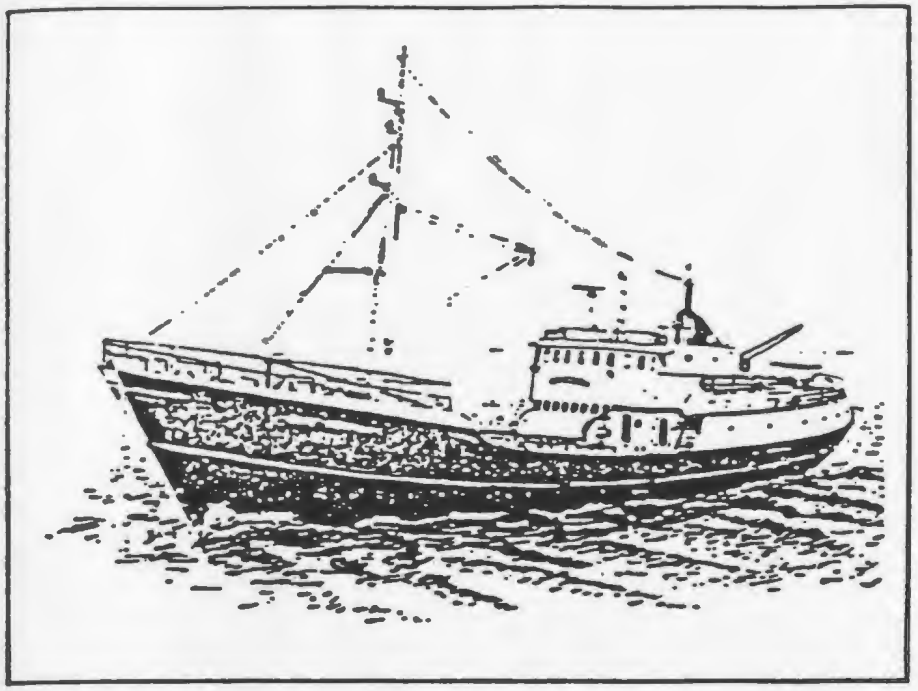
Gillnetting

Gillnets are used on the Atlantic coast to catch many species of fish, especially groundfish and pelagics and such anadromous species as salmon, smelt and gaspereau. They are constructed principally of monofilament netting and may be either secured to the bottom of the sea with the use of weights or left to drift. Fish are caught as they attempt to swim through the webbing, entangling their gills.

Nets which are anchored to the seabed to keep the gear stationary have buoys on each end which float on the surface. These buoys indicate the location and ownership of the gear and provide a line from which the gear can be raised to the surface to harvest the catch.

The nets may be positioned in varying water depths, depending on the location of the species. It is common for fishermen to join a number of nets together to increase the efficiency of the operation.

The size of the mesh used in gillnets may differ, depending on the species and size of the fish sought.



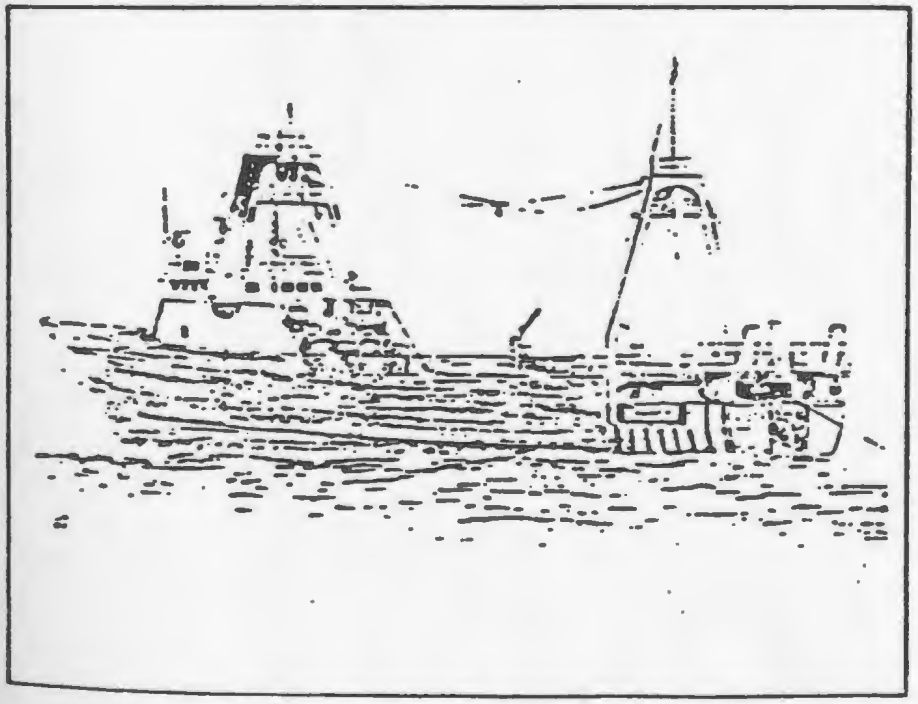
Atlantic Side Trawling

Atlantic side trawlers are members of the older series of groundfish trawlers which are declining in numbers due to the preference for more modern stern trawlers.

They are referred to as side trawlers since the gear (trawl) is towed from gallows fixed on one side of the vessel. Atlantic side trawlers are primarily between 19.8 and 30.48 metres (65-100 feet) in length and are of wooden construction.

Stern Trawling

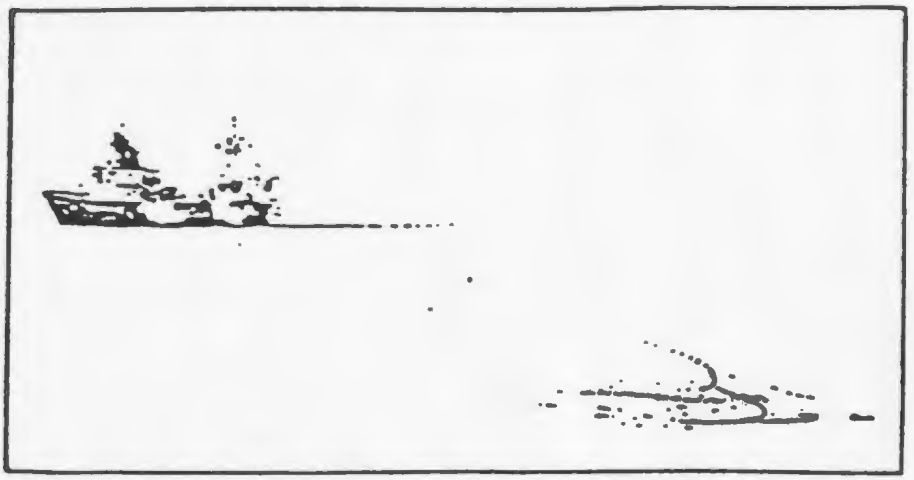
Stern trawlers are the main components of Canada's Atlantic offshore fishing fleet and are modern vessels of steel construction, averaging in size from 30.48-45.72 metres (100-150 feet). The gear (trawl) is hauled into the vessel over a large ramp through an opening at the back or 'stern' of the ship. Stern trawlers can operate in almost any waters or weather conditions and often range as far as 300 nautical miles off the Canadian east coast, fishing at depths of up to 250 fathoms. These vessels can contain up to 2.72 tonnes (600,000 pounds) of fish within their holds. They carry a crew of about 15 and can fish for ten days to two weeks each trip. Atlantic stern trawlers harvest traditional groundfish species such as cod, haddock, flounder and hake.



Otter Trawling

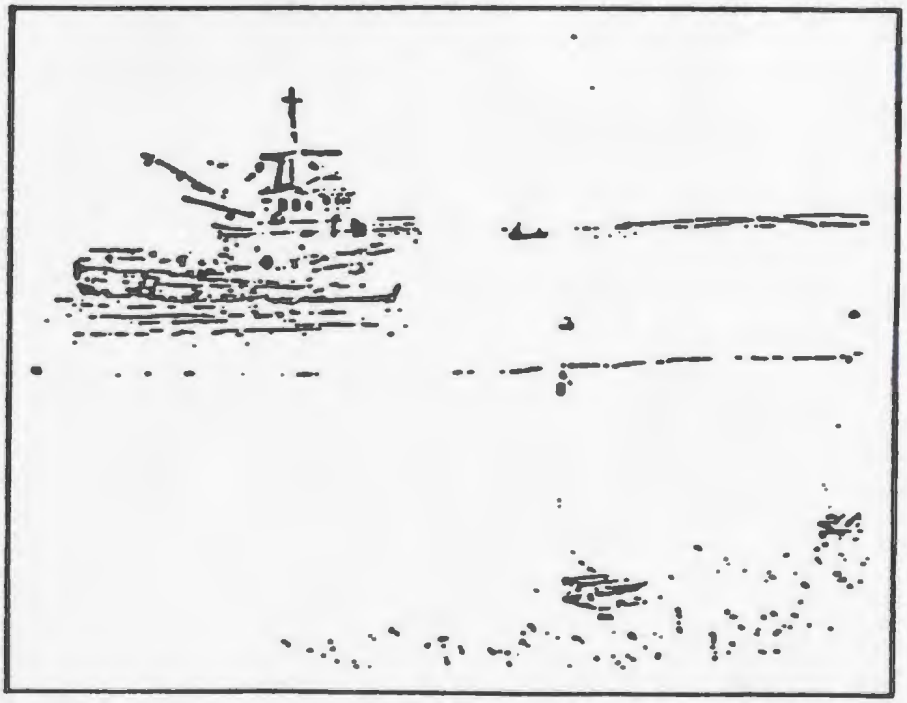
Otter trawls are cone-shaped nets which are towed along the ocean bottom to catch many species of groundfish. They take their name from the rectangular "doors" or "otterboards" that are attached to cables between the boat and the net. These doors serve to keep the mouth of the net horizontally open while the net is making its tow. A vertical opening is maintained by weights on the bottom and floats on the top and the water pressure generated from towing. The net traps fish in the end of the bag-like section or "cod-end", which has a mesh size that permits only the smaller fish to escape. The net rolls along close to the bottom with the aid of bobbins, which are similar in appearance to wheels.

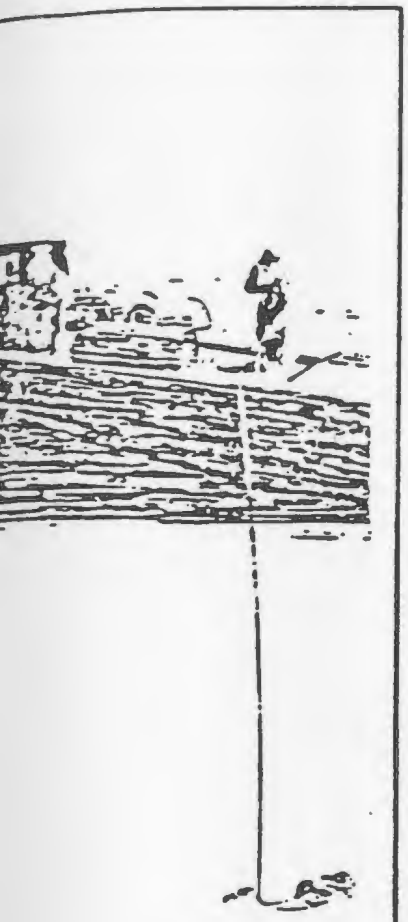
After a period of towing, the trawl is winched up beside the vessel. In a side trawling operation the cod-end is raised and suspended over the vessel. The cod-end is untied, and the catch released onto the vessel's decks, where the fish are bled, gutted and stored in the hold. In a stern trawling operation the gear is hauled up the "stern ramp" and the cod-end opened.



Crab Traps

Crab traps differ considerably from those used in the lobster fishery. Crab traps are framed with iron rods and are covered with polyethylene rope webbing, and may be either cone-shaped or rectangular. They are much more expensive than lobster traps because of the material used, and are somewhat larger. Usually only one trap is placed on each line. While the main species caught in the Atlantic area is the Snow Crab, exploratory fishing is being conducted for Rock Crab, Jonah Crab and Red Crab.



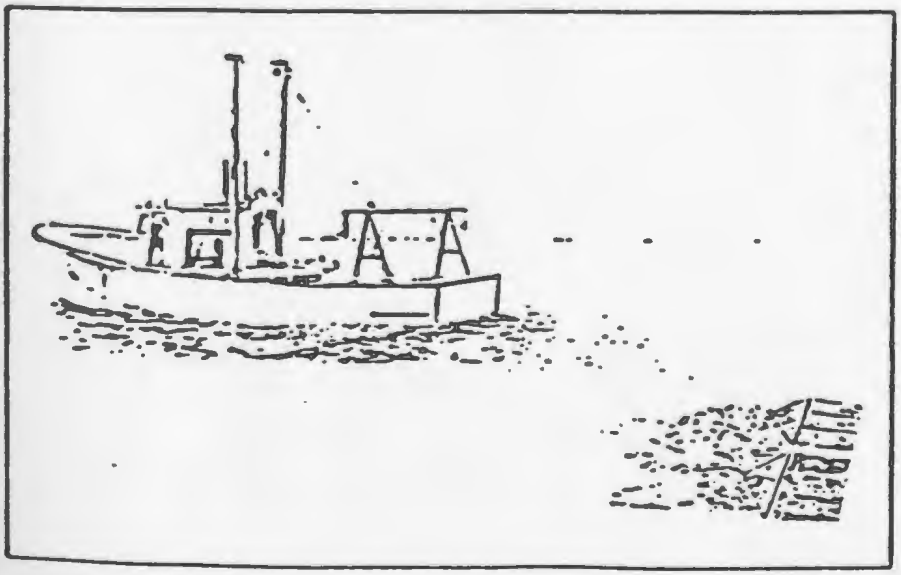


Inshore Lobster Fishing

Lobsters are caught by inshore fishermen using traps (or pots) set on the ocean floor, either individually or in groups on a line. The size and design of these traps differ somewhat in various localities but they are usually constructed of curved pieces of wood, laths, and cotton or nylon twine, and often weigh in excess of 40 kilograms. Every trap has one or more funnel-shaped openings fashioned from twine, which allow the lobster to enter the trap but prevent it from escaping. They are baited with either fresh or salted fish, commonly herring, mackerel or gaspereau.

Traps are set in waters of varying depths, but usually near a rocky bottom, which lobsters prefer. In recent years, fishermen have begun to make greater use of electronic equipment to determine water depth and bottom type. Traps are ballasted with flat stones or concrete slabs to sink them and reduce their movement on the ocean floor. Marked buoys allow the gear to be easily located and identified.

The traps are hauled up on the boats using winches. Smaller, illegal-sized lobsters are returned to the water along with any unwanted species. The harvested lobsters are kept alive in boxes or tanks containing circulating water.

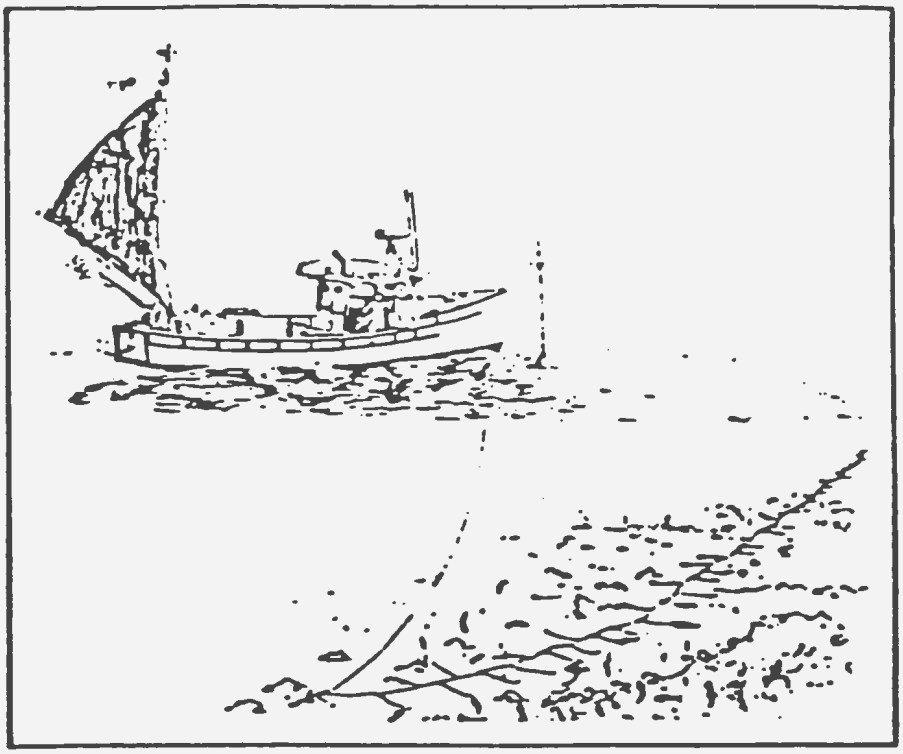


Scallop Dragging

Scallops are harvested in both inshore and offshore areas. While methods of fishing are quite similar in both areas, the offshore fishery is significantly larger, both in terms of the volume of the landings and the size of the gear used. The drag consists of a metal frame with teeth on which a type of chain-mesh bag is attached. The drag is towed along the ocean bottom and the catch is raked into the mesh bag. The vessel tows the gear for a period of time and then winches it onboard. The crew removes the meat from the scallop shells during the next tow of the gear.

Longlining

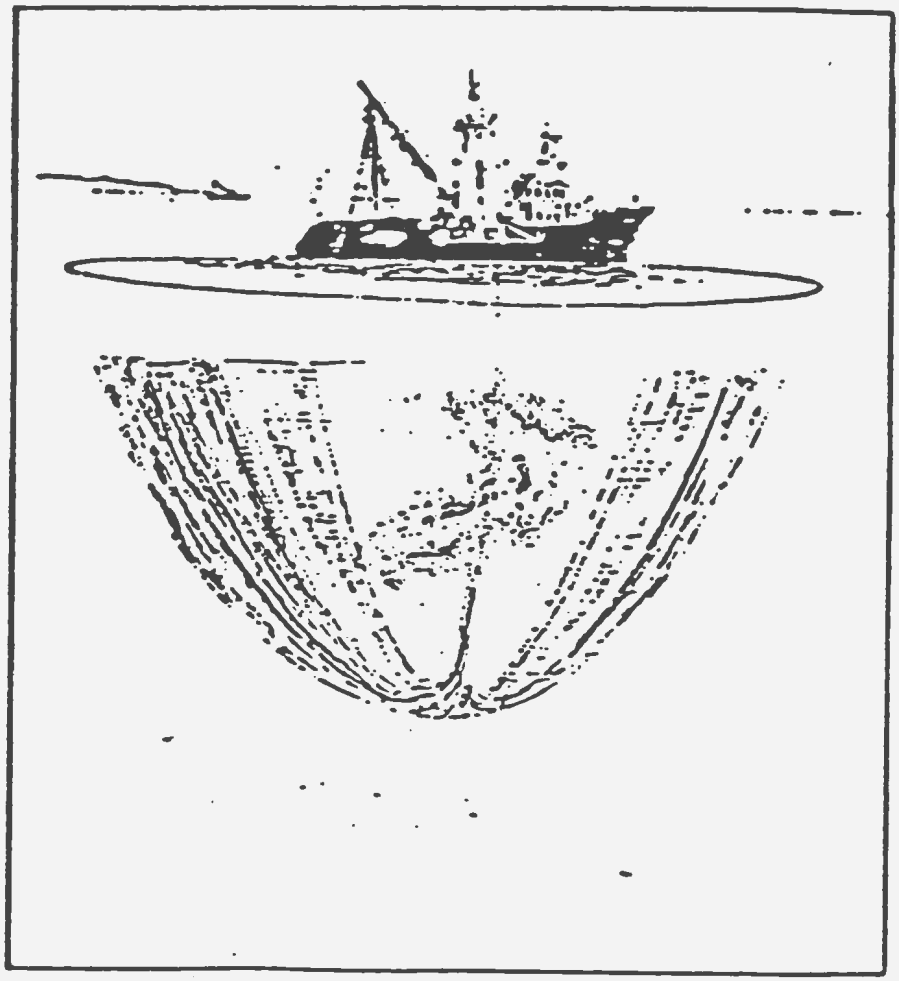
Longlining, as the name implies, involves the use of a "long line" with a series of baited hooks spread along the ocean floor. Initially retrieved manually, this system has now become mechanized and uses automatic hauling baiting and shooting machines. These improvements have made longlining an increasingly popular form of fishing. Fishermen are able to fish more gear, and in many other ways can compete with other forms of fishing. They can be more selective, landing a higher quality of fish, and also require less fuel for the operation. Longlining is used primarily in the Atlantic provinces to catch groundfish such as cod, hake, haddock and halibut.



Purse Seining

A seine is a wall of webbing used to encircle fish. It is the encircling action, rather than towing, which is responsible for its catching power. As with a gillnet, the purse seine has floats on the top and weights on the bottom to keep it vertical in the water. A purse seine, however, has a wire rope passing through rings on the bottom of the net which enables the net to be drawn together to entrap fish. While purse seines are used to catch many species of fish, they are most effective when used to capture fish schooling near the ocean bottom.

When a school of fish is detected, one end of the seine is taken by a small boat or "skiff". The vessel and skiff then encircle the fish with the net. After receiving the end of the line from the skiff, the vessel begins to winch in the wire cable, closing the bottom of the seine and forming a bag-like net around the fish. The other lines are now also winched in, reducing the space inside the net which is then brought alongside the vessel. The fish are dipped out and put in penned-off sections, boxes, or in the hold of the vessel.



LESSON # 6: THE PROBLEMS OF THE FISHERY TODAY

Objective 1: The student will write an essay to demonstrate understanding and awareness of the problems which face the fishery today.

Objective 2: The student will read selected articles and answer questions based on the readings.

Objective 3: The student will use this information to assist in the development of opinions as to the cause(s) of the downturn in the Newfoundland fishery.

Instructional Strategies

1. Use the short article, " The Hidden Implications of the Fisheries Crisis" to generate discussion about the effects of a collapsed fishery. Have students suggest problems that people now face as a result of the fisheries crisis.

2. Put as many answers/effects as possible on the board to create a master list. You and/or the students may add any that are not covered in the article.

3. In their learning groups, have the students read and answer the questions on "The Sorry State of Our Atlantic Fishery."

4. Preview a video on the collapse of the fishery (see attached list for choices) and develop a viewing sheet for the students to record points brought up in the video.

5. Have students read and answer questions on the article, " If Only the Fish Would Come Inshore."

6. After all the readings are done have the students, in their learning groups, write a short paragraph about what consequences the downturn in the fishery is having on the people of Newfoundland. Also, have them begin to form an opinion as to why the fishery is in trouble.

* Their ideas could be focused on the following areas although any opinion should be considered valid.

Technology
Over fishing
Seal Hunt
Environment

Evaluation

(a) Grade the essay based on the reasons provided in the assigned readings.
(b) Many group/class discussions possible to check for interpersonal/communication skills

The hidden implications of the fisheries crisis

As politicians and bureaucrats struggle to come to terms with the ongoing problems in the fishing industry, one of the more difficult issues they face is the need to assess the exact impact of the crisis.

Efforts to develop response programs to offset the decline in the fishery can only succeed if they are based on an accurate estimate of the number of people affected. And as that process of estimation continues, it is quickly becoming obvious the depth of the economic problems which lie ahead for Newfoundland may be far greater than first feared.

On the surface, the cuts appear easy to count. At Fishery Products International the closure of plants in Trepassey, Grand Bank and Gaultois will result in elimination of just over 1,300 jobs. The planned shutdown of the National Sea Products plant in St. John's will cost another 450 positions, for a total of about 1,750 direct job losses at the two offshore fisheries giants.

Allowing for the standard multiplier effect in other industries which are supported by the fishery, that would translate to a total of about 3,000 lost jobs resulting from the cuts by FPI and NatSea.

In a province where the total workforce numbers just a little over 100,000, that figure is, in itself, cause for serious concern. But the fact of the matter is the employment losses at the two big offshore companies are only the tip of the economic iceberg.

The same types of pressures which have forced FPI and NatSea to shut plants and tie up trawlers are forcing cutbacks and slowdowns at literally hundreds of smaller inshore fish plants throughout rural Newfoundland. Lacking the public visibility of their larger cousins, cutbacks at these smaller operations seldom receive the type of extensive media coverage accorded to the steps taken by FPI and NatSea. But for those individuals affected, the cuts are every bit as real as the more highly publicized mass layoffs.

At the root of the problem, as far as the smaller plant operators are concerned, is Ottawa's decision to slash this year's quota for resource-short inshore plants and to completely eliminate the middle-distance fleet, which had served as emergency suppliers for a number of the smaller processors. Not only will these moves force cutbacks at the plants themselves, the resulting extension in the length of the processors' annual shutdown periods will deprive inshore fishermen of local markets, adding even further to the economic losses.

Social Services Minister John Efford attempted early this month to estimate how the anticipated cuts at smaller plants throughout the province might affect his department. The figures which he came up with were nothing short of startling.

Without sufficient federal funding, Mr. Efford warned that an additional 4,000 Newfoundlanders might be forced to seek social assistance this year, a 20 per cent addition to the province's already-inflated total of 20,000 welfare recipients. That type of increase would push the province's current social services budget of $105 million to more than $125 million a year, an increase Mr. Efford says government cannot afford to cover.

Nor are the negative effects of the problems in the industry limited solely to potential growth in the social assistance rolls.

In many of the province's rural communities, the local fish plant represents the sole source of economic activity in the area. As such, the impact of cutbacks in the operations of the smaller processors will spread throughout the rural economy, forcing cuts in many businesses which have little or no direct connection with the fishery.

Suppliers of marine equipment are already cutting back their sales staffs, truck owners who in past years have made their livings transporting fish are looking for new business, even rural store owners are taking a hard look at their staffing levels in preparation for the expected increase in unemployment and the resulting slump in sales.

But perhaps the least-recognized result of the decline in fishing industry activity relates to its impact on the various levels of government and public authorities which depend on local taxation revenue to support their organizations.

Groups like the province's school boards, squeezed by serious funding shortages, can look forward to even more acute financing woes in the near future. As more and more rural residents find themselves without work, existing problems of non-payment of school taxes can only grow more critical.

For rural school boards already constrained by their inability to raise as much tax revenue as their urban counterparts, there is every reason to believe the fisheries crisis will serve to further widen the gap between "rich" and "poor" school boards.

The same can be said for Newfoundland's beleagured municipalities. Councils throughout the province have spent the past few years struggling to make ends meet on the basis of government funding which has grown increasingly inadequate for the task at hand.

At a time when the Canadian Construction Association estimates it would take $1 billion to provide all the municipal services needed in different parts of the province, councils can ill-afford a further cut in their already-meagre budgets.

In short, virtually all sectors of the province's economy have much at stake in the present fisheries crisis. While well-organized lobby efforts and mass protests might be sufficient to secure adequate assistance to offset the larger layoffs, there is a very real danger the smaller cuts might be allowed to simply slip through the cracks until they reach the proportions of a crisis which can no longer be ignored.

To effectively address the full range of negative effects resulting from the downturn in the fishery, government aid packages must be designed to deal with cutbacks of all sizes, not just the large layoffs.

Failure to recognize this need from the outset would be a mistake for which the province would undoubtedly be forced to pay dearly in the future.

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"Net Losses"
"The Sorry State of Our Atlantic Fishery"

1. Simply put, What is the problem with the fishery?

2. What is the total number of individuals in Atlantic Canada employed by the fishery?

3. What are the four main areas where the fishery takes place?

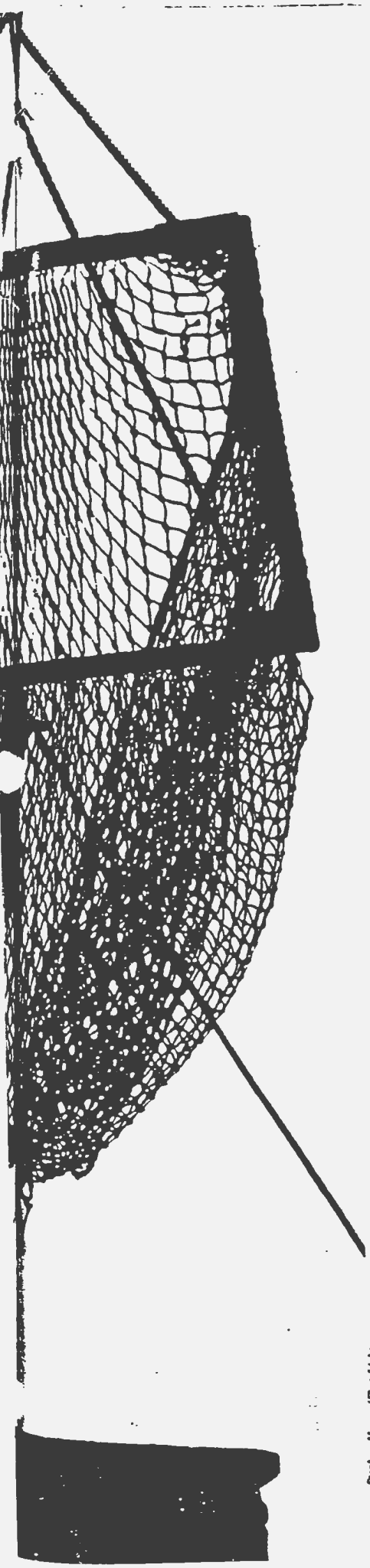
4. Describe an "offshore dragger".

5. What has been the inshore catch for each of the following years:
   a) 1958
   b) 1974
   c) 1982
   d) 1986

6. Why did the stocks rise dramatically after 1977?(Two reasons).

7. What is "enterprise allocation"?

8. What was the total allowable catch (TAC) for each of the following years:
   a) 1982
   b) 1988
   c) 1989
   d) 1990



Stephen Homer/First Light

Net losses

The sorry state of our Atlantic fishery

By Silver Donald Cameron

AFTER A FEW rich seasons, the East Coast fishery is in deep trouble again — for the third time in 15 years. Like the ocean ecology that shapes it, the fishery is enormously complex, but the essence of this sudden new crisis is simple: our sophisticated fishing vessels are catching fish far more efficiently than anyone realized.

"Our technology has outstripped our science," says Dr. Leslie Harris, chairman of the federally appointed Review Panel on Northern Cod and president of Newfoundland's Memorial University. "We have underestimated our own capacity to find, to pursue, and to kill."

Trouble in the fishing industry is big trouble for Atlantic Canada, with its 65,000 fishermen and more than 40,000 fish plant workers. Fishing provides 10 percent of the region's jobs; as much as 25 percent in parts of Newfoundland. In total, it is a $1.5-billion business.

The fishery takes place in four main areas: the Scotian Shelf, stretching from the mouth of the Bay of Fundy to the northern tip of Cape Breton Island; the Gulf of St. Lawrence; the Grand Banks of Newfoundland; and the Labrador coast. The situation varies from one area to another, but nowhere in that vast expanse of ocean are the fish populations really healthy.

The two areas that dominate the news are the Scotian Shelf and the banks off Labrador — and the two are very different. The Scotian Shelf is within easy reach of inshore fishermen all along the coast of Nova Scotia and New Brunswick, and they fish a wide variety of species: cod, haddock, flounder, pollock, hake, herring, redfish, crab, scallop, lobster and others.

The Labrador fishery, by contrast, covers a vast area of the ocean east of the Labrador coast and north and east of Newfoundland, and its fishery is dominated by the stock known as northern cod. This stock is fished by offshore draggers, multimillion-dollar steel vessels about 160 feet (48 metres) in length, that tow a huge bag of net along the bottom that scoops up everything in its path. The northern cod stock normally produces almost half of Atlantic Canada's cod catch and a quarter of all the region's groundfish landings.

The same cod migrate to the shores

of Newfoundland during the summer, supporting a once-abundant inshore fishery — but during the 1980s very few have been taken by the inshore fishermen's traps, nets and hooks. Until 1958, the inshore catch was never much less than 150,000 tonnes. By 1974, however, relentless overfishing by more than 20 nations had decimated fish stocks on both the Labrador banks and the Grand Banks, and the inshore catch had fallen to 35,000 tonnes. In 1977, Canada responded with a 370-kilometre (200-nautical-mile) exclusive fishing zone and a ban on foreign draggers. The inshore catch increased, peaking at 115,000 tonnes in 1982, but by 1986 it was down to 68,000 tonnes. Inshore fishermen were also complaining that the fish they did catch were unusually small.

The fishery remains "the last major industrial enterprise in the world in which raw material is still hunted instead of raised, grown or produced," Stephen Kimber notes in *Net Profits*, his recent history of National Sea Products. The industry is tied to natural cycles as well as to economic and diet trends, but the situation in 1986 was not like earlier cycles: inshore nets were empty, while the offshore draggers were finding plenty of fish.

The roots of this paradox go back to 1977. With foreign draggers banned, Canadian fish companies embarked on an orgy of debt-financed expansion. In the early 1980s, however, interest rates and fuel prices soared, and most of the large companies found themselves insolvent. The federal government assembled Newfoundland's bankrupt firms into a supercompany called Fishery Products International. In Nova Scotia, new private investment and a massive infusion of government funds reshaped the venerable National Sea Products into a second supercompany.

Meanwhile, a federal task force headed by Dr. (now Senator) Michael Kirby devised a new quota system called "enterprise allocation." This gave the supercompanies fixed amounts of fish to catch and broke the cycle of glut and shortage that naturally resulted from unfettered competition for fish. Knowing how much they could take, the companies paced their fishing to maximize their profits, catching precisely what the market demanded and commanding premium prices.

Under enterprise allocation, National Sea went from losses of $17 million and $18 million in 1984 and 1985 to record profits of $10 million, $36 million and $25 million in the three following years. FPI did even better, earning $47 million in 1986 and $58 million in 1987, at which point its management privatized the company by buying back the government's shares.

The success of enterprise allocation suggested that science and sound management had tamed the fishery's cyclical nature, and the 1987 bonanza seemed to confirm those hopes. But 1987 was an exceptional year. Low world oil prices held the draggers' operating costs down, while a depressed Canadian dollar made Canadian fish cheap in the United States market. Consumers in the United States had learned to appreciate fish as a tasty, low-fat main dish with a whole array of health benefits. They consumed 20 percent more fish in 1987 than they had in 1983, driving prices to record levels.

Even during the euphoria, however, FPI's annual report noted that its trawlers had worked much harder to catch the same amount of flounder, and that its allocation of northern cod had been cut by 10 million tonnes. FPI's record sales were achieved because "price increases more than offset a reduction in the volume of raw material available to our company." Translation: we caught less fish, but we

Steven Hall/Canadian Geographic

got more money for the fish we caught.

The northern cod reduction was particularly ominous. The Kirby task force had predicted that, by 1989, the northern cod stock would support a total allowable catch of a colossal 400,000 tonnes. To allow the stock to grow both in numbers and in total weight, the Department of Fisheries and Oceans set the catch not at the maximum sustainable yield, but at about 90 percent of that yield.

Yet even with this conservation measure, the allowable catch for 1988 was only 266,000 tonnes. The stock had grown much slower than expected.

Newfoundland's inshore fishery continued to fail. To the inshore fishermen, the reason was clear: fish were scarce, and offshore draggers were catching them before they came closer to shore.

Maybe not, said the scientists. Maybe the fish were staying offshore. Maybe fewer crews were actually fishing. Maybe it was the water tempera-

Above: idle fishing boats at St. John's, Nfld. Overcapacity of the Canadian fleet is the main reason for the current crisis; the number of vessels registered in the 1980s was constant, but the boats are now faster, with better gear and bigger holds.

Left: filletting cod at Petty Harbour, Nfld. Groundfish stocks, northern cod in particular, have grown slower than scientists expected.

ture, or food cycles, or . . .

No, said the fishermen. There are not enough fish. And they were right.

By 1986, fisheries scientists were questioning their own statistics. With millions of dollars and thousands of jobs at stake, they checked their figures cautiously. In late 1988, they announced that their estimates of the northern cod population had been massively wrong. Their new figures warranted a total allowable catch for 1989 of only 125,000 tonnes.

"That was the greatest shock I ever had in the fishery," says Stephen Greene of Clearwater Fine Foods, the aggressive young company that grew up during the boom. "It was like someone telling you it's night when you're sure it's day."

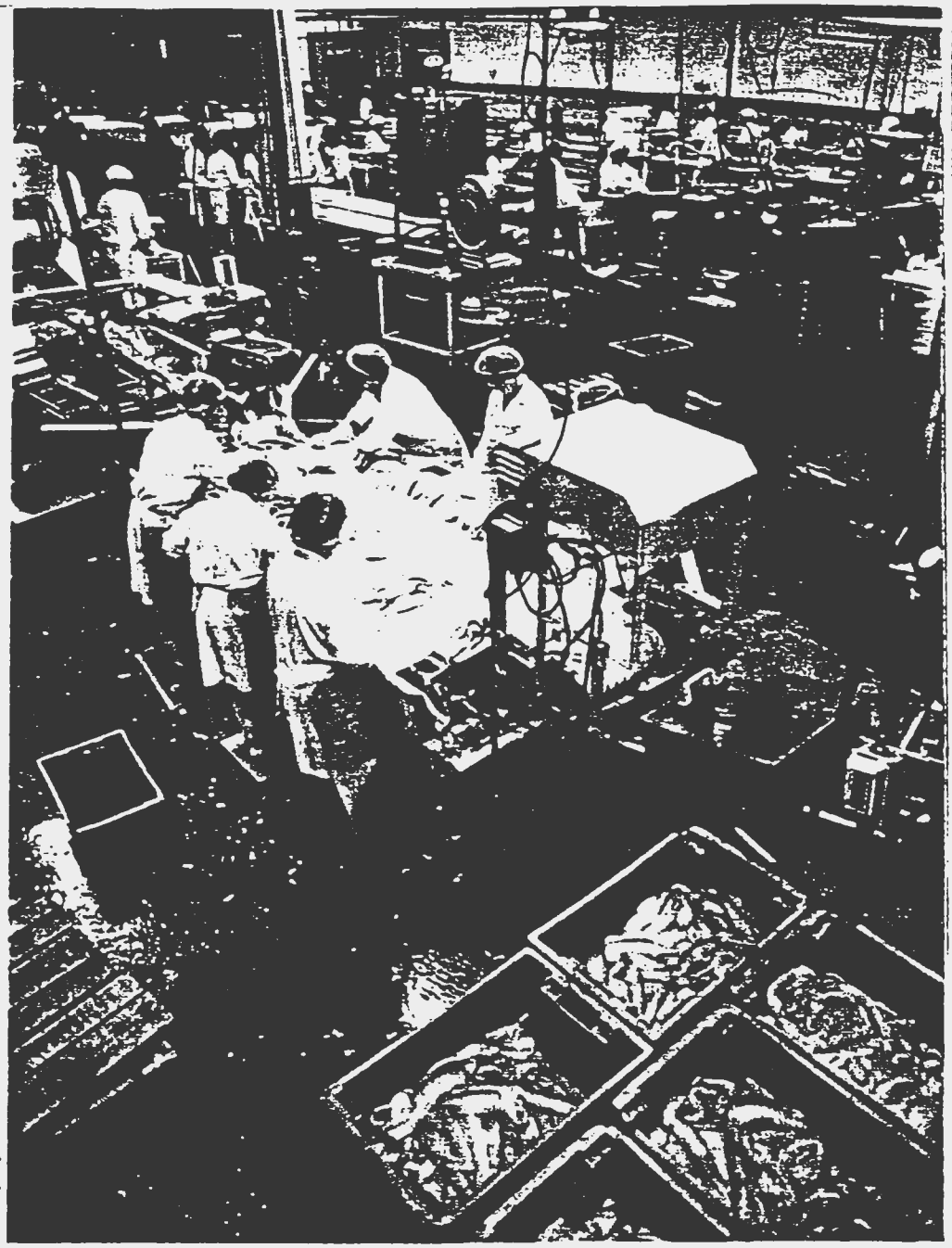
An alarmed federal government asked Memorial University's Leslie Harris to chair a panel to review the scientific evidence. The panel's interim report, in May 1989, confirmed the bleak outlook. The northern cod stock, Harris explains, "has grown since 1977, but not nearly at the rate we thought, maybe not even 40 percent or 50 percent as much as we expected."

How could the scientists have been so wrong?

First, they do not have enough information. They do a certain amount of sampling themselves, but that sampling, Harris notes, is unreliable because it takes place at the same time every year. "If you assume the same conditions exist from year to year, then you're likely to be wrong. Fish don't follow our calendar."

To illustrate a more general sampling problem, Harris quotes Dr. Dayton L. Alverson of the University of Washington. Suppose you want to estimate the number of cattle on a ranch, says Alverson, but you can only do it in the dark, by towing a big bag across the ranch from a helicopter. In the morning you will see how many cows are in the bag, and you will estimate the total number of cattle from that. How likely is it that you will be right?

One standard way of measuring fish stocks is to calculate the catch-per-unit-of-effort. If a dragger tows its net for an hour, how many fish does it catch? If the number is steady from one year to the next and the next, then surely the population is holding steady.



both: Dept. of Fisheries and Oceans

The number of fish plants in Atlantic Canada almost doubled over the past decade with government encouragement. Reduced quotas in 1989 and 1990 have forced at least eight large plants to close or gear down, putting thousands out of work.

But the draggers — the measuring stick — have changed. Today's electronically equipped draggers are powerful fishing systems that can locate a school of fish, identify the species, lock onto it, and steer the nets into the thick of the concentration. When the holds are full, the crew can pinpoint the spot with satellite navigation systems and call sister ships to keep fishing while they nip ashore to unload.

Scientists knew the dragger fleet was evolving, but the changes came quickly — and catch-per-unit-of-effort, the standard measure, was not to be changed casually.

"Modern electronics tell the fishermen exactly where the fish are," says Dr. Harris, "and they fish on concentrations of spawning fish. If the fish are concentrated, then the catch will be as

high as ever — and it will remain high until the last fish is caught.

"The state of our ignorance is appalling. We know almost nothing of value with respect to the behaviour of fish. We don't even know if there's one northern cod stock, or many, or how they might be distinguished. We don't know anything about migration patterns or their causes, or feeding habits, or relationships in the food chain. I could go on listing what we don't know."

However, in spite of the lack of knowledge, decisions have to be made. In February 1989, the Department of Fisheries and Oceans cut the 1989 quota for northern cod to 235,000 tonnes from 266,000 tonnes in 1988. Even that small a cut will cost the two supercompanies as much as $40 million. The 1990 total allowable catch has been set at 197,000 tonnes.

"That's too high," says Cabot Martin, a St. John's lawyer who represents the Newfoundland Inshore Fishermen's Association. "The ecological approach has to come first — and we'll somehow have to find the political will to take the pain."

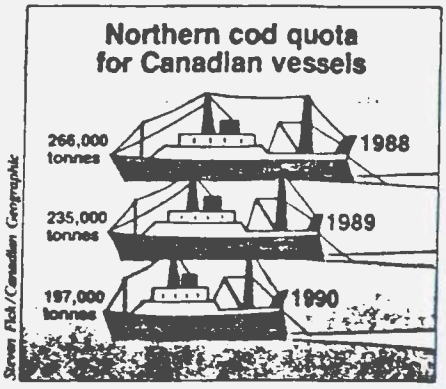
Far to the south, on the Scotian Shelf, a different fishery faces the same sombre outlook: too much fishing power, too few fish. Here, too, inaccurate estimates of the fish stocks have produced unjustifiably high allowable catches, while individual fishermen and small processors have built boats and plants capable of handling four times more fish than is actually available.

On the Scotian Shelf, the focus falls not on a few score offshore draggers, but on 2,700 smaller boats that land their catches in dozens of villages tucked into crannies along the ragged, rocky coast. This armada is nearly impossible to police, and fishermen readily admit that cheating is easy and profitable. Nothing prevents a fisherman from delivering his fish to the local processor without reporting it — or, indeed, from trucking it directly to the Boston market. The Halifax *Chronicle-Herald* reports that up to 50 percent more fish may be taken than are reported; last year the Standing Senate Committee on Fisheries heard that the value of such illegal fish may have reached $100 million in 1985.

"There is no shame to getting caught and paying a $400 fine," a fisherman told the Senate Committee. "It is almost a badge of honour. I am sorry to have to be blunt with you, sir."

A Nova Scotia fishing executive is far less charitable. "We have to start seizing boats, withdrawing licences and jailing poachers," he says, speaking off the record. "These bastards are criminals, and we should treat them that way. On the Scotian Shelf, in my opinion, we've got one year to turn it around. After that, we've lost the fishery."

But the fishermen themselves are caught in a vicious circle. Years ago,



small vessels fished right along the coast, near their home ports. Today the nearby grounds are fished out, and inshore boats fish at Sable Island and Georges Bank, up to 160 kilometres at sea. That means bigger boats and more-advanced equipment, financed by hefty loans, with heavy monthly payments. Fishermen *must* pursue their catches relentlessly, with steadily growing technological sophistication. The long-term result is a devastated fishery, but the short-term result was sheer gravy; one Yarmouth fisherman told his lawyer that he did not know his 1988 income — but he paid over $65,000 in income taxes.

Greed and desperation are powerful motivators. The fisheries department tried to regulate the fishing effort in-

directly by restricting the length of inshore boats to under 45 feet (14 metres). The complicated structures of wooden-hulled boats once ensured that a length restriction would automatically limit a boat's capacity. But the flexibility and strength of fibreglass has changed all that. A 35-foot (11-metre) wooden boat would have a capacity of between seven and nine gross tonnes, according to Coast Guard marine surveyor Harry Rex, but a fibreglass boat that length today would have a capacity of between 28 and 36 tonnes. Such boats are like fat bathtubs: clumsy, sluggish and unstable in a rough sea, but capable of carrying huge loads of fish.

And — oh, Canada — federal attempts at restraint are undercut by provincial policies aimed at expansion, like Nova Scotia's provincial subsidies for new fishing vessels. The provinces also license the processing plants, whose numbers increased from about 500 in 1977 to nearly 900 in 1988. Employment rose from the equivalent of about 25,000 full-time jobs to about 33,000 in the same period. Even after the plant closures of the past winter, Atlantic Canada's fish plants still employ several thousand more people than they did a decade earlier.

Fishing techniques also changed. Inshore boats traditionally used stationary nets or longlines with baited hooks at regular intervals. But 400 of the new inshore boats are draggers, costing up to $750,000 each. A decade ago, small inshore draggers could catch 23 tonnes per season; today's equivalent can catch 164 tonnes. A fleet of eight draggers owned by Yarmouth fisherman Lawrence Corkum and his sons is capable of catching 25 percent of the inshore quota for all of southwestern Nova Scotia.

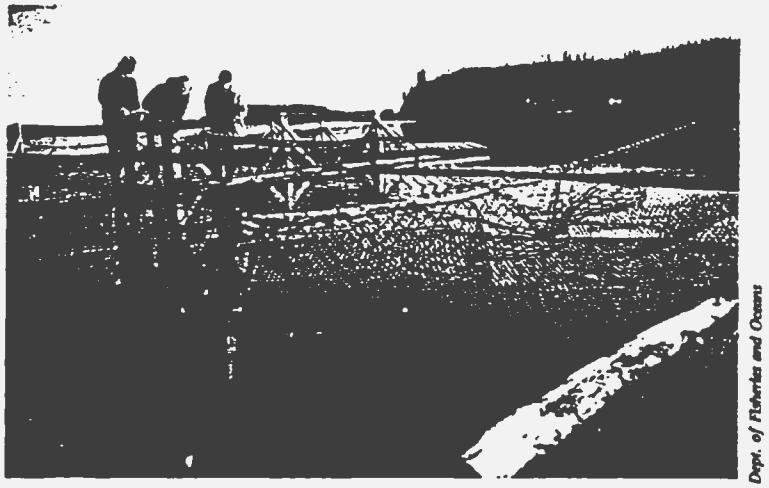
All this fishing power has punished the stocks severely. The Department of Fisheries and Oceans reduced Scotia-Fundy's total groundfish quota from 279,000 tonnes in 1982 to just 168,000 tonnes this year. Department information officer Joe Gough says that Scotia-Fundy suffers from "growth overfishing of cod and pollock," a level of fishing that captures all the natural increase in a fish population, preventing any growth. Haddock catches, however, have plummeted, and the stock is in danger of outright collapse.

The Department of Fisheries and Oceans tends to be more optimistic than fishermen and industry executives — but even Gough remarks that on the Scotian Shelf, "the big crisis may be yet to come."

For many fisheries observers, draggers are the commmon denominator in all the various crises. Elnathan Smith manages a 50-year-old family fish business in Shag Harbour, N.S. He has spent his whole life in the fishery, and says flatly that "there are too many draggers, both offshore and inshore."

"When a drag tows through the bottom of the ocean," Smith wrote to then Fisheries Minister Tom Siddon in Au-

Is aquaculture an alternative?



Dept. of Fisheries and Oceans

Feeding time at a fish farm on the Bay of Fundy.

IF WILD STOCKS of fish are in decline, can aquaculture take up the slack?

Fish farming has certainly made great strides. This year, world production of farmed shrimp — largely from China — is predicted to equal the catch of wild shrimp. New Brunswick produced 5,500 tonnes of farmed Atlantic salmon in 1989, worth $50 million; Norway, the world leader, raised 140,000 tonnes. (For comparison, fishermen in British Columbia landed 85,000 tonnes of wild salmon in 1989.)

About 95 percent of Maritime mussels are farmed, and about 25 percent of oysters. Trout and even cod are now raised commercially in Atlantic Canada, and scientists and businessmen are investigating scallops, clams, lobster and halibut.

Atlantic Canada faces some obstacles in aquaculture, including fish stock supplies, financing and a limited number of sites. But it also has significant advantages in terms of scientific and technical expertise, competitive production costs, and proximity to the major markets of Eastern Canada and the northeastern United States.

Compared to the existing fishery, however, aquaculture will remain a minor factor in seafood production for the foreseeable future.

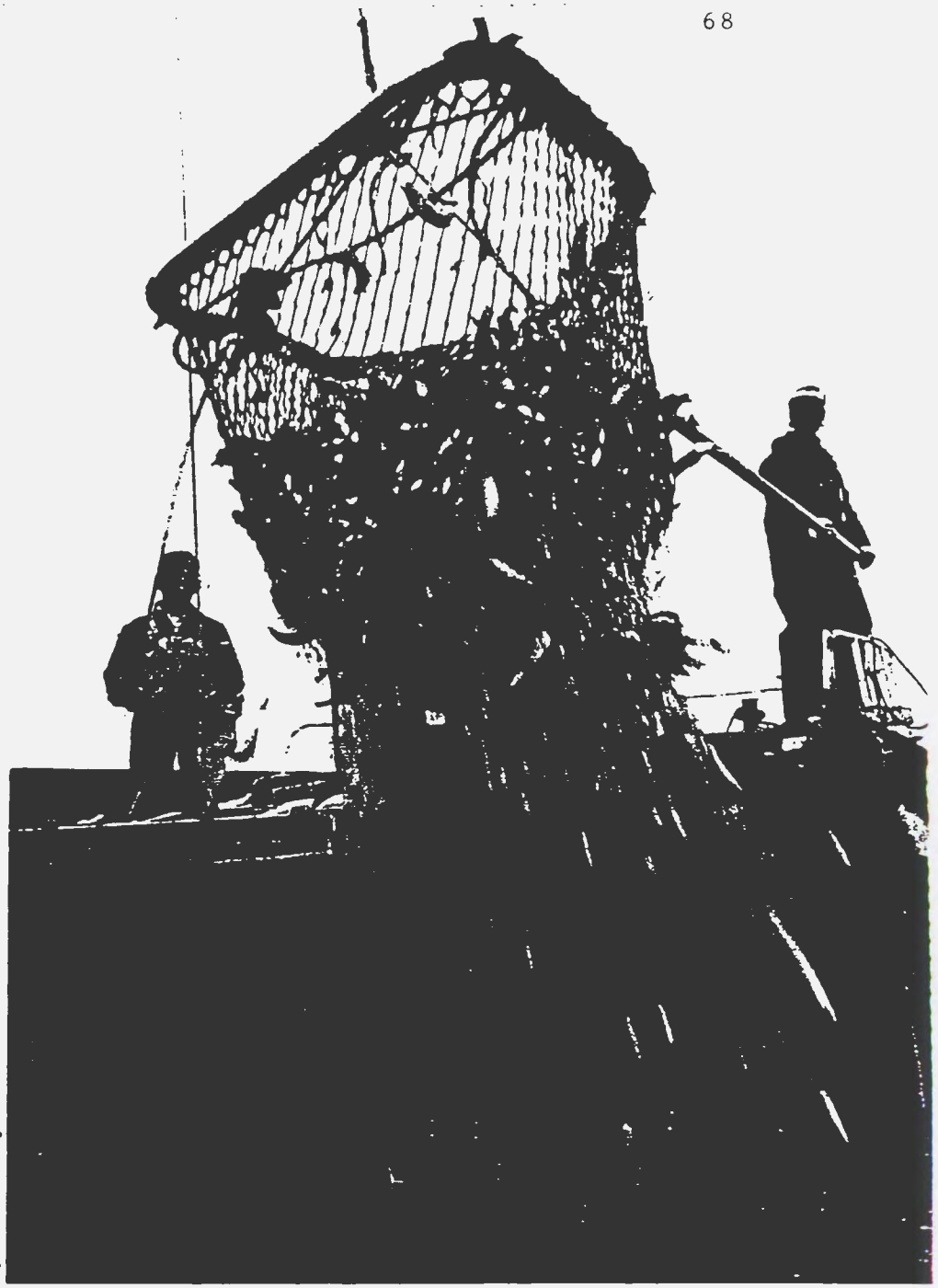
S. D. C.

gust 1989, "it collects anything and everything that is in its path, regardless of size or species. When the drag is dumped on deck, only the species directed for is kept, and in some cases only the large fish of that species are kept because of the higher prices paid. The rest is thrown back into the ocean." This bycatch, of course, is dead.

When draggers are used, the sea bottom "is scored as though with ploughshares, and rammed down as though with steam-rollers," says former Soviet dragger captain Vladil Lysenko, who fished extensively in Canadian waters. "Nothing is left alive for the fish to eat. What is more, this is where the fish breed, and when they lose their breeding grounds, the fish die out without leaving any progeny."

The baited hooks of longliners, by contrast, automatically regulate the size of the fish they catch and there is no bycatch.

Draggers perfectly symbolize an unsound and uncaring approach to the fishery — and indeed to the environment at large. Scouring the ocean floor, the dragger indiscriminately captures big fish and small ones, dogfish and monkfish and sculpins, spawning fish and juveniles, plants and lobsters and rubber boots and tin cans along with the occasional skull or thighbone of a drowned sailor. Like the tree harvester and the dynamite stick, the dragger applies raw force to a complex and sensitive ecological system. The fishery may well be a symbol for the environmental predicaments we face on many fronts.



Stephen Homer/First Light

Dumping a net full of capelin with too few females, which are sought for their roe. For the Atlantic fishery to recover, less wasteful fishing methods and stricter management — such as an emphasis on longlining over dragging and increased fines for overfishing — are being proposed.

Drastic reduction or even abolition of draggers is a feature of many plans for reform. Clearwater's Stephen Greene and a colleague have published a radical blueprint for the Scotian Shelf, including a ban on draggers except in rare circumstances where no other technique can be used — with flounder, for example, which do not easily take the hook. Greene's approach also includes punitive fines for overfishing, a ban on gillnets, a zero quota for haddock, and an industry-wide emphasis on longlining.

It is hard to imagine a recovery of the fishery without tough, rational regulations of this kind. For some stocks, though, it may already be too late.

Considering this point, Bob Lee, a Coast Guard supervisor in Dartmouth, N.S., shakes his head gloomily. He cites the once-rich California pilchard fishery — similarly plundered, similarly regulated, similarly poached.

"Today," he says, "there is not one single pilchard left on the coast of California. A free resource is always exploited to extinction, for the minimum possible benefit — and that is where the Atlantic fishery is headed."

Atlantic Canada's daunting task is to prove Lee wrong. ◇

Silver Donald Cameron is a Nova Scotia writer who contributes regularly to Canadian Geographic.

"If Only The Fish Would Come Inshore"

1. Using the graph titled " Declines in Inshore Catch 1964-75/1983-86", answer the following questions:

    a) What year showed the lowest catch?

    b) What is the average catch for the years 1971 to 1977?

    c) What reasons would you give for the decline from 1963 to 1974?

    d) What reasons would you give for the rise in catch from 1974 to 1982?

2. What are some of the reasons scientists believe have caused a decline in the inshore fishery?

3. What are some of the things that can be done to help understand the problem of a declining inshore fishery?

If Only The Fish Would Come Inshore

The low catch from the inshore cod fishery in wide areas of the northeast coast of Newfoundland in recent years, which some have called "a disaster," is many things to different people.

To the inshore fishermen who pinned their hopes on forecasts of large inshore catches by the mid-80s, it is a bitter disappointment.

To fisheries scientists, who calculate the adult stock has grown at least 500 per cent since 1976, the inshore failure is a puzzle that defies quick answers. They are often pressed to supply them anyway.

Many fishermen and groups which represent them already have a quick answer: the offshore trawlers are taking too much fish. Federal fisheries biologists believe the problem is much more complex, and they conclude the stock is still growing. If trawlers were depleting the resource, their catch rates would be expected to decline, yet instead they keep increasing. While the adult stock is still only half the size it was in 1962, it should easily support both the current offshore quotas and a much larger inshore catch, if the fish would only come inshore.

When asked why they don't, scientists suggested, for several years, that unusually cold water temperatures could be a contributing factor. Then in 1986, water temperatures returned to near-normal but inshore cod landings did not.

Biologists know that water temperature has a major influence on the migration of cod, but they are now certain it is only one of a number of factors, some of which are still poorly understood. Learning more about this is a high priority in fisheries research.

Following is a summary of what scientists now believe about factors affecting the low inshore landings of northern cod in recent years. First, a review of the landings themselves:

By 1976, after more than a decade of extremely heavy fishing by foreign trawlers, the stock had reached its lowest point. There were only about 124 million fish aged six and older, compared to an estimated 900 million in 1962.

Inshore catches, which had averaged 144,000 tons in the four years before heavy foreign fishing began, declined to a low of 35,000 tons in 1974. When Canada extended her fisheries jurisdiction out to 200 miles in 1977, largely to save the shattered inshore fishery, trawler quotas were cut back sharply and the stock began to recover.

Inshore landings rose steadily from 1974 to 1980, more than doubling in that period. They fell off sharply in 1981, rose again in 1982 and 1983, and have fallen steadily ever since, from 106,000 tons in 1983 to 72,000 tons in 1986. In fact, the inshore catch of northern cod in 1986 was the worst since 1976, when the stock was at its bottom.

So the problem is urgent. What are some of its causes? The range of possible answers includes the following:

1) Not enough fish may be coming inshore.
2) Those which do may avoid the areas and water depths where inshore gear is set.
3) Inshore fishing effort is lower.

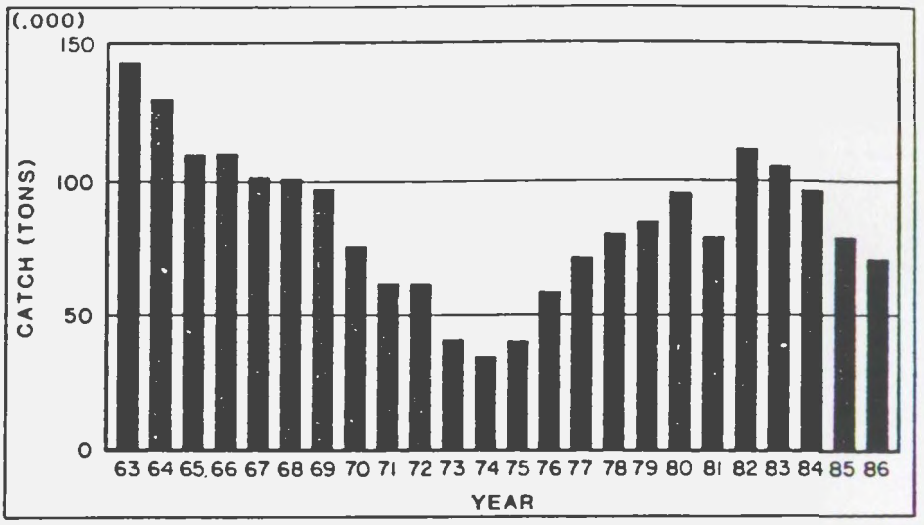
Let's look at these possibilities in order;

1) The Failure of Fish to Come Inshore.

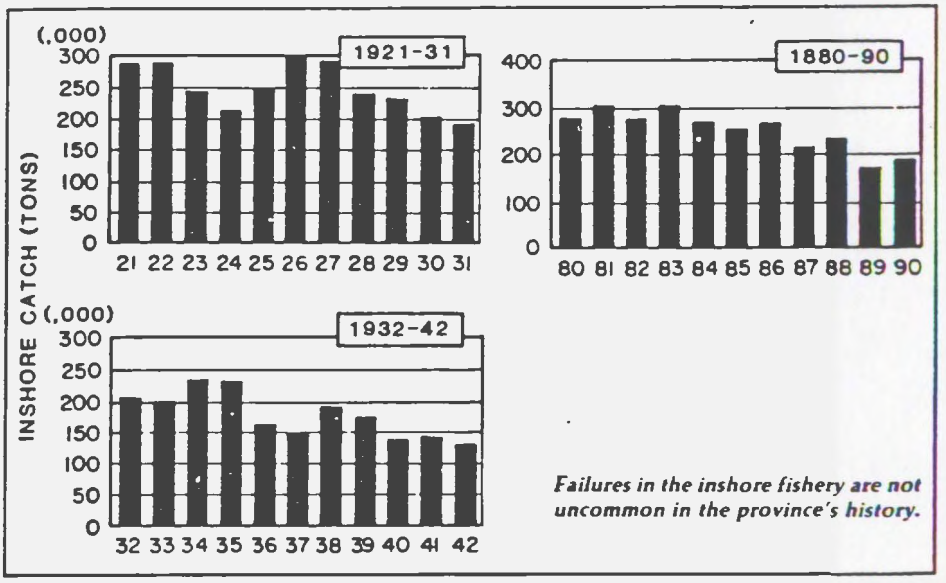
The most obvious reason for low inshore catches would be a shortage of fish. Yet, every calculation of the abundance of northern cod shows that the stock is still growing.

Another possibility is that something is interfering with patterns of cod migration, so that fewer fish migrate to shore. Two things which could cause this are a cold

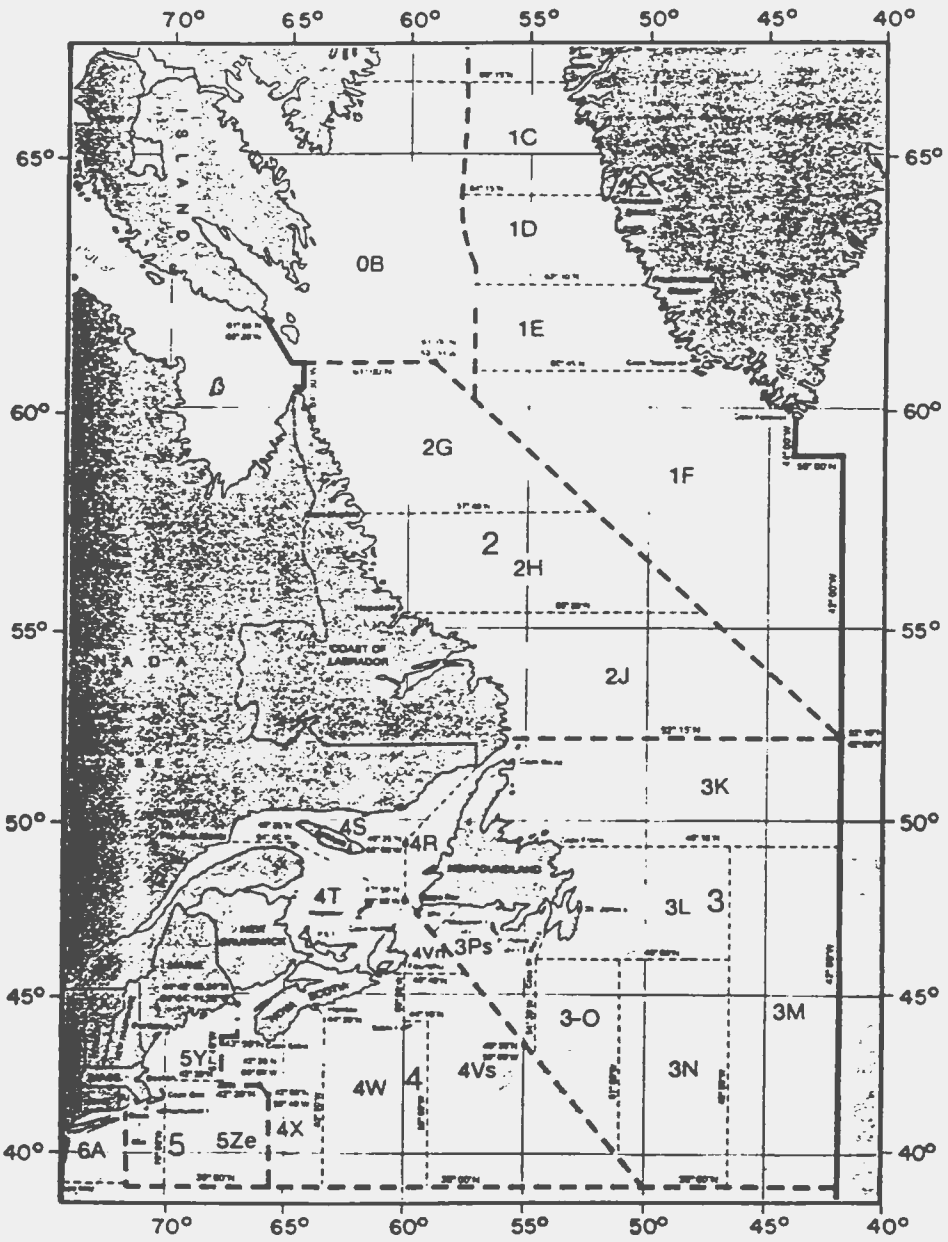
Declines in Inshore Catch 1964-75/1983-86



Previous Declines in the Inshore Fisheries



Failures in the inshore fishery are not uncommon in the province's history.



Canada's 200-mile offshore economic zone, and fishing zones established by the North Atlantic Fisheries Organization.

water barrier and an unusual abundance of young capelin.

It is not clear yet whether cod actually follow spawning capelin to the shore, or whether they just tend to show up at the same time. If they actively follow capelin, then an exceptional abundance of immature capelin, which do not come inshore, could tend to keep more cod out on the banks.

Capelin surveys on the Grand Bank show that immature capelin were more than 10 times as abundant in 1985 and 1986 as they had been in the three previous years. Such a huge food supply could simply make it unnecessary for cod to come inshore.

On the other hand, water conditions could make it very difficult. Cod avoid water much colder than 0 degrees Celsius, yet we have huge areas of such water off our coast every year. The cold water layer varies in area, thickness and depth from year to year, but in bad years it could be a serious barrier to cod migrating from the offshore banks.

Surveys in June of 1984 and 1985 found dense concentrations of cod off eastern Newfoundland below the cold core of the Labrador current. These fish were near the coast but far too deep for inshore gear. Some were tagged, and tag returns later showed that relatively few of these fish made it into shallower water.

Other studies also suggest that inshore catches in Labrador and along the northeast Newfoundland coast are closely related to water temperature. Years when surface water is cooler and the water at a depth of 100 to 150 meters is warmer than usual were the years of best inshore catches.

2) The Avoidance of Traditional Cod-trap and Gillnet Berths

The cod's dislike of cold water may also affect the behaviour of those which do come to shore. Early studies of the movements of cod in inshore waters suggest that cod tend to remain in water at a temperature of 1-5 degrees Celsius, avoiding water which is much warmer or colder than this. If winds and currents move a mass of cold or warm water into areas traditionally fished with inshore gear, the cod might stay away.

Early in the season, the temperature in shallow inshore water is normally about right for cod. However, heavy seas can mix this surface water with much colder water just below it, or strong offshore winds can push the surface layer out to sea, allowing colder water to well up from below. This can cut cod traps off from the fish. On the other hand, strong onshore winds can push the warmer surface water toward shore, making it deeper and opening up a larger inshore area with water suitable for cod.

Later in the season, the surface may become too warm for cod. They may avoid the depths in which cod traps are set, but still be accessible to deeper line trawls and gill nets. Strong onshore winds can once again deepen the surface layer near shore, forcing the cod to retreat to deeper, cooler water beyond the reach of inshore gear.

These are very simplified descriptions of complex processes. Local wind, current and bottom conditions can strongly influence what happens in a particular place.

3) Reduced Inshore Fishing Effort

Individual inshore fishermen know how hard they work, how much gear they use and what they get for their effort. But no one can accurately say how much inshore gear is in the water at any one time, or how much was fished this year compared to last.

Unlike the trawler fishery, where the number of vessels is limited and captains keep a detailed log of where and when and for how long they fish, the inshore fishery is a sprawling, complex industry, very

difficult to measure. Fishermen move between shore jobs and their boats, between cod and other species, between different fishing areas, and between different types of fishing gear, trying to make the best of shifting opportunities. They might haul their gear eight times one week and three the next, depending on wind. They might start fishing in May one year and July the next, depending on ice.

All this makes it virtually impossible to evaluate the total inshore catch in terms of how much effort it took to land it. Yet, without some measure of effort, no one can determine how serious the recent inshore failure has been. Landings are only part of the picture – the clear part.

4) Other Factors

There are at least three other possible causes of low inshore catches. One is that unusually cold water might delay cod spawning on the wintering grounds. If cod normally follow schools of capelin to shore – which is still not known – and if capelin move toward shore before cod have finished spawning, the cod may be late moving inshore and more of them might just stay on the banks all summer.

Research cruises in 1984 and 1985 found that more than half the female cod off Fogo Island and Cape Bonavista had still not spawned by mid-June. However, similar research must be conducted for several years to establish whether this was unusual or whether there are actually local populations of cod which spawn on the coastal shelves and in the deeper bays. If so, it could mean that late spawning signals a late start and probably lower catches for the inshore fishery.

Another factor, all too familiar to fishermen, is "slub." This is known to be formed from the discarded mucus "houses" of a jelly-like creature which lives in the Labrador Current. Sometimes, for reasons which are still unknown, they multiply tremendously. When local wind and current patterns bring the Labrador Current right to shore, this can have two effects. The cold water can prevent many fish from reaching the shore, and the slub can make it harder to catch those which do. Slub makes the nets more visible and much heavier to haul, and the time spent cleaning them can cut into a fisherman's earnings.

A third cause of low inshore catches in some areas could be the concentration of the offshore trawlers on a few favourite fishing grounds. While northern cod is managed as one stock complex, scientists know that many of these fish tend to move between the same spawning grounds and the same inshore areas year after year. So, if the trawlers concentrate their fishing in one zone, they could be hurting the inshore fishery in the area where fish from that zone tend to migrate in summer. With this in mind, scientists recommended that the offshore effort be spread out more evenly in the three NAFO zones occupied by northern cod. This recommendation was adopted in 1987.

Another possible cause for which there is only circumstantial evidence stems from the idea that the local bays supported resident stocks of inshore cod which remain inshore during the winter under the cold Labrador Current water. These local stocks may have been overfished by the inshore gears, principally gill nets, to such an extent that the inshore fishery is now relying totally on the migration of cod from offshore, a migration which is highly variable among years and among areas.

What Else Can Be Done?

In an effort to better understand the slump in inshore catches, DFO has stepped up its research into all the questions discussed above. No fish resource in Atlantic Canada has received more scientific attention in recent years, and the effort is ongoing. Some of the priorities in this research include:

- Refining methods of collecting data on catches and fishing effort by different types of gear used in the inshore fishery.
- Much closer monitoring of the temperature of the cold layer in the Labrador Current.
- Better estimates of the abundance of capelin each spring.
- More study of the behaviour of cod and capelin, in terms of migration and feeding and in terms of their movements under various temperature conditions in shallow inshore water.
- Ongoing efforts to refine the methods used to calculate and forecast the abundance of fish.

Many of these issues are discussed in more detail in the articles that follow.

St. Anthony fisherman Eldridge Cull lifts a portion of net covered with slub.

LESSON #7: OVER FISHING (CAUSES AND IMPLICATIONS)

Objective 1: The student will list the countries which overfish.

Objective 2: The student will explain why they think countries and people overfish.

Objective 3: The student will offer solutions to the problem of over fishing.

Instructional Strategies

1. Provide the learning groups with the following resources:
   - Graphs and charts which show degree of over fishing
   - Pages 2-7 of the " Northwest Atlantic Fisheries Management Divisions" article
   - Page 13 of Today's Atlantic Fishery
   - Assortment of photo-copied newspaper article on over fishing

2. Have the students review the various pieces of material and get them to answer the three objectives.

3. Go over the responses and create a master list on the board. For the last objective, accept all answers and then have the class determine which are practical and which would be impossible to implement.

4. On an individual basis have each student pick one solution and have them write a 'mock' letter to the editor to justify their choice. They will use the information they discovered in the articles to back up their positions on this matter.

Evaluation

(a) The group work and responses will be examined for inclusion of factual material from readings.
(b) The letters to the editor can be evaluated based on the degree to which the students back up their opinions using the material from the readings.

LESSON #8: THE SEAL HUNT: ITS IMPORTANCE, ITS END, AND HOW IT AFFECTED THE FISHERY

Objective 1: Through group discussions, the students will be able to identify why the seal hunt was important to Newfoundland.

Objective 2: The student will explain verbally the viewpoint of those people who wanted the hunt stopped.

Objective 3: The student will make a visual display to emphasize their opinion about the seal hunt; should it continue or be stopped altogether?

Instructional Strategies

1. Have the students generate reasons as to why the seal hunt was important to the people of Newfoundland.

   * They should have some background from earlier lessons where it was learned that men took part to supplement their incomes. Just have them extrapolate those ideas on a broader scale.

2. Have students watch the video, " All Creature Great and Small" with Gorden Pinsent and make note of the reasons given as to why people wanted the seal hunt stopped.

   * As this video is graphic, be sure to warn them ahead of time that there is going to be some blood and guts.

3. Assign each learning group the name of an environmental organization involved in protests against the seal hunt. Using the Internet, if available, and the resource center, have the students find out about their organization.
   - When and where it started ?
   - What are its aims or goals ?
   - The techniques it employs ?
   - Anything else the student might find interesting.

* Make sure they get a current address if possible.

4. Each group can explain what it found out about its organization to the rest of the class.

5. Provide students with the following resources:
   - " The Appetite of Seals"
   - " The Harp Seal"
   - The Atlantic Seal Hunt
   - Newspaper articles on the seal hunt

6. Have students come up with arguments as to why the hunt should not have been stopped and record these answers in their groups.

7. Once all the information has been recorded, have each group make a decision on where they stand. If there is disagreement within a group, switch people around so that all group members hold the same opinion about the end of the hunt-either good or bad.

8. Each group will use whatever items are necessary to create a visual display to advance their belief. A poster or display on bristle board would be two choices. These can be displayed around the class.

9. The final activity will be a letter written to the location of their choice outlining their opinion. Individuals can write a letter of support to a conservation group or to the government. Or they can write a critical letter to a group whose views they do not agree with. Addresses are available in various documents.

Evaluation

(a) The display can be evaluated based on originality, creativity, and the inclusion of factual information.

(b)The letter can be used to determine the degree to which the students backed up their arguments with facts from the assigned readings.

CHAPTER FOUR

CURRICULUM UNIT NUMBER TWO

Rationale:

As a component of the grade eight social studies curriculum, students are required to complete an investigation into the country of France. With the assistance of the teacher- librarian, the two subject teachers developed a curriculum package which incorporated many of the tenets of the information literacy theory. This theory recognizes the individuality of students and how their learning experiences should be centered around the following premise:

> ..a program centered on active learning, inclusion of all students, acceptance of diverse student needs and abilities, continuous learner focused goals...
>
> (Brock,1994,p. 16)

This unit also embodies the notion that as learners are different, each can be engaged in a different set of activities which contribute to a common larger goal. In the case of the unit on France, the larger goal is the creation of a visual display which incorporates a wide variety of information on the country of France. The display on France will contain the following elements:

1. The Flag and National Anthem
2. Maps
3. Menu
4. Travel Brochure

5. Newspaper Events

6. Models

7. Time-line

8. Music and Art

9. Historical Figures

10. Language

Each of these activities involves a variety of competencies ranging from computer usage to simple drawing and organizing. The teacher will determine who is best suited to which activity and assign persons to a topic appropriate to their abilities. A sheet will be provided to each group outlining the topic, how they can present it, and where they can search for information.

As a way to encourage students to visit other parts of the display which they did not have a hand in creating, the cooperative planning group will develop a short activity sheet of twenty (20) questions. Students can then visit the display and discover the answers while familiarizing themselves with country of France.

FLAG AND ANTHEM

Names:_____

Objective: The group will complete two separate activities for this assignment.

A. A flag of France will be created using bristle board and construction paper. Its dimensions will be approximately 1.5' by 3'

B. A visual display for the lyrics to the National Anthem accompanied by a recording of the same. The lyrics can be written using freehand or stencils and will be done on large sheets of display paper.

Accompanying these two projects will be a write-up, approximately two pages double spaced, on the origins of the flag and anthem. Why those colours? And who wrote the Anthem and why? Are just two questions that need to be answered. **There are others!!**

Materials

- Bristle board.
- Construction paper.
- Scissors.
- Glue/tape.
- Stencils.
- Tape recorder and tape.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Maps

Names:_____

Objective: The group will create two maps.

A. France.

B. Western Europe.

The maps will include the following elements as indicated:

- Political Boundaries (Both)/ Countries (Western Europe).
- Capitals (Both).
- Major rivers / water bodies (Both).
- 10 Major centres (France).

A write-up, of two pages double-spaced, will also be required which will include information on population statistics, importance of cities, unique features, and how boundaries changed over time.

Materials

- Bristle board.
- Construction Paper.
- Markers.
- Paper.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Menu

Names:_____

Objective: The group will develop an menu from a fictional French restaurant. The menu will consist of four categories of items:

1. Appetizers (4 items).
2. Main Courses (4 items).
3. Desserts (4 items).
4. Beverages (4 items).

A price list for each item will also be needed in francs. A hard shell folder will be provided so students can design a cover that includes the name and location of the restaurant.

The menu itself will be typed up using Corel WordPerfect 7.

A write-up will also be required which explains the food habits of France and its people. Include things like what they most often drink, do they have particular foods or snacks at particular times of the day, and anything else which stands out as unique and interesting.

Materials

- Computer.
- Folder.
- Construction paper.
- Scissors.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Travel Brochure

Names:_____

Objective: The group will develop a travel brochure using the brochure template in **Corel WordPerfect** 7. The content of the brochure will highlight three (3) points of interest in the country that they feel tourists would most like to visit. It should include famous landmarks such as the Eiffel Tower and the Louvre. Some background information on France is also necessary. Pictures will be downloaded from the Internet so that they can be placed in the document. A rough drawing of the brochure will be completed before students can access the computers to do their final copy.

Materials

- Computer.
- Paper.
- Brochure template.
- Pictures.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Newspaper Events

Names:_____

Objective: The group will design and write a front page for a fictional newspaper. The stories will center around **one** (1) of the following events in France's history:

1. Fall of France (WWII).
2. Liberation of France (WWII).
3. Beaumont Hamill / Battle of the Somme.
4. French Revolution.

There will be three (3) articles with pictures and captions which should provide historical background as to what is going on and information on important figures. Students will develop a title for their paper as well as a price relevant to the time period. The newspaper articles will be typed up and photocopied onto large sheets of newsprint (11" x 17") with the accompanying pictures.

Materials

- Large sheets of newsprint.
- Pictures.
- Markers.
- Stencils.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Time Line

Names:_____

Objective: The group will design a time line for France from the period 1429 to 1970 in 50 year intervals. The time line will be created on perforated computer paper and incorporate the following items:

1. Events.
2. Rulers/ Leaders of France.
3. Historical Figures.

A sample time line will be provided but students can design their own any way they wish. Pictures may also be used to denote events on the line.

Materials

- Perforated computer paper.
- Markers.
- Yard sticks.
- Pictures.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Music and Art

Names:_____

Objectives: The group will develop four (4) posters about famous french composers/ musicians, and artists. These posters will be done on large newsprint and should highlight the accomplishments of the various individuals. Pictures of their paintings and musical titles should be included on the posters. Along with the posters will be four (4) mini biographies, two (2) on the artists and two (2) on the composers. The biographies should be no more than one (1) page double spaced for each person.

Materials

- Newsprint paper.
- Markers.
- Stencils.
- Pictures.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Historical Figures

Names:_____

Objective: Using Corel WordPerfect 7 each group will be responsible for completing a four (4) page double spaced biography on two (2) important figures in France's history. The student will include at least one picture and focus on the following elements:

- Birthplace / Date of Birth.
- Parents.
- Early years.
- Contribution to French History.
- Circumstances surrounding his/her death.

Students will choose one (1) person from each group:

A	**B**
Charles De Gaulle	Napoleon Bonaparte
Francois Mitterand	Joan of Arc

Materials

- Computer.
- Pictures.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Language

Names:_____

Objective: The group will design and create a display on the french language. It will include at least fifteen (15) common expressions, thirty (30) words accompanied by pictures representing the translations. Accompanying this will be an audio tape of the expressions and words being pronounced by the members of the group. The display can be done on bristle board using stencils and markers.

Materials

- Bristle board.
- Paper.
- Stencils.
- Tape/glue.
- Tape recorder and tape.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Models

Names:_____

Objective: The group will construct a scale model or replica of a famous French Landmark such as the Eiffel Tower or Arc de Triomphe. They can use any substance such as popsicle sticks, cardboard, Styrofoam, etc. Accompanying the model will be a write of two pages double spaced about the structure they have modeled. Items to include would be who designed it, why it was built, important events where landmark was included.

Materials

- Popsicle sticks.
- Glue.
- Paper.

Resources

The possible sources of information for all of the projects are the same and will be provided on a separate hand-out.

Resources

* It is important to remember that these resources are based on those available to students in my particular setting. While some are generic and most likely to be found in many resource centres some are obviously not. The onus is on the subject teacher(s) and the resource person(s) to compile as many possible resources from their own settings and available collections. Due to the nature of the topic, it is also feasible to complete the activity using encyclopedias.

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Hull, E. (1988). The Wall Chart of World History. London: Bestseller Publications.

The World Book of Knowledge

The World Book Encyclopedia

Encyclopedia Britannica

Merit Student Encyclopedia

Various URL's are provided on a continuous basis due to the ever changing nature and content of the Web.

Microsoft's Encarta Encyclopedia (CD-Rom)

Grolier's Encyclopedia (CD-Rom)

Chronicles of the 20th Century (CD-Rom)

Eyewitness History (CD-Rom)

APPENDIX A

SUCCEED Model for Independent Learning			
	Stages	**Skills Required**	**Process Questions**
S	Select and focus topic and information needs.	Analyze broad topic. Narrow (Focus) topic. Formulate research questions and objectives. Identify key terminology. Define terms and relationships. Reflect on the topic (review process).	What is my topic? What do I need to know about it? Who will see or use this information? How much detail is needed?
U	Uncover potential sources of information. Learn how to access them.	Identify information sources. Determine availability of resources. Locate resources. Review process.	Where can I find the information I need? How can I get to it? How is the information organized?
C	Collect, examine, and select suitable resources.	Choose resources. Examine resources. Select/reject resources. Review process.	Which are the best resources for me?
C	Compile relevant information from selected resources.	Choose relevant information. Organize information. Make outline; take notes; paraphrase; compile bibliography. Review process.	What information answers my research questions? How shall I record and organize this information?
E	Evaluate, interpret, analyze, and synthesize the information.	Review information. Interpret information. Draw conclusions. Review Process.	What does this information mean? Does this apply to my topic? What conclusions can I draw from this information? Do I have all the information I need?
E	Establish and prepare an appropriate format and present the information.	Choose appropriate format. Write/create/produce. Edit/revise. Present information. Review Process.	How should I present the information? What formats can I use? Who is my audience? Does the format I have chosen clearly and accurately present the information?
D	Determine the effectiveness of the whole process.	Evaluate product. Evaluate strategies and skills used. Review process.	Have I attained my objectives? What have I accomplished? How can I improve?

APPENDIX B

EFFECTIVE Model for Resource Based Learning	
E	The basis of the provincial curriculum is contained in the Department of Education policies and the curriculum guides. Ant implementation of this centralized curriculum must begin with an **EXAMINATION** of the goals and objectives of these documents.
F	Resource based learning **FOCUSES** on the learner and requires careful analysis of student characteristics such as interests, age, maturity, attitude, family history, intellectual ability, psychomotor development, gender, socio-economic and cultural background.
F	Objectives should be **FORMULATED** which specify what the learner is to gain from the resource based learning experience in terms of knowledge, skills, and attitudes.
E	Instructional strategies, techniques and learning activities should be **ESTABLISHED** which reflect the specific objectives which have been formulated. Examples include collect, dance, compute, dramatize, debate, play, travel, write, videotape,etc.
C	To accommodate the different learning styles of individual students and to provide students with **CHOICES**, a wide range of resources is necessary. Examples include atlases, games, newspapers, photographs, diagrams, magazines, maps, etc. Also, it is important to remember that learning can take place anywhere so other parts of the school, community, and local region can be accessed. Resource based learning seeks to utilize many different locations.
T	Planning and scheduling are vital to resource based learning so access to resources, facilities and personnel must be **TIMETABLED**. Time periods must be set aside for planning, developing, implementing, and evaluating the whole resource based unit.
I	At the **IMPLEMENTATION** stage, the resource based learning plan is put into action. The unit is introduced to students in a positive, enthusiastic manner to motivate them to want to learn. Learning objectives are clearly defined and the time frame and evaluation procedures are outlined.
V	Teachers observe and assess the performance of the students as they work through the unit **VERIFYING** that learning is occurring. They act as facilitators of learning constantly tracking a students progress as they question, prompt, assist, and clarify.
E	After the resource based learning experiences have been completed and final presentations made, summative **EVALUATION** is necessary for both student achievement and the instructional process. Questions such as did students meet learning objectives?, do they know something about the content?, is further instruction necessary ? address student achievement. How effective were the activities used?, were the learning resources appropriate and suitable?, and were the students motivated throughout the unit? address the instructional process component.

APPENDIX C
INFORMATION INTERMEDIARY PROCESS MODEL

	Instructing	Coaching	Facilitating
Phase 1: Defining the Problem	Build awareness of ISU process. Introduce and model strategies for selecting, developing, and refining topic and for formulating research questions.	Monitor and provide feedback as students practice brainstorming, clustering, and webbing techniques in cooperative learning settings.	Help students select topics independently. Suggest sources for topic overview. Consult as students develop authentic topic and research questions.
Phase 2: Developing Information Seeking Strategies	Introduce information sources. Model development of search strategy.	Provide guidance as students identify, expand, limit, and combine terms to develop search strategies in practice settings.	Suggest specific resources for student topics. Help students develop individual search strategies.
Phase 3: Locating Information	Demonstrate retrieval of citations from indexes and databases, location of sources in media centre, and location of information in sources. Discuss access to sources outside of media centre.	Give directions as students practice retrieving citations, locating sources, and using scanning and skimming techniques to find information in a controlled setting.	Assist as students locate information independently. Provide access to outside resources.
Phase 4: Gathering and Assessing Information	Discuss criteria for evaluating relevance, reliability, and adequacy of information. Demonstrate strategies for taking notes. Explain rights and responsibilities of information use.	Monitor and provide feedback as students apply criteria for evaluating and selecting or rejecting information using practice data in cooperative learning settings.	Consult as students assimilate, evaluate, select or reject, and record information independently. Help students determine copyright compliance and obtain clearances as needed.
Phase 5: Synthesizing Information	Introduce and model strategies for organizing information, identifying relationships, and drawing conclusions. Describe format options for communicating results.	Give guidance as students practice strategies for organizing and synthesizing information in cooperative settings.	Help students organize and synthesize information independently. Consult as students plan presentation of results. Help students obtain and use required resources.
Phase 6: Evaluating and Refining Results	Discuss criteria for evaluating product and process. Discuss how evaluation may suggest revisions.	Provide direction as students apply criteria and suggest revisions using practice data in cooperative learning settings.	Provide feedback as students evaluate process and products. Consult as they make revisions.

APPENDIX D

SAMPLES OF STUDENT WORK

THE SURRENDER

France and Great Britain planned to wage a defensive war of attrition, but their strategy failed. In May 1940 the Nazi forces swept through The Netherlands,and part of Belgium. Within a short time the road to Paris lay open. Panic and defeatism gripped the government.On June 18 France finally surrendered to Germany. They did not say this publicly yet, but were determined to. It was now that the members of the France Government,, began to disagree openly. So did the Generals. The leaders of the country were falling into two groups; those who were in favor of surrender, and those who thought France should fight on, from North Africa if need be.Marshal Petain led the first group Paul Reynaud the second.

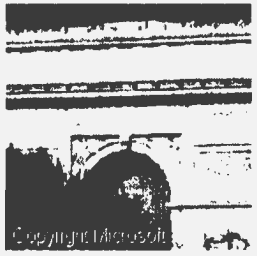
On May 27 the Belgium King Leopold asked the German high command for an armistice. Belgium resistance was at a end.

Petain declared the end of the Third Republic on July 11 and established a dictatorship, with Vichy as the capital. After the Allies invaded North Africa on Nov. 8, 1942, Germany broke the surrender terms and occupied all France.

On June 22 he signed surrender terms. At first only the north and the west coasts were occupied. But in the near future almost all of France was occupied.

Arc de Triumphe de l'Etoile

The Arc de Triumphe de l'Etoile is the world's largest triumphal arch. I t forms the back drop for an impressive urban ensemble in



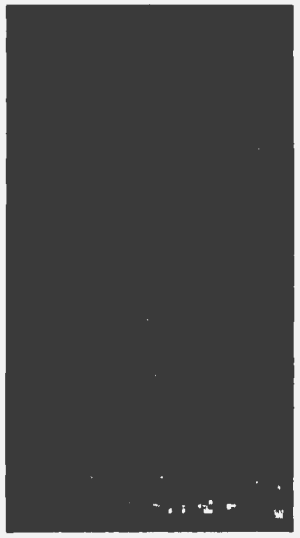
Paris. The monument surmounts the hill of Chaillot. At the center of a star shaped configuration of twelve radiating avenues. It is the climax of a vista seen, the length of the Champs Elysees from the smaller Arc de Triumphe du Carrousel.

France

The capital of France is Paris, the city of love. The national anthem is La Marseillaise. The official name of the country is Republique Francaise. The countries bordering France are Belgium, Luxembourg, Germany, Switzerland, Italy and Spain. The president is Francois Mitterrand. The Prime Minister is Edith Cresson. The population is 56, 303, 985 people. Approximately 75% of the population live in towns of 2000 or more. 16.2 % live in cities of 100, 000 or more.

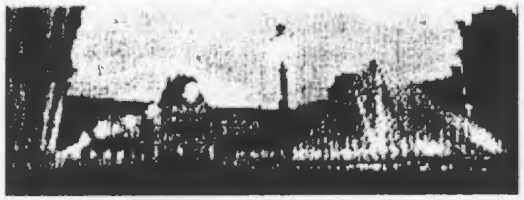
France

The Place To See!



Le Louvre

For so many centuries, the seat of French power, Le Louvre still Contains some national



administrative offices in the rue de Rivoli Gallery, where a separate museum, the Musée des Art Décorations is also housed. The Louvre, known formally as the Musée de Louvre, occupies the older gallery, the palace around the Cour Carrée.

Bordeux. Land of Vineyards.

Bordeux, the chief town of Aquitang is located 557 km southwest of Paris. Here, visitors will encounter a large city with majestic squares and impressive fountains. It's finest attraction remains the Grand Theatre, a masterpiece of neo-classic architecture reminiscent of a Greek temple.

The Eiffel Tower

The Eiffel Tower, an immense tower of exposed Lattice work supports made of iron, was erected for the Paris exposition of 1889. It was named after it's builder, the french structural engineer Alexandre Gustave Eiffel, who assisted in the design by the engineers Maurice Koechlin and Emile Nouguier and the architect Steven Sauvestre. Built to celebrate the science and engineering achievements of it's age, the 300m (984ft) structure consists of two visibly distinct parts, a base composed of a platform resting on four separate supports (called pylons or bents) and, above this a slender tower created as the bents taper upward, rising above a second platform to merge in a unified column.

The Eiffel Tower dominates the skyline of Paris, the capital city of France. It is one of the most famous landmarks in the world.

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