AN EVALUATION OF A THREE-WEEK
ADULT EDUCATION PROGRAM FOR COMMERCIAL FISHERMEN

by

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We accept this thesis as conforming to the required standard.

THE UNIVERSITY OF BRITISH COLUMBIA

September, 1969
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Date Sept. 1969
ABSTRACT

The Technical Fisheries Short Course has been administered by the Department of Extension at The University of British Columbia for fifteen years with funds provided by the federal government. The content of this three-week adult education program for commercial fishermen is designed with emphasis on the scientific rather than vocational aspects of fisheries. It was the purpose of this study to evaluate the effectiveness of the Short Course in terms of new knowledge acquired and attitudes which were modified during the time it was offered.

The study population consisted of 117 fishermen composed of 22 students of the 1969 Class (Group I); 40 non-students (Group II); and 55 former students (Group III). Data for Group I was collected by the use of six objective instruments and one subjective discussion session. Two of these, a knowledge-attitude test and a socio-economic instrument, were used to collect data for the other two Groups.

Knowledge acquisition and attitude change for Group I was measured by administering the knowledge-attitude test in the pre and post situations. It was shown that learning did occur as average knowledge scores improved from 18.0 in the pre-test to 31.0 in the post-test out of a possible total of fifty. Although there were sixty-seven individual attitude changes to eight statements concerning governmental bodies, the overall Class attitude score remained
virtually unchanged at 22.2 in the post-test from 22.4 in the pre-test out of a total of forty.

By means of multiple stepwise regression it was shown that 30% of post-knowledge was dependent on pre-knowledge. By logic it is assumed that some of the remaining 70% was due, directly or indirectly, to exposure to the educational experience. Analysis of variance tests with socio-economic data provided some statistically significant results, but because of only one or two replies in the categories causing the significance these are not reported and further studies with larger populations are indicated.

Group I fishermen showed a preference for vocationally-oriented subjects (unlike previous classes), but at the same time indicated an interest in and understanding of academic and research oriented content. In terms of interest and value ratings of the subjects offered the program content met the needs of the participants and they believed that what they had learned would help them to increase their financial returns from fishing.

The results indicate the need for establishing instructional objectives and providing guidance to some instructors on teaching techniques. Other results based on the study are that consideration should be given to scheduling the program earlier in the year and that more advance publicity about the Short Course is required.

The knowledge-attitude test and the socio-economic instrument were
also administered to Groups II and III (non-students and former students). As most of the Group I fishermen came from metropolitan areas in the lower mainland and on Vancouver Island an attempt was made to determine if the knowledge and attitude they possessed were representative of these factors for fishermen from metropolitan areas in general (Group II). Within the limitations of the study it was found that Group I knowledge was similar to that of Group II as determined by average group scores. On the same basis Group I attitude differed significantly at p.05 from that of Group II.

Analysis of the data from the knowledge-attitude test and socio-economic Instrument showed that Group I fishermen were more representative of Group III fishermen (former students) than they were of Group II fishermen (non-students). It was also determined that no significant difference existed between the knowledge scores of former students and post-test knowledge scores of Group I. This suggests a retention factor and reveals an area for further research.

It was concluded on the basis of the factors studied that the 1969 Short Course was a success. The results indicate that certain modifications in content, instruction and format would have enhanced its effectiveness. The study also confirmed the difficulties faced by an adult education program administrator in concurrently conducting evaluative research. While the collection of evaluative data can be accomplished with comparative ease its
interpretation and presentation becomes a problem in terms of the time and expense involved, a problem which can only be corrected by the provision of research funds.

Other implications for research are a study of the application by students of knowledge gained at the Short Course and a study of the attitudes held by fishermen toward government regulatory agencies. Repeated evaluative studies of the Short Course using the same instruments established for this study are recommended. Communications research to determine if the program is influencing a much wider population than the fishermen who attend is also suggested. This empirical study provides a benchmark on which the research suggested can be built.
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CHAPTER I

INTRODUCTION

Canada ranks tenth among the fishing nations of the world but unlike some of the major countries such as Japan, has not felt the need for a highly developed fisheries education system. In the last two decades, however, a few training centres have become established in the Maritime Provinces with the one at St. John's, Newfoundland being the largest and possessing the most comprehensive curriculum. Prior to this time fishing was merely a way of life and experience was the teacher.

ORIGIN OF THE U.B.C. FISHERIES SHORT COURSE

This condition is particularly true on the Pacific Coast where the fishery is predominantly coastal and the emphasis is on salmon. But it was here that the first training in fisheries in Canada started in 1955. The importance attached to this development was indicated in the House of Commons by Honourable James Sinclair, the then Minister of Fisheries, who said:

One other thing we have done, which I think is a significant step forward. We have no fishermen's school in Canada. The way a boy learns to be a fishermen in Canada is by going to sea with his father and watching him fish. ... This spring, as an experiment, we started at The University of British Columbia a school for professional fishermen, not for boys. ... The course of studies is an excellent one and it is well worth while putting it on the record, because I am sure there will be requests from other parts for similar courses.
The curriculum was decided co-operatively by the University with representation from the Department of Extension and the Institutes of Fisheries and Oceanography and fisheries organizations with representation from the Department of Fisheries, the Fishermen's Co-operative Association and the Fishermen's Union. The group formed in this way recognized the need "to introduce the scientific side of the industry to the practising fishermen." Because of this approach the course is quasi-academic rather than vocational in character although a few practical subjects such as coastal piloting, first aid and field trips are included as incentives (Appendix A).

The program objectives as originally stated are

1. to extend the knowledge of the fishing industry to practicing fishermen beyond their specialized branch, with applicants willing and able to convey some of the information gained from the course to other fishermen in their areas;

2. to provide a means through which the latest fisheries information and fishing methods may be introduced to British Columbia fishermen;

3. to make fishermen aware of the biological, economic and legal problems of fisheries and fish conservation.

All costs of transportation, lodging and instruction are paid for from a grant received from the Department of Fisheries for this and other fisheries programs administered by the Department of Extension of the University of B.C.
PURPOSE OF THE STUDY

The uniqueness of this program has received wide interest and many inquiries about its content and administration have been received. The Short Course has been used as a model by the Indian Affairs Branch in British Columbia, for a similar program for native Indians. The Province of Manitoba and the University of Alaska have also utilized the format and some of the content to suit their particular circumstances.

For these reasons, besides the desirability of knowing about the effectiveness of a program that has been offered for fifteen years, it was considered useful to conduct an evaluative study of the 1969 Fisheries Short Course during the span of its presentation; a study which could be repeated in successive years. A secondary intent was to compare certain data such as test scores and socio-economic information with that obtained from previous graduates of the program.

A detailed search of the literature failed to reveal other empirical studies of fisheries education programs. Thus there is another reason for this study for with minor adaptations the instruments devised can be used to conduct similar studies in these other programs.

Because the study was made over the duration of the course it was concerned only with the primary aspect of behavioural change, viz, the acquiring of new knowledge and the modification of attitudes in the course of the educational experience. The objective data obtained was used for making correlations between measured learning and selected socio-economic factors in the background experiences of the participants.
DESIGN OF THE STUDY

The course was designed: (a) to impart to fishermen useful practical information about the fishing industry; (b) to assist them in understanding the nature of research that is related to the success of the industry, eg. oceanography, fisheries biology, fisheries engineering, world fisheries; and (c) to inform them of the operation of national and international bodies whose functions appear to limit or influence the activities of fishermen.

In order to study these objectives it was necessary to pre-test and post-test the participants of the 1969 Fisheries Short Course (hereafter Group I consisting of 22 students). Testing was done for (a) and (b) in terms of measurable knowledge imparted by the course and for (c) in terms of measurable attitudes toward certain regulatory and decision-making departments or commissions whose functions and operations were described.

To determine the relevance of some of the subject matter which may seem remote to fishermen Group interview of the 1967 Class and their measurement of subject interest and value were selected as the best methods of evaluating such content.

Because the students were a non-randomized group an attempt was made to determine if the knowledge and attitudes they possessed on arrival were representative of these factors for fishermen of the area as a whole. This was accomplished by comparing the pre-test results with those obtained by a group of fishermen (hereafter Group II consisting of 40 respondents) who had never attended
a Fisheries Short Course and were willing to take the test.

It was also thought desirable to find out, if possible, about knowledge retention by former Short Course students. As the course curriculum had not been radically changed since 1965 and many lectures were common to both, it was theoretically possible to compare Group I post-test results with those of cooperating former students (hereafter Group III consisting of 55 respondents).

As socio-economic factors are known to influence learning and are also a measure of consistency within the groups used, an attempt was made to collect such data for all three groups for comparative purposes.

FOOTNOTES


CHAPTER II

LITERATURE REVIEW

Adult education institutions generally, have yet to become committed to the practice of evaluating their educational offerings scientifically. The criteria of success, by and large, are the attendance figures or the number and diversity of programs offered in any given year compared with the preceding year. While such statistics are not without merit, particularly in assessing an institutions' annual offerings, they fall short of describing the more fundamental and important issue of behavioural change which is the ultimate aim of all education. The writer is aware that subjective evaluations of the "did the program meet your needs" type are not uncommon for specific courses or conferences. While useful as indicators for future planning, this type of evaluation does not measure the educational results of the program. To rectify the situation, evaluation research on selected individual programs by the best available scientific methods is indicated.

This has been done by the United States Department of Agriculture Cooperative Extension Service. Mathews writes that:

Systematic evaluation of teaching activities and programs using sound research methods were initiated a few years after the Cooperative Extension Service was founded. Training of staff in evaluation methods and techniques has been carried on to some extent in almost all states. This training in practical methods for use in day-to-day evaluation of educational programs is supplemented by educational research.
Also worthy of mention is a study by A.A. Lacognata to investigate the effectiveness of a residential and non-residential course in insurance fundamentals. By the use of three data gathering instruments to measure knowledge acquisition and knowledge application the research supported the hypothesized superiority of residential instruction. Significant differences favouring residential students' performance were obtained on separate examinations of knowledge acquisition, knowledge application and attitude to insurance as a profession. The author suggests that the isolation factor, instruction on a continuous regular basis and group influence are factors contributing to effective study habits in the residential setting.

Reasons to explain the lack of attention to evaluation in adult education are readily available. As Clark has stated, adult education is a marginal operation beset with the problems of having "...too little money, too few facilities, and too tenuous a hold on its clientele to gain support for its aims or recognition for its professional personnel." In addition, program administrators are too pre-occupied with the administrative function to devote time and energy to more than subjective forms of evaluation. In the case of colleges and universities, adult education plays an ancillary role to teaching and research and "there is no clear-cut statement of goals and directions for higher adult education developed by the field itself..." Furthermore, while the number of sections, departments or faculties
which are devoted to adult education within institutions of higher learning are increasing, they are still few compared with the academic staffs devoted to primary and secondary education. It is in these areas that evaluative studies have predominated and no such resource exists at present for those who design and administer adult education.

Brunner et al point out that Americans have placed a high value on education and:

Only in recent years have questions arisen as to whether the goals, implicit and assumed for so long, were in fact as important as imagined, and more important, whether they were being measurably attained. In crass terms, was the huge investment of time and money bringing commensurate returns?

A very real deterrent to adult education agencies to conduct elaborate evaluation studies are the related large budgets which are required. On the other hand, "good evaluation can point the way to saving large sums of money wasted in ineffectual action, and, more important can mean the difference between constructive and destructive action." Many of these reasons for there being no evaluation can also be used as argument for the opposite view. The increasing size of the adult education enterprise and its relative importance in the total educational field "makes it essential that adult educators be able to defend their programs by knowing its achievements in very specific terms." Miller states the situation succinctly by saying that "evaluation in adult education does not yet occupy the place accorded it in primary and secondary education."
In support of this statement another author claims that:

Administrators often confuse educational purposes with what are essentially goals of institutional survival. Typically, evaluation in adult education consists of asking the student whether he liked the program, a result which may or may not bear some relation to learning. 9

An equally disheartening example is provided by a participant at an adult education meeting, convened especially to consider evaluation, who said, "I think the first steps in evaluation are to ask, 'Is the attendance good or bad? Have we misjudged the interest?'" 10 Such a thought typifies the lack of investigation, consultation, and knowledge about what need a program is meeting and the rationale for the program in the first instance.

In the view of Essert, adult educators have lacked confidence in their claims for both private and public risk capital for experimentation in adult education. He claims that:

Until more foundations and government agencies encourage a wide range of soundly financed, coordinated, and long term experiments and researches in adult education, adult educators can only hope to make sporadic impacts upon quality living in our nation, only limited tests of the power of wholesome adult education. 11

While this may be true for far-reaching formal scientific studies, evaluation of one form or another is inescapable and continuous at the individual program level. As London writes, "Often it may be casual, based on one's own observations or the use of a simple questionnaire to secure information from the students." 12 Klineberg recognizes "the difficulty of reducing the
technology of the social scientist to the applied level of administrative practice" but adds "...at least an attempt should be made to bridge this gap." \[13\]

In the field of general education Ahmann feels that complex and sometimes poorly defined methodological problems cause educators to de-emphasize evaluation. He asserts that:

All evaluation is relative, perhaps to a larger degree than the unsophisticated wish to acknowledge. Rather than emphasizing the search for one 'final decision' ... we should, perhaps, concentrate more heavily on the 'try-out' type of study where measurement sophistication is less sophisticated. \[14\]

In the same area Scriven, discussing professional versus amateur evaluation, points to conflict between teachers or curriculum makers and evaluators. He claims that those who are against evaluation are rationalizing an anxiety caused by an external judge (the evaluator) who is not committed to the project. \[15\]

Miller reports that an obstacle to evaluation may be due in part to the fact that, in the view of some, research on values is unscientific. He suggests:

... that adherence to this objection masks, in many cases, the operation of personal factors, including a dislike of evaluation due to some previous experience of its misuse, and an unwillingness to face up to findings which might require basic changes in existing practices, whose preservation has emotional value for the educator. \[16\]
If the program administrator becomes involved in evaluation he is faced with an opposing dichotomy of attitudes. On the one hand he "must be devoted to his job and convinced that his activities have social usefulness" and on the other he "must be prepared to discover that the programme may be ineffective or even harmful."

In America, behaviour change is the fundamental assumption upon which evaluation is predicated in education. Thiede claims that "...adult education seeks to change the thinking, feeling, and acting of adults in desirable ways." This is performed with cognizance of the beginning competence of the adult student and his ultimate capability. The clear implication is then, "that we are primarily interested in evaluating programs, not students - a most important difference."

It is highly unlikely though, that adult education administrators could be convinced of the necessity to evaluate all programs, particularly those which are "liberal" and non-credit. They would probably argue with conviction that "knowledge for the sake of knowledge" and personal faith in their program offerings is sufficient and that such programs need not be subjected to impersonal scientific scrutiny. Many legitimate programs, eg. "Introduction to Greek Thought," are designed to inform or enrich and behavioural change in the student is not a primary aim.

Klineberg points out the need for more acceptable evaluation based
on the scientific method, and agrees with Travers who says that:

Evaluation procedures are often thought of as trimmings on the educational process or as something which occurs in the last few hours of a course. Nothing could be further from the truth, for evaluation is an inescapable and continuous process.  

In answer to critics who claim that program goals of behaviour change might imply manipulating people in some way, Brunner et al make the following assertion:

The propriety of such manipulation raises a legitimate ethical question as far as all education is concerned, but it would seem to apply more to the compulsory education of children than to the education of adults who are volunteers.

The foregoing discussion on the need for evaluation in adult education has been primarily concerned with the program; its improvement and its defense. It should also be remembered that "an appraisal of evaluative data sometimes results in review of aims rather than of procedures."

Inextricably associated with evaluation is a statement of objectives expressed in behavioural terms. Without such, stated in clear and explicit form, there can be no measurement. Thiede points an accusing finger at adult educators, especially administrators, who, "are likely to think that their purposes are to 'provide', to 'offer', or to 'conduct' programs for clientele."

The specifications required for defining objectives in behavioural terms:

1. should include all the more important aspects of behaviour related to the problem of evaluation;
2. should specify the kind of responses that may be accepted as evidence of these aspects of behaviour;

3. should specify the limiting conditions under which these responses are likely to take place.\textsuperscript{25}

An educational objective has been defined as a desired change in behaviour. It is "not something the instructor does; it is not the same as the course content; and it is not a fundamental of life value."\textsuperscript{26}

Most writers on the subject agree that setting of objectives is the first step in the evaluation process. The others are:

1. defining aims or objectives of the program;

2. selecting the criteria by which accomplishment is judged and methods of measuring them;

3. deciding on the logic or design of the evaluation, collecting data and analyzing the data.\textsuperscript{27}

It should be noted that the typical statement of "Aims and Objectives" appearing on an announcement brochure of a conference is liable to be of little use to the evaluator. The statement is designed to inform the reader, presumably a potential client, in concise terms of the content of the course from which he will judge whether he is interested in attending or not. This is a proper use of the administrative function. The administrator and his co-designers of the course content and methodology should establish their own guide for the behavioural learning expected to result, but whether this should be published in the announcement is open dispute, especially where the course is not a mere
technical training program (the difference, for example, between a course on the "Fisheries Industry" and one on "How to Navigate a Fishing Vessel by the Stars"). The instructional objectives, however, must be in harmony with the guidelines set by the general objectives.

Behavioural scientists have recognized three domains for the classification of intended behaviour. The cognitive domain includes those objectives which deal with the recall or recognition of knowledge and the development of intellectual abilities and skills; the affective domain includes those objectives which describe changes in interest, attitudes, and values and the development of appreciation and adequate adjustment; and the psychomotor domain is the manipulative or motor-skill area. Bloom's taxonomy which focuses on the cognitive domain consists of six categories including knowledge, comprehension, application, analysis, synthesis, and evaluation where each step represents a higher order of intellectual development.  

This taxonomy is useful in assisting evaluators with establishing the right kind of objectives and underscores the importance for the program administrator to be knowledgeable about the intellectual level of his clientele.

The important reasons for using behavioural objectives are that they provide guidance in planning instructional procedures, are useful in performance assessment, and help the student direct his own attention and efforts. However, Scriven points out the problem of "putting pressure on
a writer to formulate his goals, stick to them and express them in testable
terms. This may alter his product in ways that are not always desirable."\textsuperscript{30}

Blaney and McKie have demonstrated that presentation of Conference
objectives improved the amount learned by a group of educators over other
groups which received a general pre-conference orientation session in one case
and a pre-conference test in another. However, the authors caution that:

while the results of this study support the hypothesis that
presenting precise conference objectives to conference participants
will facilitate learning in terms of the objectives, this kind of
study needs to be replicated on other groups...\textsuperscript{31}

At least one author suggests that evaluation measurements are not
completely accurate. Stake writes,

Measurement consultants usually recommend specification of
objectives in behavioural terms, experimental studies rather than
status studies, and testing with instruments of empirically
demonstrated reliability. Clearly these recommendations have
their merit, but they misguide evaluation efforts.\textsuperscript{32}

Until such time as the adult educator develops expertise in
evaluation, concern for refinement in its technology must be left with the
educator and social scientist. In the meantime he should consider the words
of Miller:

The lack of experience in using techniques should not deter
educators from embarking on evaluation. The main requirements
are a willingness to exercise care in making the assessment and
honesty in its interpretation.\textsuperscript{33}
Adult educators would doubtlessly include additional requirements of time and funds. The lack of these may be responsible for the adult education void in the literature of evaluation research.
FOOTNOTES


13 Klineberg, p. 348.


16 K.M. Miller, pp. 431-432.

17 Klineberg. p. 363.


20 Klineberg, p. 347.

21 Brunner et al, p. 247.


26 Furst. p. 3.

27 Klineberg, p. 363.


30 Scriven. p. 55.


33 K.M. Miller, pp. 441-442.
CHAPTER III

METHODOLOGY

A. GROUPS STUDIED

Three groups of fishermen were chosen for study; the 1969 Class of 22 students, Group I; 40 fishermen who had never participated, Group II; and 55 former students, Group III. When the study was initiated there was no way of knowing the size of the first Group as enrolment is permitted up to, and in some instances, after the course begins. An attempt was made to obtain from the Department of Fisheries a complete listing of all fishermen in the Province from which a representative sample for Group II could be drawn. As no such list was available, it was necessary to solicit the cooperation of fishermen in the following manner.

The second Group was formed by cooperating fishermen at False Creek Fishermen's Terminal in Vancouver* and at two meetings of the United Fishermen's and Allied Worker's Union. Group III was determined by including all 'graduates' whom it was felt had been exposed to the same subject-matter content. This comprised one hundred and eighteen fishermen who had participated since 1965.

All Groups were similar in that the majority of fishermen in each were from a metropolitan area. This makes no difference in terms of areas fished but may sociologically in terms of attitudes and values held by these fishermen as a result of urban influences.

* a fieldworker assisted in this instance.
B. INSTRUMENTS USED

For the purpose of the study, six instruments were used; two were administered to all Groups and all were administered to Group 1. In addition the 1969 Class participated in a subjective evaluation session. The various instruments and their function are listed below.

<table>
<thead>
<tr>
<th>Instrument No.</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 1</td>
<td>knowledge and attitude</td>
</tr>
<tr>
<td>2</td>
<td>subject interest and value; instructor rating</td>
</tr>
<tr>
<td>x 3</td>
<td>socio-economic data</td>
</tr>
<tr>
<td>4</td>
<td>reading habits, motivation, etc.</td>
</tr>
<tr>
<td>5</td>
<td>Kropp-Verner Attitude Scale</td>
</tr>
<tr>
<td>6</td>
<td>Chapin Social Participation Scale</td>
</tr>
</tbody>
</table>

x completed by all groups.

Questions for knowledge testing by Instrument No. 1 were obtained in December, 1968. Instructors were asked to submit a minimum of six questions covering the material which would be included in their presentation and about which they considered a well informed fisherman should be knowledgeable. In most cases these were re-worded to obtain conformity of construction and desired form of response. An objective exam was designed which included multiple choice, true-false, and yes-no questions. A considerable portion of the subject material presented in the course consisted of important facts to be
learned and they could be measured only in this way. The knowledge score was obtained by counting all the correct answers to fifty knowledge questions (Appendix B).

Attitude questions were included to measure agreement or disagreement with certain statements relating to authoritative government bodies. It was thought appropriate to include this element in the study because fishermen often fail to understand the reasons behind regulatory actions imposed by the Department of Fisheries and agreements reached by International fisheries commissions in order to conserve the fishery. Examples of such matters are fishing area closures to permit escapement for spawning and the principle of abstension arrived at by the International North Pacific Fisheries Commission wherein Japan has agreed not to fish for salmon east of a designated line in the waters of the North Pacific Ocean. Thus, for the 1969 students, it was of interest to learn if the attitudes held towards such matters prior to participation in the short course (pre-test) became modified after exposure to explanatory talks about them (post-test). The statements were decided upon in consultation with a University staff member experienced in attitude testing and the study of attitudes. They are based on views expressed by fishermen at previous short courses and those encountered at various times at other fishermen's meetings, union headquarters and during casual conversations.

Answers were provided on a five-point scale adapted from Miller which included response categories of strongly disagree, disagree, undecided, agree and strongly agree. Corresponding values of 5, 4, 3, 2, 1 were used for marking purposes.
except for two questions which were so worded that the reverse values were assigned for consistency. High or low scores reflect the respondents' degree of pro or anti-government feeling with respect to the content of the questions.

Instrument No. 1 was pre-tested and as a result four questions were re-worded for clarity and one was eliminated. It was confirmed at this time that the planned thirty minutes for completion was sufficient.

Instrument No. 2 was a seven-point scale adopted from Osgood et al and measured interest and value of the various topics to the student. Instructor ratings were obtained using the same scale. Students were reminded several times throughout the course to keep a record for this purpose.

The upper limit designates a highly favourable response and the lower limit a highly unfavourable one, the mid-value of 4 designates a neutral response, and the intermediate values between it and the extremities are indicative of the degree of favourableness or unfavourableness which the respondent felt to the topic or instructor. It is not claimed that the intervals have equal value (Appendix C).

As is customary in studies of this nature, socio-economic data was gathered for such factors as ethnic origin, income, investment in the operation (in the case of vessel owners), former or other occupations, church membership and activity, parental background (country of birth, occupation, education, etc.) and, in the case of married respondents, involvement of the wife in the operation. This became Instrument No. 3 to be used for ascertaining correlations or
differences within and among groups (Appendix D). A shortened version of this Instrument, hereafter referred to as the Modified Instrument No. 3 and further described in Section D, was administered to some of the respondents in Groups II and III (Appendix E).

Instrument No. 4 was designed specifically for the 1969 students and asked questions such as how they heard about the program, why they came, what fisheries publications they read, other training programs in which they had participated, whether or not they were losing income by attending and the frequency and ease with which they obtained information from other fishermen (Appendix F).

The Kropp-Verner Scale Technique for Evaluating Meetings\(^3\) became Instrument No. 5. This Scale is designed to measure objectively the general attitude of the participant toward a one or two day educational program. It avoids the specialized and subjective questions and responses of less scientific devices and measures elements common to any educational activity for adults, thus making possible comparisons between distinctively different programs. The authors suggest its experimental use in a variety of situations and it was included for this purpose (Appendix G).

Instrument No. 6 was Chapin’s Social Participation Scale\(^4\) which measures the extent and degree of a person’s involvement in groups and institutions. The rating obtained is a composite of increasingly weighted values given for the factors of number of memberships for the preceding year,
attendance at meetings, financial contribution, committee memberships and offices held (Appendix H).

Finally, a subjective evaluation was conducted by the Short Course Administrator with the students to provide an additional opportunity to learn of the effectiveness of the program.

The Short Course was advertised for three consecutive issues in two widely read Fisheries publications, one a monthly magazine and the other a weekly newspaper. Also, personal contact was made with key industry people who were familiar with the program. Prior to acceptance, potential students were asked to sign a statement expressing willingness to write tests or provide information as required. It was emphasized that it was the program and not the student which was being evaluated.

Thirty candidates were obtained, but this number was reduced to twenty-two who completed the entire program. It is normal to lose students and the reasons are varied. However, this rate was unusually high and part of the reason can be attributed to fine weather following a particularly severe winter. Several of those who left found it necessary to work on their boats in preparation for the fishing season. Two were known to have made a fishing trip for economic reasons.

C. EVALUATION OF THE STUDENT GROUP

An orientation session was held with the students upon their arrival.
During the discussion, the syllabus was explained in detail and all general queries about the course were answered. It was emphasized that the objective was not to teach fishermen how to fish, but rather to expand their knowledge about the fishing industry in general and in British Columbia specifically.

Instrument No. 1 was administered at this time to obtain pre-test scores and again on the final day to obtain post-test scores. It was introduced by Professor H. Roberts, a visiting Adult Educator from Perth, Australia. The purpose of the study was explained in detail with the added information that the results would be useful to apply to a similar program for Australian fishermen. To further put the candidates at ease they were given a short preliminary test containing simple examples of the types of questions contained in the Instrument.

Instrument No. 4 was completed by the class during the second week of the Short Course; the remaining four instruments were completed on the final day. The subjective evaluation was held with the students to give them the opportunity to elaborate on their answers to the written questionnaires or mention other points about the program. This session was tape-recorded for future reference.

D. EVALUATION OF THE NON-STUDENT GROUPS

Responses from Group II were difficult to obtain. A fieldworker soliciting cooperation of fishermen at the False Creek Basin in Vancouver met
resistance because of a suspicion that the information requested was somehow connected with the income tax department. The fishermen were also busy preparing their boats for the season. Of thirty responses received from this source, only twenty-two were usable and then only for Instrument No. 1 and Modified Instrument No. 3. The latter included information on age, years of fishing experience, school grade achieved, reading habits and place of residence. This information, being part of the methodology, was used along with the corresponding knowledge and attitude scores as part of the Group II data.

The assistance of the United Fishermen’s and Allied Workers' Union in getting respondents was then sought. This resulted in bringing in eighteen replies to instruments No.’s 1 and 3 from fishermen who were attending meetings at the Union Hall. In this case respondents completed the instruments at their leisure following an explanatory talk on how the information would be used.

Instrument No. 1 was mailed to the one hundred and eighteen former students (Group III) with a covering letter and return-addressed stamped envelope. The Modified Instrument No. 3 was included. Fifty-five usable replies or 46.6 percent were returned. Eleven more were undelivered because of changes of address. Instrument No. 3 was then mailed to these cooperating fishermen with another covering letter and return-addressed stamped envelope. Thirty-five or 63.6 percent of these were returned. In their replies to this second mailing, respondents were asked to indicate if they wished to receive the correct answers to the questions contained in Instrument No. 1.
The data for Group III then, consists of information from Instrument No. 1 and Modified Instrument No. 3 provided by fifty-five respondents, thirty-five of whom also completed Instrument No. 3.

Statistical treatment of the data for Group I included an attempt to predict the pre-test knowledge score from single and total scores for responses to eight attitude-finding statements and analysis of variance for pre and post knowledge and attitude scores and socio-economic data. Bivariate tables for combinations of the socio-economic data were obtained and multiple stepwise regression using pre-knowledge scores and pre and post-attitude scores as independent variables and post-knowledge scores as the dependent variable was also conducted for this Group. Chi square tests of significance using 2 x 2 tables for knowledge and attitude scores between Groups I and II and Groups I and III were administered.
FOOTNOTES


CHAPTER IV

RESULTS AND DISCUSSION OF RESULTS

A. RESULTS FROM SOCIO-ECONOMIC INSTRUMENTS

The socio-economic characteristics of the participants (Group I) were studied to determine their background. Presentation of these results is followed by an examination of the characteristics of the two other Groups that were studied (Group II - fishermen who had never participated in the program and Group III - graduates of previous programs).

GROUP I (STUDENTS)

Canada was the country of birth for nineteen (87%) of the fishermen. This was also the birthplace of the fathers of fifteen (68%) of them. The majority of ten (45%) students lived in Greater Vancouver or adjacent municipalities and seven (32%) were from Vancouver Island. Fifteen (68%) of the students had been fishing for nine years or less and of this number six (27%) had fished between five and nine years. Of the remaining seven students two had over twenty years experience (Table I).

Only nine (41%) fishermen said they had fished all their life, and it was the full-time occupation for eighteen (82%) of them. The previous occupations of those who had not spent a lifetime fishing were varied, eg. loggers, salesmen, truck drivers. A desire for independence was given most often as the reason for
becoming a fisherman. Half the Group had relatives who were also fishermen.

Fourteen (64%) members of the group were vessel owners, half of whom had fishing partners. Three students were partners in a vessel valued at $150,000. The other owners with boat values were as follows: 3 - up to $9000; 4 - between $10,000 - $19,000; 1 - between $20,000 and $29,000; 2 - between $30,000 and $39,000; and 1 between $70,000 and $79,000.

There were no students in the forty to fifty years of age category and nine (41%) students were less than twenty-five years of age. The remainder were fairly evenly distributed in the remaining categories. The average age was 31.5 years (Table II).

Two (9%) students were University graduates and two others had received College or some University education. Seven (32%) students had received High School matriculation, eight (36%) did not complete High School and three (14%) had achieved Grade 8 or less (Table III). Fourteen of the Class felt their education had helped them in their occupation as fishermen.

Table IV indicates the income of the participants. Six categories of income were presented. As expected there was only one respondent at each of the two extreme categories, $2000 or less and $10,000 or more. The remainder were equally distributed in the other four categories.

Slightly more than half belonged to a Credit Union and seven (32%) students said they obtained regular bank financing.
TABLE I
FISHING EXPERIENCE - GROUP I

<table>
<thead>
<tr>
<th>Years</th>
<th>0-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20 and over</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>9</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>Percent</td>
<td>41.0</td>
<td>21.3</td>
<td>13.2</td>
<td>4.5</td>
<td>9.0</td>
<td>100</td>
</tr>
</tbody>
</table>

TABLE II
AGE CATEGORIES - GROUP I

<table>
<thead>
<tr>
<th>Years</th>
<th>10-14</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
<th>60 and over</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>9</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Percent</td>
<td>41.0</td>
<td>9.1</td>
<td>18.2</td>
<td>13.6</td>
<td>0.0</td>
<td>0.0</td>
<td>4.5</td>
<td>13.6</td>
<td>0.0</td>
<td>100</td>
</tr>
</tbody>
</table>
### TABLE III
EDUCATIONAL LEVEL - GROUP I

<table>
<thead>
<tr>
<th></th>
<th>Grade 8 or less</th>
<th>Incomp. H.S.</th>
<th>Matric.</th>
<th>Coll. or some Univ.</th>
<th>Batch. Degree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>3</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>Percent</td>
<td>13.6</td>
<td>36.4</td>
<td>31.8</td>
<td>9.1</td>
<td>9.1</td>
<td>100</td>
</tr>
</tbody>
</table>

### TABLE IV
INCOME - GROUP I

<table>
<thead>
<tr>
<th></th>
<th>No Response or less</th>
<th>$2000 or less</th>
<th>2000 to 4000</th>
<th>4000 to 6000</th>
<th>6000 to 8000</th>
<th>8000 to 10,000</th>
<th>10,000 or over</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>Percent</td>
<td>22.7</td>
<td>4.5</td>
<td>18.2</td>
<td>18.2</td>
<td>13.6</td>
<td>18.2</td>
<td>4.5</td>
<td>100</td>
</tr>
</tbody>
</table>

33
Of the nine respondents who said they belonged to a church only two said they and their families were active in it.

The Class was equally divided between single and married students. The distribution of educational levels obtained by the wives of the ten fishermen who reported on this question was skewed with six having incomplete high school or less. The wives helped with keeping records in half the cases.

Five had wives who read fisheries publications and eight (36%) said that their wives informed them of fisheries articles.

The number of fisheries publications read regularly by the students with the number of responses in brackets were:

  0 (1); 1 (3); 2 (6); 3 (5); 4 (5); 5 (1); and 6 (1)

The strongest motivating factors for attending were 'to learn more about navigation', 'to learn more about the industry in general' and 'to improve practical knowledge of how to fish'. These were mentioned nineteen, seventeen and seventeen times respectively. The last two reasons agree with two of the program objectives which are to broaden the knowledge of fishermen about the fishing industry and to provide information on up-to-date fishing methods. The first reason supports the inclusion of some vocational content in the program as enticement to potential students.

Only one student had attended another course related to fisheries within the last five years, but nine (41%) had participated in other educational
programs. In most instances the programs in which they participated were training for a vocation and not always fisheries.

Nine (41%) students said they were losing income by attending the short course, but this fact was a serious influence in making the decision to attend for only two of them.

All but three students stated they discussed fishing matters with other fishermen more or less regularly. Half of the respondents obtained ideas about fishing from other fishermen and half did this only sometimes. Eight (36%) students indicated no reluctance of other fishermen to share fishing information and ten (45%) said this was the case sometimes.

In answer to the question, "do you consider the sports fishery more important than the commercial fishery?", nine said 'yes' and thirteen said 'no'.

Ten students used to listen to the CBC Fishermen's Broadcasts and nine said that they missed it.

Eighteen (82%) of the Group said that they discuss world food and population problems with their friends.

The average value obtained from the Chapin Social Participation Scale was 9.77. This falls almost midway between mean scores of 8 and 12 for semi-skilled and skilled occupational groups.¹

Some 400 analyses of variance were conducted with the Group I socio-economic data and pre and post knowledge and attitude scores. Seven of these
proved to be significant. However, because of the small N resulting in as few as one or two people to a category causing the significance, the reliability of such results is questionable and with the following exception they are not reported. Significant F ratios at p.05 were obtained between vessel owners and non owners in both the pre and post tests in their responses to the statement that the Department of Fisheries is influenced by the demands of the large fishing companies, with the non owners being more pro-government. Further research with greater numbers is indicated. An attempt to predict pre-test knowledge from pre-test attitude proved insignificant.

GROUPS I, II AND III (STUDENTS, NON-STUDENTS, FORMER STUDENTS)

The total number of respondents was 117 with 22 in Group I, 40 in Group II, and 55 in Group III. However, N varies with each Group as not all respondents replied to all questions. Analysis of the socio-economic data is an additional means of finding out how closely the Student Group typifies other fishermen. The reader is again reminded of the way in which Group II was obtained (randomness was not possible) and that Group III was drawn from 100% of those considered eligible under the conditions set.

Over eighty percent of fishermen in all groups were born in Canada. Half of the fathers of the fifty-five fishermen respondents in Group II and III were also born in Canada. Most of the non-Canadian born fathers were of Scandinavian or other European birth and most had been fishermen in their home countries.
About one-third of all fathers were or had been fishermen.

The majority of fishermen in all groups resided in the Greater Vancouver area or Vancouver Island.

While nine (41%) of Group I had fished for less than 5 years, twenty-four (59%) of thirty-seven respondents from Group II and fifteen (27%) of thirty-seven respondents from Group III had fished for over twenty years. Thirty-two responding members of Group II had fished for fifteen years or more, but for Group III the corresponding figure was fifteen with seventeen having fished from five to fourteen years. Fishing experience, then, was lower for Group I, dispersed among all categories for Group III and predominantly high for Group II (Table V).

TABLE V

FISHING EXPERIENCE - GROUPS I, II, AND III (PERCENT, ROUNDED)

<table>
<thead>
<tr>
<th>Group</th>
<th>0-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20 and over</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>41.0</td>
<td>27.0</td>
<td>18.0</td>
<td>4.0</td>
<td>9.0</td>
<td>22</td>
</tr>
<tr>
<td>II</td>
<td>5.5</td>
<td>5.5</td>
<td>3.0</td>
<td>27.0</td>
<td>59.0</td>
<td>37</td>
</tr>
<tr>
<td>III</td>
<td>13.5</td>
<td>24.0</td>
<td>22.0</td>
<td>13.5</td>
<td>27.0</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>18</td>
<td>14</td>
<td>16</td>
<td>31</td>
<td>96</td>
</tr>
</tbody>
</table>
Respondents were primarily vessel-owners with Group III owning the most. Thirty-one of thirty-seven fishermen were in this category, but only two mentioned being in partnership. Twenty-nine out of thirty-nine Group II fishermen were owners; only ten replies were received on partnership and these all indicated a 'no' response. Fourteen of the twenty-two students owned boats.

Thirty responses were received from Group III for the question on investment in their vessels (Table VI). Ten vessels were valued in the $20,000 to $29,000 category, six were placed in each of the categories above and below this one, and five were in the category of $10,000 or less. The ten vessels in Group II were valued at less than $20,000 by the owners with three of these valued less than $10,000. Thus, besides owning the most boats they represent a larger investment for Group III fishermen than do the boats of fishermen in the other groups.

More of the fishermen in Group II had spent their lifetime fishing than had fishermen in the other two groups. Eleven (61%) of eighteen of those who answered said they had fished all their lives, whereas thirteen (59%) of twenty-two and twenty-four (65%) of thirty-seven fishermen in Groups I and III respectively said they had not done so.

All Groups were similar with respect to fishing being the only present occupation; eighteen (86%) of twenty-one Group I, fifteen (88%) of seventeen Group II and twenty-seven (75%) of thirty-six Group III respondents gave this as their only source of
TABLE VI
VESSEL INVESTMENT, GROUPS I, II and III

<table>
<thead>
<tr>
<th>Group</th>
<th>up to 9</th>
<th>10-19</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
<th>over 80</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I %</td>
<td>21.4</td>
<td>28.6</td>
<td>7.1</td>
<td>14.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7.1</td>
<td>21.4</td>
<td>14</td>
</tr>
<tr>
<td>No.</td>
<td>(3)</td>
<td>(4)</td>
<td>(1)</td>
<td>(2)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(1)</td>
<td>(3)*</td>
<td></td>
</tr>
<tr>
<td>II %</td>
<td>30.0</td>
<td>70.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>No.</td>
<td>(3)</td>
<td>(7)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td></td>
</tr>
<tr>
<td>III %</td>
<td>16.7</td>
<td>20.0</td>
<td>33.3</td>
<td>20.0</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
<td>0</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>No.</td>
<td>(5)</td>
<td>(6)</td>
<td>(10)</td>
<td>(6)</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
<td></td>
</tr>
<tr>
<td>Totals %</td>
<td>20.4</td>
<td>31.5</td>
<td>20.4</td>
<td>14.8</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
<td>5.6</td>
<td>100</td>
</tr>
<tr>
<td>No.</td>
<td>(11)</td>
<td>(17)</td>
<td>(11)</td>
<td>(8)</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(3)</td>
<td>54</td>
</tr>
</tbody>
</table>

* $150,000 vessel - 3 partners
income. Those for whom fishing was not full-time had an assortment of other occupations which were mainly vocational. The jobs they had left to become fishermen were also varied and the majority were in the primary and secondary industries. Logging and subsidiary forest industries, farming and truck or taxi driving were most frequently mentioned.

The reasons most often given for leaving previous occupations were a desire for independence, a liking for fishing or the life of a fisherman, or because of relatives in the industry. Over half the responses related to these reasons for all groups.

Fishermen who were non-participants or former students were, on the average, older than the students, nine (41%) of whom were less than twenty-five years of age.* Almost half of the thirty-four fishermen from Group II who answered this question were between the ages of thirty and fifty and sixteen (47%) were over the age of fifty. Group III had twenty (44%) of its respondents in the thirty to fifty age-bracket and seven (19%) were over fifty years of age. (Table VII).

Group II did not receive as much education as did the other Groups. With twenty-nine responding, fourteen (48%) had Grade eight or less and ten (35%) had incomplete high school. Group III, with thirty-seven responding had ten (27%) and fifteen (41%) in these categories. On a percentage basis Group I had more respondents with matriculation or higher (Table VIII). Seventeen (59%) and twenty-

* The 1969 class av. age of 31.5 yrs. was similar to that of other classes.
TABLE VII

AGE CATEGORIES - GROUPS I, II and III

<table>
<thead>
<tr>
<th></th>
<th>10-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
<th>60 and over</th>
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<tbody>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Percent</td>
<td>40.9</td>
<td>9.3</td>
<td>18.2</td>
<td>13.6</td>
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<td>.0</td>
<td>4.6</td>
<td>13.6</td>
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<td>(9)</td>
<td>(2)</td>
<td>(4)</td>
<td>(3)</td>
<td>(0)</td>
<td>(0)</td>
<td>(3)</td>
<td>(3)</td>
</tr>
<tr>
<td>II</td>
<td>Percent</td>
<td>.0</td>
<td>5.9</td>
<td>5.9</td>
<td>17.6</td>
<td>17.6</td>
<td>5.9</td>
<td>11.8</td>
<td>14.7</td>
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<td>(0)</td>
<td>(2)</td>
<td>(2)</td>
<td>(6)</td>
<td>(6)</td>
<td>(2)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>III</td>
<td>Percent</td>
<td>5.4</td>
<td>21.6</td>
<td>8.1</td>
<td>10.8</td>
<td>18.9</td>
<td>16.2</td>
<td>10.8</td>
<td>2.7</td>
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<tr>
<td></td>
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<td>(8)</td>
<td>(3)</td>
<td>(4)</td>
<td>(7)</td>
<td>(6)</td>
<td>(4)</td>
<td>(1)</td>
</tr>
<tr>
<td>Totals</td>
<td>Percent</td>
<td>11.8</td>
<td>12.9</td>
<td>9.7</td>
<td>14.0</td>
<td>14.0</td>
<td>8.6</td>
<td>9.7</td>
<td>9.7</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>(11)</td>
<td>(12)</td>
<td>(9)</td>
<td>(13)</td>
<td>(13)</td>
<td>(8)</td>
<td>(9)</td>
<td>(9)</td>
</tr>
</tbody>
</table>
TABLE VIII

EDUCATIONAL LEVEL - GROUPS I, II AND III

<table>
<thead>
<tr>
<th>Group</th>
<th>Grade 8 or less</th>
<th>Incomp. H.S.</th>
<th>Matric.</th>
<th>Coll. or Some Univ.</th>
<th>Batch. Degree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>14.0</td>
<td>36.0</td>
<td>32.0</td>
<td>9.0</td>
<td>9.0</td>
<td>22</td>
</tr>
<tr>
<td>Number</td>
<td>(3)</td>
<td>(8)</td>
<td>(7)</td>
<td>(2)</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>48.0</td>
<td>34.5</td>
<td>14.0</td>
<td>3.5</td>
<td>.0</td>
<td>29</td>
</tr>
<tr>
<td>Number</td>
<td>(14)</td>
<td>(10)</td>
<td>(4)</td>
<td>(1)</td>
<td>(0)</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>27.0</td>
<td>41.0</td>
<td>24.0</td>
<td>3.0</td>
<td>5.0</td>
<td>37</td>
</tr>
<tr>
<td>Number</td>
<td>(10)</td>
<td>(15)</td>
<td>(9)</td>
<td>(1)</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>31.0</td>
<td>37.0</td>
<td>23.0</td>
<td>4.5</td>
<td>4.5</td>
<td>88</td>
</tr>
<tr>
<td>Number</td>
<td>(27)</td>
<td>(33)</td>
<td>(20)</td>
<td>(4)</td>
<td>(4)</td>
<td></td>
</tr>
</tbody>
</table>
four (65%) of Group II and Group III fishermen respectively thought that their schooling had helped them in their occupation and fifteen (67%) of Group I thought this. While the percentage differences are not great on this point the results are consistent with research studies reported intermittently in adult education journals in England and the United States for a number of years ie. those with higher average education place a higher value on education in relation to their occupation.

The income from fishing for Group II fishermen was substantially higher than for fishermen of the other two Groups. The most-often mentioned category was between $6000 and $8000 with $8000 - $10,000 being next. Those replying in Group III mentioned the $4,000 to $6,000 category most often followed by $6000 to $8000. Group I responded equally and most often to the categories of $2000 to $4000 and $4000 to $6000. These results are not used in the total analysis because of a suspected reporting of gross income in some cases and net income in others.

There was a large difference of opinion among the Groups about the relative importance of the sports fishery compared to the commercial salmon fishing industry in the Gulf of Georgia (Table IX). For all Groups together the opinion was equally divided, but thirty-seven (69%) of fifty-four Group III respondents thought that the sports fishery was more important economically. Group II with thirty-nine respondents and Group I with twenty-two respondents had
<table>
<thead>
<tr>
<th>Group</th>
<th>Sport fishing more imp.</th>
<th>Commercial fishing more imp.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
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<td>59.1</td>
<td>22</td>
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<td>(13)</td>
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</tr>
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<td>II</td>
<td>25.6</td>
<td>74.4</td>
<td>39</td>
</tr>
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<td>(20)</td>
<td>(29)</td>
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</tr>
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<td>III</td>
<td>68.5</td>
<td>31.5</td>
<td>54</td>
</tr>
<tr>
<td>Number</td>
<td>(37)</td>
<td>(17)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>48.7</td>
<td>51.3</td>
<td>115</td>
</tr>
<tr>
<td>Number</td>
<td>(56)</td>
<td>(59)</td>
<td></td>
</tr>
</tbody>
</table>
twenty-nine (74%) and thirteen (59%) respectively who gave the opposite answer.

There were eighteen Group II and thirty-seven Group III fishermen who replied to the question on Credit Union membership. Fifteen (83%) of the former and twenty-six (70%) of the latter indicated that they were members, and one-third of each Group said they obtain regular financing from a bank or loan agency. These results are similar to those of Group I.

It is apparent that most fishermen in this study miss the former CBC Fishermen's Broadcast. All of the eighteen responding Group II fishermen used to listen to the Broadcast and seventeen (95%) of these said they missed it. The corresponding figures for thirty-seven Group III fishermen are twenty-four (65%) and twenty-three (92%) and for Group I, ten (45%) and nine (75%) with twenty-two respondents.*

The Marital status of respondents in Groups II and III contrasts sharply, there being sixteen (89%) single fishermen in the former group (eighteen replies) and nine (24%) in the latter group (thirty-seven replies). Fifty percent were single in Group I.

Most wives had incomplete high school, but one-third of Group III wives had matriculation. There were 29 replies in this case. This Group also had a majority of wives who read Fisheries publications and informed their husbands of fisheries articles.

The second Group although the least educated claimed to read more

* These results will be reported to the appropriate authorities of the Canadian Broadcasting Corporation.
fisheries publications than did the others; seven of eighteen respondents said they read from four sources. For Group III, eight of thirty-seven respondents read this many and twelve listed three sources. (Table X).

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td><strong>II</strong></td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td><strong>III</strong></td>
<td>3</td>
<td>3</td>
<td>12</td>
<td>8</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6</td>
<td>9</td>
<td>22</td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>76</td>
</tr>
</tbody>
</table>

Sixteen out of twenty-nine wives of the fishermen in Group III did not help in keeping records and nine out of fourteen did not do so in Group II. Half the wives in Group I helped in this regard.

Half of those in each Group who answered the question said they had relatives who were also fishermen. There were 74 replies in this case.

Responses to the question of Church membership for seventeen Group II and thirty-seven Group III fishermen who answered were similar to those of Group I. Eleven (65%) and twenty-one (57%) said that they were not members. Few of those who said they were members were also active in the Church.
The large majority, thirty-five (92%) of thirty-eight in Group II and forty-six (87%) of fifty-three in Group III said they discuss world food and population problems with their friends. Several qualified their answer by saying that this occurred only occasionally.

B. RESULTS FROM COURSE EVALUATIVE INSTRUMENTS

GROUP I (STUDENTS)

Instrument No. 1 (a) Learning: Table XI shows the results of the pre and post test knowledge scores. Six scores in the pre-test were in the 10-14 range, and 6 were in the 20-24 range. In the post-test only one score was in the 10-14 range; the remainder were distributed in the upper score ranges with one being in the highest of 45-49.

Mean scores for knowledge advanced from 18.0 to 31.0 out of a possible total of fifty in the pre and post-test scores for knowledge respectively; an obviously impressive gain. Two students improved by only one point but the remainder gained from 5 to 24 points.

Multiple stepwise regression analysis using pre-knowledge and pre and post attitude as independent variables and post knowledge as the dependent variable resulted in obtaining an $r^2$ of .30. Therefore 30% of the variability of post knowledge scores was dependent on pre-knowledge and 70% remains unexplained.*

* About half the students were in residence and all were under instruction by day and voluntary instruction on several nights. While it cannot be shown statistically it seems logical to assume that the acquired knowledge is a consequence of exposure to the short course.
Attitude: There was a total of sixty-seven attitude changes amongst the students. Five of the group had pre-attitude scores between 25 and 29, fourteen between 20 and 24, and three with less than 15. The distribution in the post-test was: 8 scores (25-29); 9 scores (20-24); and 4 scores (15-19). However, the grand mean score of 22.4 in the pre-test remained virtually unchanged at 22.2 for the post-test value out of a possible total of forty.

From Table XII it can be seen that questions 3, 4, 6 and 7 received average scores that were less than the value of 3 on both tests, thus indicating an anti-government attitude. The lowest scores of 1.5 and 1.6 were recorded on both tests to the statement concerning the establishment of a fishing limit on a headland to headland basis. This result was not unexpected as the government has been slow in bringing such legislation to fruition.* It is noted as well that the least number of attitude changes occurred with this statement. These results might indicate that fishermen do not hold very strong or constant attitudes to government in general, accounting for considerable shift of attitude in the "big" questions; but they do hold strong and hard-to-change attitudes concerning their immediate protection. Obviously, further research is needed, probably over a span of some years.

The statements from Instrument No. 1 used to gather information on attitude are summarized below.

Statement 1: The Department of Fisheries is unfair to fishermen.

* Since conducting this study the 12-mile fishing limit drawn from headland to headland has been officially adopted by the Government of Canada.
### TABLE XI
**PRE AND POST KNOWLEDGE SCORES - GROUP I**

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
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<td>Pre-scores</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Post-scores</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>22</td>
</tr>
</tbody>
</table>

### TABLE XII
**PRE AND POST ATTITUDE SCORES - GROUP I**

<table>
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<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>N</th>
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</thead>
<tbody>
<tr>
<td>Pre</td>
<td>3.7</td>
<td>3.6</td>
<td>2.1</td>
<td>2.6</td>
<td>3.8</td>
<td>2.3</td>
<td>1.5</td>
<td>3.4</td>
<td>22</td>
</tr>
<tr>
<td>Post</td>
<td>4.1</td>
<td>3.6</td>
<td>2.4</td>
<td>2.6</td>
<td>3.6</td>
<td>2.1</td>
<td>1.6</td>
<td>3.4</td>
<td>22</td>
</tr>
</tbody>
</table>
Statement 2: The staff of the Department of Fisheries understand the problems of the commercial fisherman.

Statement 3: The Department of Fisheries is influenced by the demands of the large fishing companies.

Statement 4: Fisheries scientists often present reports to support their own point of view.

Statement 5: Department of Fisheries regulatory decisions are made for the good of the industry rather than for political reasons.

Statement 6: The Government representatives in Ottawa are too far removed from the Pacific Coast to negotiate treaties for this area.

Statement 7: The off-shore fishing limit should be established on a headland to headland basis.

Statement 8: Because Canada is a small fishing nation our Government lacks sufficient political power to effectively negotiate in the best interest of our West Coast fishery.

Statements 2 and 8 were scored only slightly above the neutral point and the highest obtained value of 4.1 was given in the post-test to the Statement 1, "The Department of Fisheries is unfair to fishermen."

Of the sixty-seven attitude changes which did occur, eighteen were reversals, twenty-five changed from an undecided to an agree or disagree position and twenty-four went from an agree or disagree position to undecided. The
greatest number of changes occurred with the statement, "the government representatives in Ottawa are too far removed from Pacific Coast fishermen to negotiate treaties for this area." Twelve changes were recorded in this case. Six attitudes changed from undecided to a position of agree while three changed from undecided to disagree, and three more changed from agree to undecided. Table XIII shows the number and direction of the attitude changes which occurred.

Instrument No. 2 - Reaction to Content and Instruction: Table XIV shows the student scores for subject value, subject interest, and instructor rating. The three highest value ratings were for practical rather than academic subjects; Coastal Piloting, Fire-Fighting and First Aid. Most favoured subjects in previous years have been World Sea Fisheries, Oceanography and International Law, although not necessarily in terms of subject value. There was fairly close agreement of instructor ratings with interest and value ratings in the cases of Meteorology, Fire-Fighting and First Aid. However, the Coastal Piloting instructor rating dropped considerably. Meteorology received the highest degree of closeness between scores, these being 5.00, 5.10 and 5.00 for instructor, value and interest respectively. First Aid and International Law each show close relationships of the same factors.

The figures for the Department of Fisheries and Fisheries Economics 2 coincide with statements made during the verbal evaluation. These sessions received strong criticism at that time. Conversely, the Nanaimo Field Trip
TABLE XIII

ATTITUDE CHANGES TO 8 STATEMENTS - GROUP I

<table>
<thead>
<tr>
<th>Direction of Change</th>
<th>Statement No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A to D</td>
<td></td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
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<td>1</td>
<td>0</td>
<td>2</td>
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<tr>
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<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>D to A</td>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>D to U</td>
<td></td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>U to A</td>
<td></td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>14</td>
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<tr>
<td>U to D</td>
<td></td>
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<td>2</td>
<td>3</td>
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<td>0</td>
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<td>12</td>
<td>10</td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>67</td>
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</tbody>
</table>

A = agree
D = disagree
U = undecided
TABLE XIV

GROUP I SCORES OUT OF A 1 TO 7 POINT SCALE FOR
SUBJECT VALUE, SUBJECT INTEREST AND INSTRUCTOR RATING

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject Value</th>
<th>Subject Interest</th>
<th>Instructor Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Piloting</td>
<td>6.73</td>
<td>6.35</td>
<td>5.60</td>
</tr>
<tr>
<td>Fire-fighting</td>
<td>6.71</td>
<td>6.45</td>
<td>6.21</td>
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<tr>
<td>First Aid</td>
<td>6.53</td>
<td>6.60</td>
<td>6.56</td>
</tr>
<tr>
<td>Records and Income Tax</td>
<td>5.95</td>
<td>5.90</td>
<td>6.22</td>
</tr>
<tr>
<td>Int. Salmon Commission</td>
<td>5.79</td>
<td>5.86</td>
<td>4.75</td>
</tr>
<tr>
<td>Chinook &amp; Coho</td>
<td>5.62</td>
<td>5.59</td>
<td>4.12</td>
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<tr>
<td>International Law</td>
<td>5.62</td>
<td>5.95</td>
<td>5.63</td>
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<td>Fish Quality</td>
<td>5.52</td>
<td>5.59</td>
<td>5.00</td>
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<td>5.45</td>
<td>5.04</td>
<td>4.50</td>
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<tr>
<td>Oceanography (biological)</td>
<td>5.43</td>
<td>5.48</td>
<td>5.60</td>
</tr>
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<td>World Sea Fisheries</td>
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<td>6.00</td>
<td>6.05</td>
</tr>
<tr>
<td>Crab &amp; Shrimp</td>
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<td>5.90</td>
<td>4.71</td>
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<td>Int. North Pac. Fish. Com.</td>
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<td>5.76</td>
<td>5.82</td>
</tr>
<tr>
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<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Salmon Dev. Projects</td>
<td>5.09</td>
<td>5.50</td>
<td>4.53</td>
</tr>
<tr>
<td>Fish Protection</td>
<td>5.05</td>
<td>5.45</td>
<td>4.28</td>
</tr>
<tr>
<td>Nanaimo Field Trip</td>
<td>5.05</td>
<td>6.24</td>
<td>5.45</td>
</tr>
<tr>
<td>Shellfish</td>
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<td>4.46</td>
</tr>
<tr>
<td>Oceanography (physical)</td>
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<td>5.50</td>
<td>5.35</td>
</tr>
<tr>
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<td>5.38</td>
<td>3.90</td>
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<td>4.57</td>
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<td>3.44</td>
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<td>Refrigeration Systems</td>
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<td>4.21</td>
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<td>4.45</td>
<td>5.14</td>
<td>4.65</td>
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<td>4.55</td>
<td>3.89</td>
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<td>4.32</td>
<td>4.86</td>
<td>3.43</td>
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<td>3.77</td>
<td>4.54</td>
<td>3.10</td>
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<td>Van. Harbour Master</td>
<td>3.65</td>
<td>4.65</td>
<td>4.18</td>
</tr>
<tr>
<td>Groundfish</td>
<td>3.33</td>
<td>4.29</td>
<td>3.80</td>
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</tbody>
</table>
which was considered a waste of time by a large portion of the class during the verbal session, scored 5.05 for value, 6.24 for interest and 5.45 for instructor.

From inspection of Table XIV it can be seen that in the majority of cases the subject interest score and to a somewhat lesser extent, the subject value score, exceeded the rating given the instructor.

A weakness in the Table may be the possible influence of the highest rated instructors on the corresponding scores for subject value and interest. Following the sessions on Fire-fighting, Oceanography, Records and Income Tax, World Sea Fisheries, International Law and First Aid, many of the students commented on the capabilities on the instructor. Yet the converse does not hold true. Comments made on instructors of the sessions on the Department of Fisheries, Herring, Chinook and Coho and Fisheries Economics 2, for example, were not particularly complimentary but the interest and value ratings are 1.4 scale units higher than the instructor rating in these instances. Although the group variable can not be held constant it would be interesting to test for instructor rating scores if a highly-rated instructor could take the place of a low rated instructor.*

There are sufficient instructor rating scores near the neutral value of 4 or considerably lower to indicate the necessity for some form of instruction guidance in these cases. However, caution must be exercised in taking action

* The Instructor for World Sea Fisheries (rating 6.05) has offered to do this for the session on Herring (rating 3.43)
on the basis of the reactions of any one class year unless the issue is clearcut.

An example of how opinions can change from one year to the next was provided when subjects receiving the highest scores were discussed. Furthermore, with only one exception, none of the instructors who received the low or near neutral ratings receive financial reimbursement for their effort. In most cases but not all, they are Federal Government employees.

**Subjective Evaluation:** At the termination of the Short Course, students were invited to discuss informally any and all aspects of the program. Part of this session was structured to ensure discussion of certain aspects; thereafter discussion was free. This practice has been followed for several years but results have not been kept.

A report on the opening portion of the discussion follows with the structured questions itemized.

Q1 Were there any subjects which you feel could be eliminated?

A (a) The Group was strongly in agreement that the talk on Function and Organization of the Department of Fisheries was of no value. The main complaint was that the speaker occupied his entire allotted time speaking, leaving no time for questioning. They added that had there been time they would have questioned him on matters other than those on which he spoke.

(Note: this was the first lecture and any questions at this time were doubtlessly answered by other speakers from the Department).
(b) The full afternoon devoted to Fish Quality was considered to be of little value by over half the class. The reason given was that nothing was added to what they have known and heard for years.

(Note: this may be true, but it is doubtful that any of them had ever been exposed to such a complete coverage of the subject in one session).

(c) A session on Economics which dealt with sports fishing also was subject to severe criticism by a sizable portion of the class. The main complaint was that the three speakers talked down to the fishermen as though they were ignorant.

(Note: the students' "feelings" seem to play a large part in this verbal and subjective evaluation. In terms of accuracy this may cast doubt on the value of such evaluations for adult educators).

(d) Two other sessions both of which were requested by the students were considered poor, but they readily agreed that it was difficult for the speakers concerned to prepare themselves adequately on the short notice given. Their own inability to explain clearly beforehand the precise kind of information they wanted was recognized. The first of these was a talk by the Vancouver Harbour Master. It was thought by some that information on the functioning of Vancouver Harbour may be of value, but this was not the case. The second, a talk on customs regulations by a man from the Canadian Customs fell short of expectations because he was unable to answer any questions pertaining to the United States situation.

In hindsight it was realized that an American official should also have been present.
Q2 Were there any subjects not presently on the program that you would like to see included?
A. The operation of electronic equipment and information on trouble-shooting received considerable support as did information on hydraulics. (It is noted that these are practical topics). There was strong support for a session on the marketing aspects of fisheries.

Q3. Were there any subjects you would have liked more time on?
A. Only one person suggested that more time could have been spent on Meteorology.

Q4 Was the program anything like you expected?
A. There were some unexpected things included but generally speaking it was pretty much as anticipated. (This reaction seemed unanimous).

    One difference voiced by a very few students was that they hoped they would learn how to fish. (Note: support for this was mainly from students with less fishing experience).

Q5 When is the best time of the year to hold this program?
A. Everyone thought January would be best because they should be preparing their vessels for the fishing season in March.

(Note: the weather was particularly fine during the entire short course. Had it been raining, this suggestion may not have been made.)
Q6 Have you anything to say about the length of the Short Course?
A. Four students thought it was too long, five thought it was too short and the remainder thought it was about right.

There was much animated discussion on this question. Although the group itself elected to add extra coastal piloting sessions which had to be given in the evening, many (over half) suggested elimination of the night meetings. Apart from being too long to sit (they started at 8:30 a.m.) they would have preferred free time to do as they pleased.

Q7 Should any aspects of the program receive specialization rather than cover a wide variety of subject matter?
A. No - alright as is.

Q8. Should there be any entrance requirements for enrolment?
A. Only a close relationship with the fishing industry.

Q9 Can you suggest why we have difficulty obtaining students?
A. The general consensus was that the program is not advertised well enough. (The steps taken to publicize the program each year were explained).
Several fishermen mentioned that they had wanted to come for several years but something else always seemed to come up. Many agreed that a person needs a little 'push' to help him make up his mind. A suggestion was made that information about the program should be distributed through Canada Manpower.
Q10 What have you to say about the Nanaimo Field Trip?

A. There was a strong feeling (half the class) that the Field Trip was really a waste of time because it duplicated what they had heard from the scientists from the station.

(Note - this reaction was opposite to that expressed by previous groups).

They thought that the time might be better spent by going out on various types of boats to see gear and equipment in operation. Others said that it would have been more instructional to have visited parts of the station which they had not heard about in class.

General Comments: The remainder of the evaluation session was unstructured and the discussion went according to the wishes of the students. Their comments follow and are presented in précis form of their own words.

- Coastal piloting was good, but the instructors wasted too much time inserting personal experiences which are quite commonplace for fishermen.

- Some speakers were obviously ill-prepared for their presentations.

- The academic subjects were generally alright and maybe some day we will realize their real value. World Sea Fisheries, International Law and Oceanography were interesting because they were well presented; too many of the other subjects were not.

- We would appreciate the opportunity of having a session with the Minister or Deputy Minister to give our point of view and ask questions.
There was too much repetition of some things; for example, we heard all about fish scale identification at least three times. We also heard about Department of Fisheries organization or parts of it more than once.

- The Department of Fisheries speakers are all afraid to take a stand and give definite answers to our questions. Sometimes they go on and on instead of getting to the point, which they never seem to do.

- The economists were really depressing and made us feel that we are doomed. (Note: this complaint has been heard from several groups before).

- When we brought up the problem of there being too many dogfish they treated it as a joke. Often, they simply grinned.

- At one stage of the discussion there was an opportunity to enquire about who asked the most questions. The four persons named had pre-test scores of 27, 21, 22, and 20; class average was 18.0. Corresponding post-test scores were 38, 35, 46, and 34; class average was 31.0.

- In response to the question there was consensus that what had been learned would, in an indirect way, help them to increase their earnings from fishing.

In general the group felt that many of the presentations could have had shorter delivery and more question time.

Observation: The discussion started with an emphasis on the shortcomings of the Short Course from the students' viewpoint and this atmosphere
predominated during most of the session.

**Instrument No. 5:** The class rating for the course on the Kropp-Verner Attitude Scale* was 4.24 thus indicating, to some degree, a favourable reaction.

The following paragraph while not relative to the 1969 course per se, nevertheless is an evaluative result of the program in general.

Personal contact appears to be the best way of securing candidates. 'Another fisherman' was given more often than any other reason for hearing about the 1969 program; being mentioned fourteen times (Instrument No. IV). It seems reasonable to assume that these other fishermen were former students although this was not determined. It may also be inferred that the informants attached a positive value to the course. Further evidence about the reputation of the Short Course is provided by the fact that twelve students gave as reasons for attending 'because I have wanted to come before, but could not do so until this year' and eleven mentioned 'because I have been told it is a worthwhile program'.

To summarize at this point in terms of what was being investigated the results show that (a) learning did occur as knowledge scores improved from 18.0 in the pre-test to 31.0 in the post test, (b) as a group there was no appreciable change in attitude to certain statements from a pro or anti-government position.

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* The Scale's mid-point of "6" indicates an indifferent reaction and the value of "1" indicates the most favourable possible reaction. As it is intended for a one or two day meeting its use here was for the purpose of trial. Results from its use with this longer program will become more meaningful upon repeated use under similar circumstances.
and (c) from the subject value and interest ratings and comments during the
verbal evaluation it is indicated that the students possessed an appreciation for
and understanding of academic activities pertaining to fisheries, but rated practical
subjects of higher value.

GROUPS I, II, III (STUDENTS, NON STUDENTS, FORMER STUDENTS)

The following data on knowledge and attitude obtained from Instrument
No. 1 is next presented to compare results for Group I with those for the other
two Groups.

Instrument No. 1, Groups I and II, (a) Knowledge: The greatest number of scores
fell into the 15-19 range for both groups. Group II had 12 scores (30%) in the
25-29 range against 2 scores (9%) in Group I (Table XV). On a percentage basis
the second group had fewer scores in the 10-14 range (12.5% vs. 27.3%) but on
the same basis this was offset by the students having more scores in the 15-19
and 20-24 ranges.

Students at the beginning of the course had similar knowledge as did
non-students according to a 2 x 2 contingency table.

(b) Attitude: Table XVI shows the distribution of attitude scores in the categories
used. While most scores, 63.6% for Group I and 42.1% for Group II, are in the
20-24 category, Group II has almost as many scores, 39.5% in the next lowest
category of 15-19. The next highest category for Group I (25-29) has 22.7% of
### TABLE XV

KNOWLEDGE SCORES - GROUP I (PRETEST) AND GROUP II

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Number</th>
<th>0-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td></td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Group II</td>
<td></td>
<td>5</td>
<td>13</td>
<td>8</td>
<td>12</td>
<td>2</td>
<td>40</td>
</tr>
</tbody>
</table>

Group I av. - 18.0  
Group II av. - 21.2

### TABLE XVI

ATTITUDE SCORES - GROUP I (PRETEST) AND GROUP II

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Number</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td></td>
<td>1</td>
<td>2</td>
<td>14</td>
<td>5</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Group II</td>
<td></td>
<td>3</td>
<td>15</td>
<td>16</td>
<td>4</td>
<td>0</td>
<td>38</td>
</tr>
</tbody>
</table>

Group I av. - 22.4  
Group II av. - 18.6

Chi square (Yates' correction) = 5.56 significant at p.05
its scores.

Average scores were 22.4 for Group I and 18.6 for Group II. Chi square of 5.56 using Yates' correction and a 2 x 2 table of values above and below 20.0 was significant at p.05. These groups are therefore not similar with respect to attitude as tested in this study.

Instrument No. 1, Groups I and III (a) Knowledge: The scores for Group III were skewed slightly to the right; those of Group I (pre-test) were skewed to the left (Table XVII). Percentage values for the first five score categories for Group III with Group I values in brackets were: 9.3 (27.3); 14.8 (36.4); 40.7 (27.3); 29.6 (9.1); and 5.6 (0.0).

Former students had a knowledge score average of 22.6 and that for the 1969 Class was 18.0 (pre-test). Chi square is 9.49 and significant at p.01. However, Chi square of 1.30 (Yates' correction) was not significant when the Group I post-test average score of 31.0 was used.

These results, again with the limitation of this study, suggest the possibility of retention by former students of knowledge learned at the Short Course. The questions which received the most correct answers were the same for each Group and did not fall into any particular category. For example they dealt with fire fighting, weather, advantages of incorporation, the best method of keeping records, age at which herring spawn, the number of motherships in the Japanese high seas fleet, etc. (question numbers 3, 14, 19, 23, 24, 31, 35, 38, 39, 41 and 42 in Appendix B).
### TABLE XVII

**KNOWLEDGE SCORES - GROUP I (PRETEST) AND GROUP III**

- Group 1 (Post-test) in brackets

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Number</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td></td>
<td>6</td>
<td>(0)</td>
<td>9</td>
<td>(1)</td>
<td>6</td>
<td>(2)</td>
<td>2</td>
<td>(3)</td>
<td>0 (7)</td>
</tr>
<tr>
<td>Group III</td>
<td>5</td>
<td>8</td>
<td>22</td>
<td>16</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>54</td>
</tr>
</tbody>
</table>

Group 1 av. - 18.0 (31.0)

Group III av. - 22.6

Chi square - 9.49 sig. at p.01 (pre-test)
(b) Attitude: The attitude scores for both groups are skewed slightly to the right, indicating a pro-government attitude to some degree (Table XVIII). Group III had a higher percentage of scores in the top two score categories of 25-29 and 30-34, but Group 1 had a higher percentage in the middle category 20-24.

The average scores were 23.8 and 22.4 for former students and 1969 students respectively. Chi square was not significant and the groups are similar with respect to attitude as it was obtained.

Summary

Table XIX concisely summarizes most of the data presented in this Chapter. By inspection it can be seen that the 1969 students are not typical of non-student fishermen (Group II) in most of the factors studied. The two Groups are similar in knowledge but not so in the factors of attitude, education, age, fishing experience, vessel ownership and investment and other lesser factors.

There is a closer similarity to former students (Group III) particularly in the factors of attitude, education, age, vessel investment as well as others.
TABLE XVIII

ATTITUDE SCORES - GROUP I (PRE-TEST) AND GROUP III

<table>
<thead>
<tr>
<th>Number</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>1</td>
<td>2</td>
<td>14</td>
<td>5</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Group III</td>
<td>2</td>
<td>4</td>
<td>25</td>
<td>17</td>
<td>6</td>
<td>54</td>
</tr>
</tbody>
</table>

Group I av. - 22.4
Group III av. - 23.8
TABLE XIX

SUMMARY OF SOCIO-ECONOMIC FACTORS - GROUPS I, II AND III

<table>
<thead>
<tr>
<th>Factor</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge: score 18.0</td>
<td>*</td>
<td>x (sig. at p.01)</td>
<td></td>
</tr>
<tr>
<td>Attitude: score 22.4</td>
<td>x (sig. at p.05)</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>x (less)</td>
<td>* (slightly less)</td>
<td></td>
</tr>
<tr>
<td>Age: av. approx. 31 yrs.</td>
<td>x (av. approx 47 yrs)</td>
<td>* (av. approx 39 yrs)</td>
<td></td>
</tr>
<tr>
<td>Fishing experience</td>
<td>x (much more)</td>
<td>x (more)</td>
<td></td>
</tr>
<tr>
<td>Lifetime fishing: 41%</td>
<td>x (61%)</td>
<td>* (35%)</td>
<td></td>
</tr>
<tr>
<td>Fishing only occupation: 86%</td>
<td>* (88%)</td>
<td>* (75%)</td>
<td></td>
</tr>
<tr>
<td>Vessel ownership: 59.1%</td>
<td>x (74.4%)</td>
<td>x (83.8%)</td>
<td></td>
</tr>
<tr>
<td>Vessel investment</td>
<td>x (lower)</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Birthplace</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Reading sources</td>
<td>x (most)</td>
<td>x (more)</td>
<td></td>
</tr>
<tr>
<td>Sports vs. com. fishery: yes 40.9%</td>
<td>x (yes 25.6%)</td>
<td>x (yes 68.5%)</td>
<td></td>
</tr>
<tr>
<td>Wives education</td>
<td>*</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Church membership (mostly not)</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

* similar to Group I

x not similar to Group I

FOOTNOTE

CHAPTER V

CONCLUSIONS

The limitations of contemporary methodology for research in adult education, and the special limitations conditioning this study have been referred to in the text. Within these limits the conclusions, implications and recommendations are offered after the following comment.

This can become a benchmark study to be built upon in succeeding years provided the curriculum and future participants remain reasonably consistent. Gathering of necessary data can be accomplished with relative ease by use of the Instruments, all of which are relevant. Of the six which were used only Instrument No. 1 (knowledge-attitude) would require any modification and then only for certain items as the lecture content changes in keeping with new developments and different conditions in subsequent years. Even with this possibility there remains the difficulty of obtaining a random sample to use as a control group and permit a more sophisticated approach. Solution of this problem requires a means of describing the fisherman population.

The foregoing may be considered as an overall general conclusion; a by-product of the purpose of the study.
A. Conclusions

a) The 1969 Fisheries Short Course

1. Based on the substantially improved knowledge test scores it can be concluded that practical information about the fishing industry was successfully imparted.

2. Individual attitude changes did occur, but in such a manner that those on either side of a neutral position were in balance resulting in no overall modification of the group attitude toward governmental bodies. If the course had aimed for achievement of a consistent attitude for all members of the group it would have been unsuccessful in this respect. Its aim, however, was rather to stimulate discussion of attitudes and to provide facts which might prevent or defer the formation of permanent stereotypes.

3. The students indicated an interest in and understanding of certain academic and research activities which appear remote but are related to the success of the industry; the policy of including academic with vocational information was justified. There appears, however, to be an inconsistency between the Groups' acceptance of academic knowledge about such activities as scientific research and the lack of consistent change in attitudes toward governmental function.

b) Group I (Students) compared to Groups II (non-students) and III (former students)

4. The students arrived at the Short Course with knowledge which was typical of non-participating fishermen (Group II), but with an attitude toward Governmental
bodies which was atypical. This conclusion is valid only for the non-participants sampled who cannot be considered representative of all fishermen as randomness was not obtained.

5. The student group was not typical of non-participating fishermen in any of the other major socio-economic factors with the exception of fishing being the only occupation.

6. The student group was typical of former fishermen students (Group III) in more socio-economic factors than it was atypical. One factor, that of educational level is of particular interest. On the average the members of Group I (students) were better educated than the members of Group III (former students) who in turn were better educated than the members of Group II (non-students). Continued collection of data would reveal whether this is a consistent phenomenon or not.

7. There are no relationships between knowledge, and attitude and socio-economic factors of the fishermen studied.

8. On the basis of this study former students appear to retain some of the information imparted by the course as indicated by an analysis of their test scores and student post-test scores. (On many occasions former students, some of whom are members of Group III, have indicated the value they place upon the course. This suggests that behavioural learning as well as knowledge retention may have taken place but this is an area for further research).
c) Other

9. The students believed that what they had learned would help them to increase their financial returns from fishing.

10. With minor exceptions the program content met the needs of the participants as indicated by them in terms of their interest in the subjects and value placed upon them.

11. The results indicate the necessity of providing guidance to some instructors on how to improve their presentations. There appears to have been insufficient time for questioning and discussion in some instances.

12. It is indicated that the program objectives need re-defining or at least rephrasing.

13. On the basis of this study thought should be given to the possibility of scheduling the course at a different time.

14. It is clear that other methods than the ones used for this year's program must be considered for publicizing the short course.

d) Evaluation

15. In consideration of all factors studied it is concluded that the 1969 Fisheries Short Course was a success. If use of this term must be qualified, then it can be stated that it was probably as successful as many similar extension programs. While there are other fisheries courses offered elsewhere, they have not been evaluated, therefore comparisons are not possible.

16. There is reason to believe that the program design would be enhanced by
minor modifications in certain respects and that overall planning could be improved, perhaps on a cooperative basis.

B. Implications for Further Research

1. Useful research could be done by ascertaining what happens to the knowledge gained by fishermen who attend Fisheries Short Courses. Is most of it forgotten or does it become consciously or unconsciously incorporated into practice? If it is the latter how has this affected the student as a fisherman - does he catch more fish; has his morale improved; does he feel more knowledgeable than other fishermen? Such a study should be based on a behavioural learning context, but should also include a knowledge retention test to link it with this study.

2. There is a need for sophisticated research into the attitudes held by fishermen toward governmental agencies. It is generally accepted that fishermen have strong feelings about what they consider to be their rights and the justice of their claims. In all probability their attitudes are formed because of a feeling that their voice, singly or collectively, is not heard, or if heard, is ignored by government. What causes attitude change of the students - is it a result of what they are told, the credibility of the speakers, the influence of other fishermen or all these factors and perhaps more? Do their attitudes become modified over time and, if so, is this a result of delayed action as a result of the Short Course? (The reader is reminded that in terms of pro-government attitude scores the Group ordering was III (former
students), I (the class), II (non-students).

3. What are the characteristics of a "typical" fisherman and if a description which is statistically acceptable can be obtained how does he compare with those fishermen who are continuing education prone or continuing education resistant?

4. Continued study of the program over several years would increase reliability of the results and make them representative of the population of fishermen who attend these short courses.

5. The need for communications research is indicated. Personal contact was shown to be the most frequent method of learning about the short course. Is this also the way some fishermen receive most of their information about fishing? If so, is the Short Course indirectly assisting a much wider audience than those who attend?

C. Recommendations

1. It is implied that had information relevant to this study been collected and preserved from previous courses the task of evaluation would have been made easier. It is recommended that use of the Instruments devised be made in successive programs for analysis at some future date. An additional study, or more if possible, would be valuable in exploring a methodology and in providing more reliable results of the effectiveness of this extension activity.
2. It is implied that in certain instances there was too much repetition of information and that the preparation by some lecturers was inadequate or ill-conceived. It is recommended that the program planning be improved by having more and different consultation with instructors and some collective or committee planning. In addition, more variety should be introduced by incorporating panels of speakers and utilizing the seminar technique if possible.

3. It is implied that there was a lack of sufficient time for questioning and discussion. It is recommended that, in keeping with adult education principles, students be given the opportunity to be involved with planning. While this already occurs, it pertains mostly to spare time in the evenings. As a step toward greater student involvement it may be possible to leave a portion of the program unstructured to be decided upon cooperatively with the program director.

4. It is implied that there is no documented evidence of the value placed on the program by students after they have returned to fishing. It is recommended that an invitational refresher and criticisms program of short duration be arranged for former students to gather such information. This could result in gaining better insight into the strengths and weaknesses of the short course.

5. It is implied that the timing of the 1969 short course was ill-conceived, at least for some fishermen. It is recommended for the 1970 program at least, that a January or February date be chosen. Thereafter dates should be selected upon consultation with representatives of fisheries organizations.

6. It is implied that the Subjective Evaluation session emphasized the negative
aspects of the program. It is recommended that in the future, positive reactions should also be obtained to maintain a proper perspective when interpreting the results.

7. The difficulties faced by extension administrators to undertake evaluation studies have been referred to several times and some of them were realized during this study. The major difficulties are those of research funds, time and trained research staff. Because of the interest and support of the Department of Fisheries for this and other fisheries education programs it is to its advantage to provide the necessary inputs to make thorough research in this area possible. It is recommended that such a possibility be brought to the attention of the proper authorities.
BIBLIOGRAPHY

A. Books


Clark, Burton R. The Marginality of Adult Education. Chicago: Centre for the Study of Liberal Education for Adults, June, 1958.


Lacognata, A. A. A Comparison of the Effectiveness of Adult Residential and
Non-Residential Learning Situations. Chicago: Centre for the Study of
Liberal Education for Adults, July, 1961.

Liveright, A. A. "Adult Education in Colleges and Universities", Handbook of


Mathews, Joseph L. "The Co-operative Extension Service", Handbook of Adult
Education in the United States, edited by Malcolm S. Knowles, Wash. D.C.,

Miller, Harry L. Teaching and Learning in Adult Education. New York: The

, and Christine H. McQuire. Evaluating Liberal Adult Education. Chicago:
Center for the Study of Liberal Education for Adults, 1961.

Miller, K.M. "Evaluation in Adult Education", International Social Science


Scriven, Michael. "The Methodology of Evaluation". Perspectives of Curriculum

Selman, Gordon R. A History of Fifty Years of Extension Service by the University
of British Columbia 1915 to 1965. Toronto: The Canadian Association for

Stake, Robert E. "Toward the Technology for the Evaluation of Educational
Programs", Perspectives of Curriculum Evaluation, Ralph W. Tyler

Travers, Robert M.W. How to Make Achievement Tests. New York: The Odyssey


B. Brochures, Reports, Miscellaneous

Best, H.L. "The Memorial University Extension Service Film Unit. Activity for Fiscal Year 1968-69", St. John's, Newfoundland. mim.


Doyle, John P. "Developing Alaskan Fisheries Through an Educational Program". University of Alaska, Jan. 1968.


Memorial University of Newfoundland. Training Course in Fisheries Co-operatives for External Aid Students, June 3 - July 26, 1968. brochure.

Ministry of Education, Quebec. "Some Notes on Fisheries Instruction". School of Fisheries of Grande-Riviere. undated. mim.


Province of New Brunswick, Department of Fisheries. "New Brunswick School of Fisheries, Caraquet". Catalogue, 1968-69.


"Educational Programs for British Columbia Fishermen". Annual Report, Fisheries, Apr. 1954.
# APPENDIX A

## Week 1

<table>
<thead>
<tr>
<th>TIME</th>
<th>February 24th MONDAY</th>
<th>February 25th TUESDAY</th>
<th>February 26th WEDNESDAY</th>
<th>February 27th THURSDAY</th>
<th>February 28th FRIDAY</th>
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<tbody>
<tr>
<td>8:30 a.m.</td>
<td>COMPLETE REGISTRATION</td>
<td>COASTAL PILOTING</td>
<td>DISCUSSION</td>
<td>COASTAL PILOTING</td>
<td></td>
</tr>
<tr>
<td>to 10:00</td>
<td>ORIENTATION</td>
<td></td>
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</tr>
<tr>
<td>10:20</td>
<td>QUESTIONNAIRE</td>
<td>OCEANOGRAPHY (Physical)</td>
<td>OCEANOGRAPHY (Physical)</td>
<td>OCEANOGRAPHY (Biological)</td>
<td>OCEANOGRAPHY (Biological)</td>
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<tr>
<td>to 11:45</td>
<td>G.L. Pickard</td>
<td>G.L. Pickard</td>
<td>M. Taylor</td>
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## LUNCH

<table>
<thead>
<tr>
<th>TIME</th>
<th>DEPT. OF FISHERIES ORGANIZATION AND FUNCTION</th>
<th>HERRING</th>
<th>CHINOOK AND COHO</th>
<th>GROUNDFISH</th>
<th>MARKETING OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 p.m.</td>
<td>M.P. Brennan</td>
<td>Don Outram</td>
<td>H. Godfrey</td>
<td>C. Forrester</td>
<td>PANEL</td>
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<tr>
<td>to 2:30</td>
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<td></td>
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</tr>
<tr>
<td>3:00</td>
<td>Lecture-Demonstration</td>
<td>FILMS</td>
<td>RECORD KEEPING</td>
<td>INCOME TAX</td>
<td>FIELD TRIP</td>
</tr>
<tr>
<td>to 4:30</td>
<td>FIRE FIGHTING</td>
<td></td>
<td>I. Boyd</td>
<td>I. Boyd</td>
<td></td>
</tr>
<tr>
<td>4:30</td>
<td>J.O. Macbeth</td>
<td>DISCUSSION</td>
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## DINNER

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### Week 2

<table>
<thead>
<tr>
<th>TIME</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>8:30 a.m.</td>
<td>Coastal Pilot</td>
<td>The State of</td>
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<tr>
<td>to</td>
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<td>World</td>
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<td>10:00</td>
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<tr>
<td>1:00 p.m.</td>
<td>International</td>
<td>Crab and Shrimp</td>
<td>Shellfish</td>
<td></td>
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<tr>
<td>to</td>
<td>Halibut Commission</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>2:30</td>
<td>Gordon Peltonen</td>
<td>T. Butler</td>
<td>N. Bourne</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00</td>
<td>Fishing Vessel</td>
<td>International</td>
<td>International</td>
<td>Fishing Vessel</td>
<td></td>
</tr>
<tr>
<td>to</td>
<td>Design</td>
<td>Law</td>
<td>Law</td>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>4:30</td>
<td>Ian Ross</td>
<td>Dean G.F. Curtis</td>
<td>Dean G.F. Curtis</td>
<td>Ian Ross</td>
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**LUNCH**

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<thead>
<tr>
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<tbody>
<tr>
<td>1:00 p.m.</td>
<td>International Halibut Commission</td>
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<tr>
<td>to</td>
<td>Crab and Shrimp</td>
</tr>
<tr>
<td>2:30</td>
<td>Gordon Peltonen</td>
</tr>
<tr>
<td></td>
<td>T. Butler</td>
</tr>
<tr>
<td>3:00</td>
<td>Fishing Vessel Design</td>
</tr>
<tr>
<td>to</td>
<td>Ian Ross</td>
</tr>
<tr>
<td>4:30</td>
<td>Dean G.F. Curtis</td>
</tr>
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</table>

**DINNER**

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<th>Activity</th>
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<tr>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>TIME</td>
<td>MONDAY</td>
</tr>
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<td>------------</td>
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<tr>
<td>8:30 a.m.</td>
<td>COASTAL DISCUSSION</td>
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<tr>
<td>to</td>
<td>FIELD</td>
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<tr>
<td>10:00</td>
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<tr>
<td>10:20</td>
<td>TRIP</td>
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<tr>
<td>to</td>
<td></td>
</tr>
<tr>
<td>11:45</td>
<td>BIOLOGICAL</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>RESEARCH</td>
</tr>
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<td>RESEARCH</td>
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<tr>
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<td>STATION</td>
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<td>3:00</td>
<td>MANADOM</td>
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<tr>
<td>to</td>
<td></td>
</tr>
<tr>
<td>4:30</td>
<td></td>
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<tr>
<td>5:30</td>
<td>DINNER</td>
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</tbody>
</table>
INSTRUMENT NO. 1

1. Fires are classified 'A', 'B', or 'C', according to the materials which must be used to extinguish them. The materials used depend on the type of fire to be extinguished. Using the classification 'A', 'B', or 'C' how would you classify the following types of fires?

   ___ one involving electricity
   ___ one involving combustible materials such as wood, paper or fabric
   ___ one involving flammable liquids

2. Gasoline gives off explosive vapours at temperatures much below normal. These vapours are lighter than air.

   ___ True
   ___ False

3. At sea, water is readily available for combating fire. For which one of the following types of fires is water most efficient?

   ___ combustible materials
   ___ flammable liquids
   ___ electrical

4. Fish flesh starts to freeze at approximately

   ___ 33°F
   ___ 31°F
   ___ 29°F
   ___ 27°F

5. Fishermen are advised to refrigerate fish as quickly as possible to avoid deterioration. Bacterial growth in fish flesh stops, for all practical purposes, between which one of the following temperature intervals?

   ___ 35°F - 30°F
   ___ 30°F - 25°F
   ___ 25°F - 20°F
   ___ 20°F - 15°F
6. The time required to freeze fish on plates to 0°F measured at the centre of the fish will be cut in half if the temperature is reduced from -25°F to -50°F.

_____ True
_____ False

7. The preservation of fish quality is essential for highest economic returns from your fishing effort. Which one of the following will cut the heat leakage through a bulkhead in half?

_____ attach a moist fiber lining on the hold side
_____ double the insulation thickness
_____ paint both sides of the bulkhead aluminium
_____ create a one inch air space with aluminium sheeting on the hold side

8. There has been a sharp increase in the capital investment in the B.C. fishing industry in recent years. Which of the following statements is correct?

_____ it has not altered the value of production
_____ it has been compensated for in value of production
_____ it has caused the value of production to decline
_____ it has not been compensated for in value of production

9. In economic terms, do you think the sport fishery is more important than the commercial salmon fishery in the Gulf of Georgia?

_____ Yes
_____ No

10. The coastal waters of British Columbia are advertised as the sport fisherman's playground. How many sport fishermen do you think fish in coastal waters annually?

_____ 150,000
_____ 125,000
_____ 100,000
_____ 50,000

11. Which of the following types of salmon development techniques to improve freshwater survival is NOT used in British Columbia?

_____ spawning channels
_____ closed season
_____ river flow control
_____ hatcheries
12. We can be optimistic about the future of some of the techniques for increasing the salmon population. At the present time, however, artificial propagation can be looked upon as a supplement to, rather than a substitute for, natural propagation.

___ True
___ False

13. Construction of spawning channels is proving to be a useful aid to natural propagation of salmon. Which one of the following streams does NOT have a man-made spawning channel?

___ Cowichan River
___ Big Qualicum River
___ Gates Creek
___ Weaver Creek

14. Salmon egg transplants have not yet been proven successful as a development technique in British Columbia.

___ True
___ False

15. When a vessel is damaged who is responsible for the cost and quality of the repairs?

___ the Insurance Company
___ the owner
___ the shipyard
___ the party responsible for the damage

16. Assuming that your vessel meets the standards required by the Fishermen's Indemnity Plan, for which one of the following values would you NOT be entitled coverage under this plan?

___ $19,000
___ $22,000
___ $25,000
___ $28,000

17. Many boats carry a spare propane fuel tank. What is the best way to store it?

___ secure firmly to a bulkhead in the hold
___ secure firmly in the galley
___ secure firmly on deck
___ secure firmly in the engine room
18. Your vessel sinks, you raise it, move it to a safe place ashore and drain the water out. Which of the following should you do first?

- flush the engine
- call the insurance company
- remove all personal effects
- arrange for repairs

19. How many sockeye races are found in the Fraser River system?

- 10
- 35
- 50
- 60

20. Fishermen often feel they are unduly restricted in the number of fish they are allowed to catch. How many Fraser River pink salmon would you estimate were caught by the West Coast troll fleet in Canada and the United States both off-shore and in convention waters in 1967?

- 1,000,000
- 1,600,000
- 2,200,000
- 2,800,000

21. Fraser River sockeye runs operate on the following cyclic pattern:

- three years
- four years
- five years
- six years

22. Racial management of Fraser sockeye is performed by the following method:

- vertebra examination
- size of various fish
- scale examinations
- time at which appear in fishery

23. How many major fish stocks of pink salmon are there that enter Convention waters? (Juan De Fuca Strait, Puget Sound, Gulf of Georgia)

- five
- four
- three
- two
24. What percent of each annual Fraser River run on the average spends two years in the ocean before returning to spawn?

- sixty
- seventy
- eighty
- ninety

25. Over how many years do you think you should be allowed to average your income?

- five years
- eight years
- twelve years
- fifteen years

26. The latitude scale is used for measuring distance on a chart.

- True
- False

27. When a boat turns the magnetic compass card also moves.

- True
- False

28. When bucking a current, the engine RPM:

- speeds up
- slows down
- fluctuates
- remains the same

29. Which of the following countries does NOT belong to the International North Pacific Fisheries Commission:

- U.S.S.R.
- Japan
- U.S.A.
- Canada

30. The principle of abstention applies in which one of the following International Treaties?

- International Pacific Salmon Fisheries Commission
- International Halibut Commission
- International North Pacific Fisheries Commission
- International Whaling Commission
31. How many motherships are known to be operating in the Japanese high seas salmon fleet?
   ______ six
   ______ eleven
   ______ fourteen
   ______ twenty

32. Does the U.S.S.R. fish for salmon on the high seas with motherships?
   ______ Yes
   ______ No

33. From what direction do strong winds most frequently blow over B.C. Coastal waters?
   ______ S.E.
   ______ W.
   ______ S.W.
   ______ N.E.

34. What are the conditions most favourable for the formation of fog?
   ______ moist air in a low pressure area
   ______ cold air over a warm surface
   ______ dry air over a moist surface
   ______ warm air over a cold surface

35. Fishermen often hear announcements of gale warnings on weather broadcasts. What wind strength in knots defines a gale in the British Columbia coastal region?
   ______ 44 knots
   ______ 40 knots
   ______ 34 knots
   ______ 30 knots

36. Is it necessary to keep cash vouchers to support expenses for income tax purposes?
   ______ Yes
   ______ No
37. Because of the uncertainty of income from year to year fishermen (and farmers) are allowed to "average" their income over a number of years. How long is this period?

   ____ 6 years
   ____ 5 years
   ____ 3 years
   ____ 2 years

38. There are advantages and disadvantages to incorporation. Which one of the following items is NOT an advantage?

   ____ deferring income tax
   ____ splitting income tax
   ____ benefits for estate tax
   ____ less record keeping

39. Which one of the following is the best method of controlling and recording expenses?

   ____ keep a separate bank account and pay by cheque
   ____ pay everything by cash at time of purchase
   ____ pay large bills by cheque and small bills in cash
   ____ charge everything and pay monthly by cash

40. At what time of year would you expect to see herring spawning?

   ____ spring
   ____ summer
   ____ autumn
   ____ winter

41. At what age do herring spawn for the first time?

   ____ 10 months
   ____ 12 months
   ____ 24 months
   ____ 36 months

42. Which of the following factors does NOT contribute to a heavy loss of eggs on the herring spawning grounds?

   ____ low tide
   ____ storms
   ____ predatory birds
   ____ frost
43. Is there a closed season for taking clams?
   ____ Yes
   ____ No

44. There are several species of clams used commercially. How many species are used in British Columbia?
   ____ three
   ____ four
   ____ five
   ____ six

45. The oyster commonly found in British Columbia, particularly in Georgia Strait is not native. Of what country is it a native?
   ____ New Zealand
   ____ Japan
   ____ Australia
   ____ China

Oceanographic studies are important to the fishing industry by helping us to understand the environment in which fish live. The content of the following four questions (46 - 49) have application to the fishery.

46. Which one of the following items is NOT a main cause of ocean currents?
   ____ wind friction
   ____ density difference
   ____ effect of the moon
   ____ slope of the surface of the sea

47. Sea waves are refracted near the shore because wave speed decreases as water shoals.
   ____ True
   ____ False

48. What is meant by the term 'thermocline'?
   ____ a region of numerous sea mountains
   ____ a sea region of rapidly decreasing temperature
   ____ a sea region with a steep sloping bottom
   ____ a sea region of constant temperature
49. What is meant by the term 'halocline'?

____ a sea region of rapidly changing salinity
____ a sea region of constant salinity
____ a sea region having a flat bottom
____ a sea region which has a steep sloping bottom

50. Do you discuss with your friends the problems of world population and world food?

____ Yes
____ No

51. What is the percentage (approximate) contribution by Canada to the world catch?

____ 1%
____ 2%
____ 4%
____ 5%

52. Products of the sea have a potential in meeting the world food problem. Recognizing this, which of the following statements is NOT true?

____ fish are a valuable source of protein
____ fishing effort could be doubled without harm to fish stocks
____ the sea can provide all of man's protein requirement
____ the sea itself can not provide all of man's protein requirement

53. What is the general magnitude of the world catch of fishes?

____ 45.0 million metric tons
____ 50.5 million metric tons
____ 55.0 million metric tons
____ 60.5 million metric tons

In questions 54 to 61 you are asked to indicate your feelings about the statements made about the Department of Fisheries, the Fisheries Research Board of Canada and International Fisheries Commissions. Place an 'X' against the statement which comes closest to expressing your feelings about the statement.

54. The Department of Fisheries is unfair to fishermen

____ strongly disagree
____ disagree
____ undecided
____ agree
____ strongly agree
55. The staff of the Department of Fisheries understand the problems of the commercial fisherman.

   _____ strongly disagree
   _____ disagree
   _____ undecided
   _____ agree
   _____ strongly agree

56. The Department of Fisheries is influenced by the demands of the large fishing companies.

   _____ strongly disagree
   _____ disagree
   _____ undecided
   _____ agree
   _____ strongly agree

57. The scientists of the Fisheries Research Board at the Nanaimo Biological Station often make reports of their research which support their own point of view rather than present the facts as fishermen know them.

   _____ strongly disagree
   _____ disagree
   _____ undecided
   _____ agree
   _____ strongly agree

58. The decision-making of the Department of Fisheries on such things as fish conservation measures, pollution control and limitation of gear is done for the good of the industry rather than for political reasons.

   _____ strongly disagree
   _____ disagree
   _____ undecided
   _____ agree
   _____ strongly agree

59. International Fisheries Treaties are arrived at by agreement between countries as a measure to protect certain fish stocks. While the industry side of fisheries is represented during treaty negotiations, government representatives are responsible for the decisions made on the issues involved.

   How do you react to this statement? The government representatives
in Ottawa are too far removed from Pacific Coast fishermen to negotiate treaties for this area.

--- strongly disagree
--- disagree
--- undecided
--- agree
--- strongly agree

60. There have been many editorials and articles in the press stating that the line for off-shore fishing limits should be established on a headland to headland basis rather than follow the coastline as is now the case. How do you feel about this?

--- strongly disagree
--- disagree
--- undecided
--- agree
--- strongly agree

61. In terms of production, Canada is a relatively small nation amongst the fishing nations of the Pacific. Because of this, our Government lacks sufficient political power to effectively negotiate in the best interest of our west coast fishery. How do you feel about this statement?

--- strongly disagree
--- disagree
--- undecided
--- agree
--- strongly agree
At the beginning of the Course you were asked to keep a record of the value of each session to you in your fishing operation.

You were also asked to record which sessions you found particularly interesting, regardless of the practical aspect.

You are asked to give these impressions for each session according to the following scale which will be explained beforehand.

If you missed any of these sessions, indicate by inserting the word 'missed'.

<p>| SESSION | Dept. of Fisheries Function &amp; Organization | Fire-fighting | Coastal Piloting | Oceanography (Dr. Pickard) | Oceanography (Dr. Taylor) | Herring | Chinook &amp; Cohoe | Groundfish | Crab &amp; Shrimp | Shellfish | Canada Customs | International Salmon Fisheries Commission | Record Keeping and Income Tax | Fisheries Economics (1) | Fisheries Economics (2) | International Halibut Commission | Fishing Vessel Design |
|---------|------------------------------------------|---------------|-----------------|----------------------------|---------------------------|---------|----------------|------------|--------------|----------|----------------|---------------------------------|--------------------------|---------------------|------------------------|------------------------|----------------------------------|-------------------------|
|         | Very valuable | Very interesting | Neutral | Absolutely no value | Very Uninteresting |         |       |           |             |            |          |                 |                                      |                          |          |                        |                        |                                  |                                  |</p>
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<th>Very valuable</th>
<th>Very interesting</th>
<th>Neutral</th>
<th>Absolutely no value</th>
<th>Very uninteresting</th>
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**SESSION**

18. World Fisheries

19. International Law

20. Vancouver Harbour Master

21. International North Pacific Fisheries Commission

22. First Aid

23. Nanaimo Field Trip

24. Fisheries Indemnity Plan

25. Salmon Development Projects

26. Refrigeration Systems

27. Fish Quality

28. Fish Protection

29. Meteorology
APPENDIX D

INSTRUMENT NO. 3

To do a proper job of evaluating this program a good deal of information is needed. Some of it may seem not to have much to do with learning about fishing and some of it may even seem impertinent, like questions about income and your personal life. However, no signatures are asked for and the information is entirely confidential.

76. In which country were you born?
    __________________________ (country)

77. If you were not born in Canada, how old were you when you came here?
    __________________________ (age)

78. Have you been a fisherman all your life?
    Yes
    —— No

79. If you answered 'no' to the above question what was your occupation immediately before you became a fisherman?
    __________________________ (occupation)

80. What was your reason for leaving the occupation you were in to become a fisherman?

81. Is fishing your only occupation at the present time?
    Yes
    —— No
    If you answered 'no' what other occupation do you have? __________________________

82. Apart from the occupation you may have listed in question 79 and question 81, what other occupations have you had in your lifetime?

83. The next two questions are for vessel owners only.

83. Do you have a partner or partners who share ownership?
    Yes
    —— No
84. What is the total investment in your vessel?
   $ ___________________

85. If you are a crew member, do you expect to own your own boat eventually?
   ___ Yes
   ___ No

86. Do you have relatives (brothers, cousins, uncles etc.) who are also fishermen?
   ___ Yes
   ___ No

87. Do you feel that your schooling has helped you in your objective as a fisherman?
   ___ Yes
   ___ No

88. Are you a member of a credit union?
   ___ Yes
   ___ No

89. Do you get regular financing from a bank or other loan agency?
   ___ Yes
   ___ No

90. Did you listen to the CBC Fishermens radio broadcast before it was taken off the air?
   ___ Yes
   ___ No

91. If you did listen to the broadcast, do you miss it now that it is discontinued?
   ___ Yes
   ___ No

92. Do you belong to a Church?
   ___ Yes
   ___ No

93. Are you and your family active in your Church?
   ___ Yes
   ___ No

94. What is your average income from fishing?
   ___ less than $2000
   ___ $2000 - $4000
   ___ $4000 - $6000
   ___ $6000 - $8000
   ___ $8000 - $10,000
   ___ over $10,000
95. What is your marital status?
   ___ single
   ___ married
   ___ divorced, widower or separated
   ___ number of children

96. What country is/was your father from?
   ____________________________ (country)

97. What is/was your father's occupation in his home country?
   ____________________________

98. If your father was born in another country and moved to Canada, what is/was his occupation here?
   ____________________________

99. How far did your father go in school?
   ____________________________ (grade)

100. Has your father ever attended a Fisheries Short Course?
    ___ Yes
    ___ No

101. Have any other relatives (brothers, cousins, uncles, etc.) ever attended a Fisheries Short Course?
    ___ Yes
    ___ No

102. How far did you mother go in school?
    ____________________________ (grade)

103. If your mother is presently working what kind of a job does she have?
    ____________________________

104. If you mother was working before she married your father, what kind of a job did she have?
    ____________________________

105. How far did your wife go in school?
    ____________________________ (grade)

106. Is your wife interested in your career as a fisherman?
    ___ Yes
    ___ No

107. Does your wife go on fishing trips with you?
    ___ Yes
    ___ No
108. Is your wife gainfully employed?
   ___ Yes
   ___ No

109. Does your wife read fisheries publications?
   ___ Yes
   ___ No

110. Does your wife bring your attention to articles on fishing?
   ___ Yes
   ___ No

111. Do you keep records of your fishing operation?
   ___ Yes
   ___ No

112. If you do keep records, does your wife help you with these?
   ___ Yes
   ___ No

113. Does your wife help in any other way with your fishing operation? Please explain.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
APPENDIX E

MODIFIED REGISTRATION FORM

Present type of fishing - ________________________

Years of fishing experience - ________________________

Are you a vessel owner?

___ Yes

___ No

School grade completed?

___ (grade)

Your age?

___ (years)

Put an 'X' opposite any of the following publications which you read regularly.

___ Fisheries Fact Sheets (Department of Fisheries, Vancouver)
___ Facts on Fish (Fisheries Association)
___ The Fisherman (U.F.A.W.U. paper)
___ Fisheries in Canada (Department of Fisheries, Ottawa)
___ Western Fisheries
___ Canadian Fisherman
___ The Fishing Gazette
___ The Fishboat
___ Fishing News International
___ World Fishing
___ Fishing News
___ daily press articles on fishing

Place of residence in B.C. ________________________
APPENDIX F

INSTRUMENT NO. 4

Please use 'X' for marking.

64. How did you hear about the 1969 Fisheries Short Course?
   (mark more than one if necessary)
   ___ newspaper
   ___ magazine
   ___ radio
   ___ another fisherman
   ___ fishing company
   ___ co-operative
   ___ credit union
   ___ Department of Fisheries
   ___ other; please indicate source ______________________

65. Is this the first time you have heard about this program?
   ___ Yes
   ___ No

66. If you answered 'no' to question 65, can you remember when you first heard about this program?
   ___ (year)

67. What are the main reasons you have come to the 1969 Fisheries Short Course? Mark as many of the following reasons that apply and give as many additional ones as you may have.
   ___ to improve my practical knowledge of how to fish
   ___ to learn more about navigation
   ___ to learn more about the industry in general
   ___ because I have wanted to come before, but could not do so until this year
   ___ a friend persuaded me to come with him
   ___ because I have been told it is a worthwhile program
   ___ I was curious to find out what the course was like
   ___ I had nothing else to do
   ___ other; please specify ______________________

68. Have you attended any other courses related to fisheries in the last five years?
   ___ Yes
   ___ No
69. Have you attended any training or educational programs of any kind since you left school?

___ Yes
___ No

Briefly describe what the program was about.

__________________________________________________________________________

__________________________________________________________________________

What did you get out of this program?

__________________________________________________________________________

__________________________________________________________________________

Did participation in this program make you interested in attending other programs?

___ Yes
___ No

70. Are you losing income by attending this program?

___ Yes
___ No

71. If you answered 'yes' to question 70, was the loss of income a serious consideration in taking this short course?

___ Yes
___ No

72. Put an 'X' opposite any of the following publications which you read regularly.

___ Fisheries Fact Sheets (Department of Fisheries, Vancouver)
___ Facts on Fish (Fisheries Association)
___ The Fisherman (U.F.A.W.U. paper)
___ Fisheries in Canada (Department of Fisheries, Ottawa)
___ Western Fisheries
___ Canadian Fisherman
___ The Fishing Gazette
___ The Fishboat
___ Fishing News International
___ World Fishing
___ Fishing News
do daily press articles on fishing

73. Do you discuss fishing matters with other fishermen more or less regularly?

___ Yes
___ No
74. Do you get ideas about fishing from other fishermen?
   — Yes
   — No
   — Sometimes

75. Do you find other fishermen reluctant to share their information about fishing with you?
   — Yes
   — No
   — Sometimes
APPENDIX G

A SCALE FOR MEASURING ATTITUDE TOWARD THIS TRAINING PROGRAM

INSTRUCTIONS: Please check the statements that best express your feelings about this training program.

1. It was one of the most rewarding experiences I have ever had.
2. Exactly what I wanted.
3. I hope we can have another one in the near future.
4. It provided the kind of experience that I can apply to my own situation.
5. It helped me personally.
6. It solved some problems for me.
7. I think it served its purpose.
8. It had some merits.
9. It was fair.
10. It was neither very good nor very poor.
11. I was mildly disappointed.
12. It was not exactly what I needed.
13. It was too general.
15. It didn't hold my interest.
16. It was much too superficial.
17. I leave dissatisfied.
18. It was very poorly planned.
19. I didn't learn a thing.
20. It was a complete waste of time.
Would you please try to recall the names of all the organizations that you have belonged to in the past year. (Do not include attendance at church).

<table>
<thead>
<tr>
<th>Name of Organization</th>
<th>Attendance</th>
<th>Financial contribution</th>
<th>Member of Committee</th>
<th>Offices Held</th>
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</thead>
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<td>1.</td>
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<td>7.</td>
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<tr>
<td>8.</td>
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<td></td>
</tr>
<tr>
<td>Total (X1)</td>
<td>(X2)</td>
<td>(X3)</td>
<td>(X4)</td>
<td>(X5)</td>
</tr>
</tbody>
</table>

Score

0
1 - 5
6 - 10
11 - 15
16 - 20
21 - 25
26 - 30
31 - 35
Over 35
APPENDIX I

FISHERIES EDUCATION PROGRAMS IN CANADA AND ALASKA
UNIVERSITY OF BRITISH COLUMBIA

Fisheries education is one of the most long-standing services of the Department of Extension of The University of British Columbia in which it has been active since 1938. In that year, in response to a request from co-operatives and with funds provided by the federal government, the Department held its first training program for fishermen. The success of this venture led to provision of an annual $5000 grant for fisheries education in the co-operative production and marketing of fish.¹

In the early stages of launching its new program the Department turned for assistance to St. Francis Xavier University in Nova Scotia which had become renowned for its work amongst fishermen in depressed areas of the Maritimes. The greatest need was for the establishment of fishermen's credit unions and the initial work emphasized this aspect.²

In the mid-fifties, when federal support for the co-operative fisheries extension program amounted to $10,000 per year, the Extension Department asked for and received an additional grant to provide technical education with broader terms of reference. A new grant for this purpose provided an additional $4,500, but in 1962 these funds were consolidated into a single amount of $11,000 for technical education of all fishermen. This was later increased to $14,000 and
currently remains at this figure. In January, 1969, the Parliamentary Vote which supported fisheries education for thirty years was lost but the Department of Fisheries, in recognition of its value, has seen fit to allow it to continue under a contractual agreement.

Two main programs resulted from the additional funds received in 1954-55 fiscal year. One of these was a fisheries option which became a part of a two month Youth Training School conducted by the Department under the Dominion-Provincial Vocational Training Agreement. For unknown reasons, this was not entirely successful as it was difficult to attract sufficiently large numbers of students. However, the other development, the initiation of a two week residential short course in 1955, proved to be highly successful in attracting students and has been held annually ever since. In 1960 it was lengthened to three weeks.\(^3\)

Because of the specificity of the terms of reference for co-operative education it is natural that the first Short Course students were, for the most part, co-op members although the program was made available to all fishermen. The number of applications invariably exceeded the capacity of the facilities and selection was necessary. The class was composed mainly of halibut and salmon seine fishermen with a few trollers. However, conditions have changed and today operators of larger vessels find it necessary to fish longer and for more than one species in order to protect a high capital investment. Enrolments are now predominantly from the troll and gillnet fleets and participants tend to have had less
fishing experience.

The original curriculum emphasized "the scientific side of the industry to the practising fishermen." It also included incentives to attract fishermen to the quasi-academic program which was proposed. Thus it was that some practical subjects such as marine engines, navigation and electronics were included as 'carrots' (as the fisheries supervisor used to call them) to partially balance the academic subjects such as international law, fish behaviour and oceanography to which most of the teaching time was devoted. The program has continued to operate under this philosophy for fifteen years. One exception is that engine work was discontinued several years ago as it was felt that this kind of information was readily available from other sources. The subject matter for the short course is up-dated but the subjects included are essentially the same as originally conceived (Appendix A).

For variety and added interest, field trips to points of interest to fishermen are scheduled throughout the three weeks. In latter years, what is included has been left to the discretion of the class, with the exception of a one-day trip to the Biological Research Station at Nanaimo, B.C. The students are also given an opportunity to decide on how they would like to fill the occasional free period, but more often than not, this requires an added evening session. For instance, for several years in the early 1960's the various groups asked for information on the operation of loran and in the 1969 course the class wanted
additional coastal piloting instruction, information on customs and a talk by the Vancouver Harbour Master. Further opportunity for passing on group feelings about any aspect of the course is made possible by the election of a class president as spokesman.

Instructors are drawn from the University, Department of Fisheries, Fisheries Research Board of Canada and the fishing industry, some of whom have been contributing since the first program in 1955. Until 1964 these groups were represented at a meeting to analyse the current years' program and make suggestions for modifications as felt necessary. This practice was discontinued when it became evident that few, if any, changes were required and the need for them was left to the discretion of the course administrator.

Besides meeting the expenses of putting on the course, the grant pays for all the costs of travel and accommodation for the students. A nominal registration fee, currently $15.00, is charged as a token payment and these funds are used for a closing banquet when a guest speaker of some prominence is invited to deliver an address. Candidates are also required to submit a letter of recommendation from a fishing company or organization. The admission requirements demand at least one years fishing experience, but this rule is sometimes bent, particularly during the years when registrations are low or when the Department of Fisheries requests the attendance of some of its staff for in-service training.
The usual channels of communication are used for publicity; radio, newspapers and magazines, personal mailing and personal contact. Most participants are obtained by mailing a brochure and covering letter to students of the previous two or three years and through fishing companies. The co-operative continues to support the program to a proportionately greater extent than all other sources.

Other programs in fisheries are arranged at various fishing centres on an occasional basis. For several years, 10-day navigation courses were provided in more remote coastal communities, but this work has been discontinued. Fishermen, generally, are more interested in practical subjects and several programs have been provided with content such as operation and maintenance of electronic equipment, refrigeration systems and the applied aspects of salmon development projects and fish quality.

The Department is also involved with fisheries education outside of the grant-supported activities. Evening classes have been arranged for fisheries management personnel and in recent years 30-hour educational programs for laboratory technicians and professional fisheries Biologists have been arranged as in-service training.

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

Fisheries Extension work at Memorial University is oriented toward
community development and co-operative training. The former field of activity, a fairly recent venture, is carried out by the use of film. An Extension Service Film Unit was officially created on April 1st, 1968 with a staff of five members. In its first year of operation this team worked with a community development officer and filmed aspects of a small coastal community which included, among other things, the problems of a family fishery, an examination of the attitude of young fishermen toward their occupation and further education, the need for harbour development and the effect of new fisheries technology.

There were two purposes in mind for using the community development method. The first was to help people of the community to recognize their problems and hopefully initiate self-help projects. The second was to segment the film for distribution to government departments and other agencies with the hope that the problems raised in the films would create an exchange of information with the people in the community and thereby help them to organize for change.

Prior to the establishment of the Film Unit the Extension Service produced a television series called "Decks Awash". The listening group approach taken was similar to the well-known radio farm broadcasts of the Canadian Broadcasting Corporation and the more recent television version of these which appeal to both rural and urban audiences.

Co-operative meetings and programs have been conducted for many years by the Memorial University Extension Service. In 1967 with the co-
sponsorship of the Canada External Aid Office it organized and administered a six-week training course in Fisheries Co-operatives for students from developing countries. The program was extended to eight weeks in 1968 and is scheduled to run thirteen weeks in 1969. The curriculum covers various aspects of co-operative development and fisheries technology for non-technically trained co-operative personnel at the management or supervisory level and is conducted jointly with the College of Fisheries.

COLLEGE OF FISHERIES, NAVIGATION, MARINE ENGINEERING AND ELECTRONICS

This independent and specialized college, the only one of its kind in the Western World, was officially opened at St. John's Newfoundland in January, 1964. It exists to provide manpower for the fishing and marine industries. The Constitution of the College is an Act of the Provincial Government which reads in part

The Lieutenant Governor in Council may establish in the Province a College to be known as the College of Fisheries, Navigation, Marine Engineering and Electronics, designed to furnish technical and vocational training and to conduct research in

a) fisheries
b) navigation
c) marine engineering
d) electronics, and
e) any other science or art relating to all principal aspects of the marine and fishing industries, including Naval Architecture and shipbuilding and Food Technology (Marine Products and By-Products).
The College has a library with over 7000 volumes; pamphlets, documents, periodicals, films and filmstrips. It also operates a 120 foot, 200 Ton long-line training vessel.

Courses are offered at various levels. Two basic training programs are provided to up-grade persons showing capability but who do not possess the necessary academic requirements.

Vocational and Special Courses from one and a half to nine months duration are offered in a large variety of practical subjects. Entrance requirements differ with the subject, but most demand some degree of experience.

Career courses leading to a Diploma in Technology are offered in five fields; namely Electrical Engineering, Food Processing (Marine Products), Mechanical Engineering, Nautical Science and Naval Architecture and Shipbuilding. The last two mentioned areas require four years training and the remainder three years; entrance requirements are Grade XI or its equivalent. Students may be accepted from other Canadian Provinces through the Federal-Provincial Vocational Training Agreement or from other countries under any one of a number of Aid programs through the Department of External Affairs.

A Department of Extension Services is attached to the College to conduct practical four-week courses in navigation and pilotage, maintenance and repair of marine engines, operation and maintenance of electronic equipment.
and fishing gear and equipment. Fifty-five to sixty of these schools operate in an average year reaching approximately one thousand fishermen.

The only condition for a community to take advantage of these Travelling Schools, as they are known, is a guarantee of a minimum of ten fishermen students willing to spend the required time. A per diem allowance of $3.00 and $1.50 is paid to married and single trainees respectively. Students from outside the community receive 75¢ extra for travel.

ST. FRANCIS XAVIER UNIVERSITY

Operating in northern New Brunswick, Prince Edward Island and Nova Scotia, the Extension Department of St. Francis Xavier University at Antigonish, Nova Scotia employs eleven fieldworkers for its fisheries extension work. This institution has a long history, almost forty years, of helping fishermen to understand and solve their many problems. This has been accomplished mainly through encouraging the organization of producer and consumer co-operatives and credit unions, fields in which they have become known and respected throughout the world.

In more recent years, as these fledgling organizations have become firmly established the nature of the extension work has changed. The fisheries field staff now performs an educational and training function for the established fisheries co-operatives which are as yet unable to provide this service. In
this way their operation resembles that of an agricultural agent with farmers.

The Department also conducts various surveys of fisheries communities, either economic or socio-economic in nature, some of which are financed under the Agricultural and Rural Development Act of the Government of Canada (ARDA).

The support from the Federal Department of Fisheries for the fisheries extension program amounted to $65,000 in 1967-68. Nearly $10,000 was provided by St. Francis Xavier University in addition.

NEW BRUNSWICK SCHOOL OF FISHERIES

Situated at Caraquet the School of Fisheries was founded by the local School Board in 1959. Three years later it was transferred to the New Brunswick Department of Fisheries.

Entrance requirements were originally age sixteen and grade seven education but since 1966 these have been raised to age seventeen and grade nine or its equivalent. The two year fisheries course consists of 36 weeks of instruction during the off-season from mid-November to early April.

The main program consists of a Basic Education Course to up-grade students to grade 9 level, an Inshore Fishing Course comprising the first year and an Offshore Fishing Course comprising the second year.

Special Fisheries Courses in Gasoline Engines and Nautical Science,
(Inshore) lasting three weeks, have a limited registration and an age requirement of seventeen years. These are practical in nature and designed for those who are unable to register for the two-year program. Other programs in this category are Diesel Engines and Fishing Gears of four weeks duration each and a six week Course in Nautical Science (Offshore) with a twenty-one year age requirement plus twelve months sea time. Previous attendance at a Nautical Science Course is also mandatory.

The School expects to have its own training vessel by 1971; in the meantime vessels from the industry have been utilized.

The Department of Manpower of Canada pays the cost of fees and this body or the Provincial Government provides allowances of variable amounts to enrollees depending on financial status and number of dependents.

The staff is composed of a Director and ten permanent teachers aided by eighteen part-time teachers.

SCHOOL OF FISHERIES OF GRANDE RIVIERE

Established in 1948 under the Fisheries Division of the Department of Industry and Commerce, Quebec, the School situated at Grande Riviere began by offering both general and specialized courses for fishermen. Ten years later this work was augmented by the addition of a practical training program of two years duration.
The School came under the jurisdiction of the Department of Education in 1965, joining a network of other schools under its Specialized Training Service. A three-year technical program was initiated the following year. With the creation of Gaspe College in 1968 the first year of this program is now given at this institution at the Collegiate level and students return to the more adequately equipped School of Fisheries for specialized training.

Two options are available; the sea-option trains fishing boat officers and mechanics and the land-option trains technicians in the handling and processing of fish.

The School offers secondary professional courses in marine fisheries and fish handling at the apprenticeship and advanced levels. In the case of the former the objective is to train young people for work on fishboats and in processing factories. Training may begin in the secondary schools on the condition that students receive information on fisheries. During the second year time must be spent on the training vessel of the School of Fisheries so that the students can learn of their aptitude for a sea-fishing life.

The third year of this program consists of a fishing option for boys which includes a session at Gaspe College and a products processing option for girls and those boys who are not suitable for fishermen.

At the advanced level students are instructed in the exploitation and utilization of marine resources. Subjects include marine engines, nautical
science, fish harvesting, oceanography and ship's care.

Special courses in navigation, marine engines, processing and so on are also available for fishermen in the off-season.\textsuperscript{10}

FISHERIES SERVICE OF THE QUEBEC CO-OPERATIVE COUNCIL

The main objective of the Fisheries Service is to complement the technical training provided by the Fisheries School at Grande-Riviere. It achieves this by maintaining close ties with the principal agencies in the fishing industry to provide programs for adults working in the co-operative sector. The areas covered by the Service include the Gaspe, Madeleine Islands, and the North Coast and adjacent areas.

Other aims are to assure permanent instruction in the professionalization of fishermen, to study a better adaptation between the requirements of the co-operative enterprise, the administrative requirements and democratic procedure of the co-operative system, to favour an understanding of the economic and social phenomena of work to facilitate transformation into an industrial society and to develop in fishermen a need for technical knowledge of the fishing industry which is essential for their increased productivity.\textsuperscript{11}

The subjects for instruction in the one-week course relate to comparative economic systems, the social and economic evolution of Quebec fisheries, and reorganization of co-operative associations. It is repeated three
times throughout the winter months for allied fisheries workers and captains and crews. Candidates are selected on the basis of scholarship, aptitude, leadership qualities and income.

The Service also publishes a monthly bulletin containing information and articles on fisheries and the co-operative movement.

PROVINCE OF MANITOBA

Since 1964 the Province of Manitoba through its Department of Mines and Natural Resources, has operated the only fresh-water fisheries training program in Canada. In recognition of the potential of the fishery and the antiquated methods used by fishermen to harvest fish, the Department sent an observer to the Fisheries Short Course conducted by The University of British Columbia with the view of establishing a similar program for Manitoba's 3500 fishermen, half of whom are Indians or Metis. The following year a two-week residential program, suitably modified from the U.B.C. Short Course, was established at Winnipeg to train 25 selected fishermen per course. There have been six programs financed with provincial funds in the last five years.

The program format bears a striking resemblance to the U.B.C. Fisheries Short Course, but is considerably more vocational in its approach because of the lower educational background of the participants. The majority have less than grade six education.
Current plans are to discard this course and set up a new one of four to six weeks duration. A more comprehensive curriculum is envisioned to do an adequate job of preparing fishermen for the rapidly changing commercial fishing industry in Manitoba. Orderly marketing, stabilized prices and better quality control have replaced the previous chaotic state of these factors until recently. The subject matter will include instruction in fish behaviour and biology, ecology of lake systems, an overview of the industry and marketing process.

A new facility to be known as the Fisheries Training Centre and Demonstration Station will officially open by June, 1969 on Lake Winnipeg at Hnausa, seventy-five miles north of Winnipeg. The $115,000 construction costs are being paid out of the Federal Rehabilitation and Economic Development Fund. Operating Budget for 1969-70 is $85,000 with a staff consisting of three instructors, two chefs and a caretaker.

The Demonstration Station aspect of the Centre is included for the purpose of having the fish station operators handle the fish caught by the student fishermen. The operators will also participate in appropriate parts of the training program.

Classes will remain flexible to accommodate training as the fishing season permits. During the fishing season, the five-building facility will be utilized by other government departments; for instance training of fish co-operative
managers and directors by the Manitoba Department of Agriculture.

Another new venture in Manitoba is the On-Site training program. It is based on the theory that change will only occur when the value of changing is completely understood and actually seen. Four instructors spend five months in different areas of northern Manitoba working among the Indian and Metis.

Costs of the program are shared by ARDA and the Province of Manitoba and supervised by the Department of Mines and Resources in close cooperation with the Indian Affairs Branch. Orientation sessions of the teaching staff are held with the Department and a specialist in community organization and group motivation.  

UNIVERSITY OF ALASKA

One of America's first fisheries extension programs was initiated by the University of Alaska at College, Alaska, as part of the Division of Statewide Services' Public Service program. It came into being in 1963 following the previous years one-week pilot program which was patterned after the U.B.C. Fisheries Short Course.

The emphasis of the Fisheries Extension Program is short courses offered in fishing communities throughout the State. Total instruction time may be from 15 to 40 hours and content varies with predominant fishing methods in the areas visited. Subject matter includes biology, oceanography, quality control,
synthetic fibers and their use, and information on exploratory fishing conducted in Alaska. Two to three months each year are spent in Western Alaskan Eskimo villages giving short courses and demonstrating construction of modern gear forms and ice fishing techniques. Regardless of short course content the objective remains the same — improvement of fish harvesting methods and landed fish quality.

More intensive short term schools of 108 to 480 hours duration have been conducted since 1965 with grants received from the Departments of Education and Labour. Outside specialists are hired for instructing in fishing gear technology, electronics, navigation, fish spoilage control, record keeping and income tax, biology and oceanography.

In addition to these up-grading schools, the Fisheries Extension Program arranges 15-hour courses in identified problem areas such as engine maintenance, navigation, fishing gear technology, and electronics. Most of the instructors employed for these programs are fishermen.

Occasional Seminars and Conferences are sponsored on specialized topics, an example of which was a seminar for logging operators on the Effects of Logging on Salmon Streams.

The University has recently approved an expansion of its Fisheries extension program to include technical training leading to an Associate Degree in Fisheries Technology. A submission for funds to accomplish this has gone forth
to the appropriate Federal Government department and, if accepted, the program will get underway in September, 1969. The three majors to be offered are in Fishing Technology, Fish Processing Technology and Biological Technology.
FOOTNOTES


6 Memorial University of Newfoundland, Training Course in Fisheries Co-operatives for External Aid Students. June 3 - July 26, 1968. brochure.


9 Province of New Brunswick, Department of Fisheries. "New Brunswick School of Fisheries, Caraquet." Catalogue 1968-69.


