Introduction

The goal of this project was to enhance the existing Marine Technology 2128 high school course and adapt the course for distance delivery to make it more readily available to all high schools throughout the province. The Department of Education approved modification to the existing curriculum with up-to-date fisheries and marine content.
Methodology

The project consisted of four phases:

**Phase 1: Develop High School Curriculum**
Instructors at the Marine Institute developed appropriate curriculum for the Marine Technology 2128 course. The resultant curriculum is included in the final report.

**Phase 2: Develop a Smart Classroom**
A Marine Education Learning Centre with a "smart classroom" (one adapted for computer usage) was established at King Academy in Harbour Breton. Fishery Products International, a partner in this project, contributed funding for the "smart classroom".

**Phase 3: Pilot the Curriculum in Harbour Breton**
The first delivery of this curriculum was taught in a regular classroom setting. Guest speakers from the Marine Institute traveled to the community and the classroom teacher visited the Marine Institute to provide feedback on the curriculum. During this period, the Marine Institute's training vessel, the MV "Lauzier", traveled from St. John's to Harbour Breton, with a number of high school groups from the province, to experience onboard daily life in the marine setting.

**Phase 4: Develop the Course for Distance Delivery**
After feedback was received from Harbour Breton and an evaluation of the classroom delivery was conducted, the course content was adapted for distance delivery. This adaptation included the identification and creation of a number of new media objects, including video, audio and graphics that greatly enhanced the course curriculum. The resultant course curriculum was uploaded into WebCT, a learning management system currently used by the Marine Institute and the K-12 system.

Results

For the first year, the hybrid teaching approach, using both face-to-face teaching strategies combined with the distance environment and resources, was used. For the second year, there were 37 students and 2 teachers from King Academy in Harbour Breton participating in distance delivery of the course. Joining them were 17 students and 1 teacher from MSB Academy in Middle Arm.

The participants report that the course is functioning very well from a technical standpoint. They offer high praise for the depth of the content and the flexibility it offers in terms of project options. The participants are also quite impressed with the learning features of the learning management system (WebCT) and its range of capabilities.

The content of the course has been greatly improved; thus, students and teachers have access to up-to-date fisheries and marine career information. More high school graduates will be attracted to careers in the fisheries and marine industries. This will benefit both industries by attending young people into these careers. The teachers involved will benefit from professional development opportunities, both in the areas of the ocean industries and distant learning. The province of Newfoundland and Labrador has received another high school course adapted for distance delivery.

Marine technology class
Future Plans

The Marine Institute will continue to work closely with schools who are piloting the course. Based on the feedback received to date, the following enhancements will be undertaken: guest speakers in the form of both live videoconferencing and prerecorded video clips are to be distributed throughout the learning package; linkages and common projects may be developed between schools; the fisheries section will be revised to better correspond with the rest of the package; and the Marine Institute will work closely with the high school teachers to develop more activities, sample tests and exams that could then be added to the curriculum.

A number of schools throughout the province have expressed an interest in delivering the course beginning in the fall of 2003. At the present time, the Marine Technology 2128 is a one-credit course. This presents a problem for many of the smaller high schools, particularly in terms of scheduling. The course contains an abundance of impressive content and could easily be adapted to a two-credit science course. The Marine Institute has had preliminary discussions with the Department of Education and will work cooperatively with a high school to submit a proposal for consideration.

Conclusion

This project has resulted in the enhancement of Marine Technology 2128 by significantly augmenting the curriculum with learning resources and adapting it for distance delivery.

The Marine Institute will continue to enhance the course content, and encourage and support high schools throughout the province in their delivery of this course.

It is hoped that this will provide the young people of Newfoundland and Labrador with a greater understanding of the marine industries and their career opportunities.
The $10 million Fisheries Diversification Program is part of the $81.5 million Canada-Newfoundland Agreement Respecting the Economic Development Component of the Canadian Fisheries Adjustment and Restructuring Initiative.