PRODUCTION AND EVALUATION OF THREE MEDIA PRODUCTIONS FOR CAREER ORIENTATION IN THE RADIOLOGICAL TECHNOLOGIES

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ABSTRACT

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This study is aimed at determining whether career-orientation media productions, combining slides and audio tapes, which were specifically produced for the study, had any effect on application and withdrawal rates in the radiological technology programs at Dawson College. The productions were evaluated by expert opinion and high school students as well as applicants and potential applicants for their quality, their usefulness and the quality and amount of information contained in the productions. The productions were shown to a sample of 61 experts and non-applicants, and to a total of 156 persons in the potential applicant and/or high school student category over a two-year period. Responses from viewer samples were positive as regards to the quality of the productions and the information supplied by the productions.

Applications for the years the years the productions were shown were lowered less than those of two other medical programs offered at Dawson College. Withdrawal rates were not significantly altered. The main finding of the study indicates the productions help fulfill the need for career information about the radiological technologies.

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The text of this thesis is complemented by three slide-tape programs entitled: "What is Radiography", "What is Nucleography", and "What is Radiotherapy", which are available in the Concordia University Library, in Montreal, P. Que., Canada.

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CHAPTER I

INTRODUCTION

1.1 The Radiological Technologies, Brief Description of Careers and Programs of Study

There are, at present, three medical technologies recognized and practiced in the field of medical radiology. Nucleography and radiography practitioners assist physicians in offering a diagnostic service to patients. Radiography, also known as x-ray technology or radiologic technology, is defined as the "art and science of producing or assisting in the production of x-ray examinations which help in the diagnosis of many diseases. These examinations are recorded on x-ray or cine film and video tape".[1]

Nucleography, also known as nuclear medicine technology, is "the art and science of administering radionuclides to a patient to assist in the diagnosis of many diseases".[2] Radiotherapy is that branch of medical radiology which offers a therapeutic service to the patient, and is defined as "the science of administering prescribed radiotherapy treatments and assisting the patients undergoing treatment".[3]

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[1] Dawson College brochure entitled "Radiologic Technologies", Dawson College publication, 1975, p. 1.

[2] Ibid. [3] Ibid.

The oldest of the three professions is radiography. A national organization comprised of practicing radiographers was officially formed in 1943[1] (The Canadian Society of Radiological Technicians). As early as 1946 the C.S.R.T. published a brief outline of educational requirements for a program of studies for radiography and radiotherapy combined[2] leading to national qualification through an examination set by the C.S.R.T. To be eligible to practice radiography, radiotherapy or nuclear medicine technology, the candidate must pass these examinations and obtain the R.T. (registered technician).

The type of education offered in Canada at this time (1946 - late 1950's) was entirely sponsored by radiology departments and was hospital-based, for all provinces. The programs were all two years long. Settings, facilities, and curricula were subject to approval by a national accreditation body with joint representation from the Canadian Medical Association, the Canadian Association of Radiologists and the C.S.R.T.

Centralized training began to be organized only in the late 1950's, with the education of radiology technicians becoming the joint responsibility of affiliated hospitals

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[1] Crowley, Sister Mary DeLellis. Some Historical Considerations of the Canadian Society of Radiological Technicians, 1948. (Thesis) Univ. of St. Louis, St. Louis, Miss.

[2] C.S.R.T. Syllabus of Training, Foreward, 1st Ed., 1950.

and institutes of technology.

Radiotherapy became firmly established as a separate profession about this time. Nucleography is the most recent of the radiological technologies, and was developed mainly through the advances made in the discovery and wide use of radioisotopes for both diagnosis and therapy. A syllabus was established for nuclear medicine in the early 1960's and students underwent training in hospital settings, as for radiography and radiotherapy.

In Quebec, as in other provinces, the advent of the "central school" concept has meant that responsibility for training radiology technicians has shifted to the CEGEP's and the ministry of education. Students still write a nationally sponsored examination, and their records of practical and theoretical training are open to scrutiny by the provincial society of radiological technicians ("l'Ordre des Techniciens en Radiologie Médicale du Quebec"). The speciality courses offered at the CEGEP's are closely related to those taught in the rest of Canada, as described in the C.S.R.T. Syllabus of Training.[1]

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[1] C.S.R.T. "Syllabus of Training for Medical Radiography"; "Syllabus of Training for Nuclear Medicine"; "Syllabus of Training for Radiotherapy". C.S.R.T. Publication, Ottawa, Ontario, 1970. Syllabii are revised periodically.

1.2. Context of the Problem

When Dawson College opened its doors in September 1969, as Quebec's first anglophone CEGEP, one of the three-year professional programs offered by the college was radiography. This program had previously been offered to anglophone students at the Laval Institute of Technology (the institute became CEGEP Ahuntsic). In 1970, the college was approached by one of the hospitals in the Montreal region to offer a program in nucleography. Finally, a small program in radiotherapy was started in 1972.

Compared to other professional programs offered in the career sector at Dawson College, with the possible exception of nursing and medical laboratory technology, radiography was a well-established profession with an existing job market and for which a curriculum had been in active use for some time. Prior to centralization of training, for example, at the Laval Institute of Technology, there were no less than some fifteen hospitals involved in training radiographers in the Montreal area alone.

Far fewer radiotherapy and nucleography schools existed in Montreal prior to the Dawson program. These two programs still train very few individuals. "Fewer jobs are available in nucleography and radiotherapy since

only large medical centres have radiotherapy and nuclear medicine departments".[1] Also, in a typical general hospital, the ratio of radiographers to radiotherapy and nucleography technicians combined would be in the order of 5:1. As of February 1976, there were 4,956 radiography technicians; 281 radiotherapy technicians, and 284 nuclear medicine technicians registered with the C.S.R.T.[2]

The following tables compare the number of students enrolled in the three programs of study annually, in all the schools of radiology technology across Canada (Table 1), and in the province of Quebec (Table 2).[3]

Fewer hospitals are now exclusively responsible for the entire training scheme, with the exception of the radiotherapy programs. Affiliated hospitals are usually involved in cooperative programs for radiology technology students, in association with a community college, technical institute, or CEGEP.

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[1] Dawson College brochure, Op. Cit., p. 1.

[2] Figures provided by the C.S.R.T. office.

[3] Statistics provided by "The Committee on Medical Radiological Training" and published in the Canadian Journal of Radiography, Radiotherapy and Nuclear Medicine, Volume VII, No. 1, January 1976. (Official C.S.R.T. publication, Ottawa).

	Central Schools	Affiliated Hospitals	Number of Students Enrolled Annually	% of Total
Radiography	17	136	732	81.7
Radiotherapy	4	19	59	6.6
Nuclear Medicine	6	43	105	11.7
Total	27	198	896	100.0

TABLE 1

COMPARISON OF NUMBER OF STUDENTS ENROLLED ANNUALLY AND NUMBER OF CENTRES OF TRAINING IN CANADA

	CEGEP's	Affiliated Hospitals	Number of Students Enrolled Annually	% of Total
Radiography	4	30	212	82.49
Radiotherapy	3	7	20	17.782
Nuclear Medicine	3	12	25	9.727

TABLE 2

COMPARISON OF NUMBER OF STUDENTS ENROLLED ANNUALLY IN RADIOGRAPHY, RADIOTHERAPY AND NUCLEAR MEDICINE, IN THE PROVINCE OF QUEBEC

Figures are approximate since the radiology technician training programs in the province of Quebec have not recently been inspected by an accreditation committee.

In spite of the relatively large number of hospitals, schools, and students involved in these radiology technology programs in Canada, there is very little information available to the general public and to high school students about these careers.

In Quebec, the Order of Medical Radiological Technicians of Quebec has published a small booklet describing the three professions. This booklet has not been circulated widely and in fact has mostly been available upon the request of the members. It is now out of print. The C.S.R.T. has no career information literature with the possible exception of a small booklet which describes the role of the C.S.R.T.[1]

The three programs of study are described in the Cahiers of Collegial Studies for the CEGEP's.[2] As for other professional programs offered in the CEGEP's, the curriculum is under constant study by a curriculum committee formed of representatives from all the colleges offering the programs. Radiography, Radiotherapy and Nuclear Medicine are offered at CEGEP

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[1] "Why C.S.R.T."? C.S.R.T. publications, 1972, Ottawa.

[2] Cahiers d'enseignement collégial, Vol. 1, DIGEC publication, Quebec, 1975 Edition.

Ste. Foy, CEGEP Ahuntsic, and Dawson College. The newest centre for radiology technology training is the CEGEP de Rimouski, where the radiography program is given.

A strong movement has already been initiated in Quebec to allow the graduate[1] to practise his chosen profession without the Canadian R.T. This movement has not yet been firmly established, but there is the imminent probability that a provincial certification will exist, thus eliminating the need for the national examination. The most serious problem attached to this is the fact that without the Canadian R.T., and in the absence of reciprocal arrangements with other provinces, the radiography, nuclear medicine, and radiotherapy technicians educated in Quebec will not be permitted to practise elsewhere in Canada, and vice versa.

All required courses must be successfully completed by the candidates before they are granted a "Diplôme d'enseignement Collégial". This diploma entitles the graduate to write the qualifying examinations sponsored by the C.S.R.T. and O.T.R.Q. jointly. The same courses are offered in all radiology technology programs across the province.

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[1] The O.T.R.Q. reports in its official journal that there are 2,435 radiology technicians in Quebec, 296 of whom are actively practising in the "anglophone" sector. (Echo-X, Volume XI, No. 1, April 1976, p. 14).

In all three programs of study, the course load is considerable, and failures or withdrawals due to this heavy workload are not uncommon. Instructors in the radiological technologies felt that better informed, better qualified applicants would considerably reduce the number of withdrawals.

The following table compares the number of candidates who entered the program of study at Dawson College, and who successfully completed it three years later. This table shows us that the completion rate is consistently a little over half the entrance rate.

The admission requirements for the program are similar to those required for other medical technologies. The following excerpt from the brochure describes the entrance requirements:

> "The entrance requirements for radiography and radiotherapy are the same: a Secondary V Certificate (18 academic units), including Mathematics 522 (Functions), Chemistry 512, and Physics 512. Nucleography students require a Secondary V Certificate (18 academic units), including Mathematics 522 (Functions), Chemistry 522 (Chem Study), and Physics 512". [1]

There is every opportunity given to the applicant to attend sessions during the summer prior to the first semester to take make-up courses. Mature

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[1] Dawson College brochure, Op. Cit.

Class	Number who Entered**	Number who Graduated**	Option*
1969-72	39	25	Radiography
1970-73	40	26	Radiography & Nucleography
1971-74	42	28	Radiography & Nucleography
1972-75	48	27	All Three Options
1973-76	51	27	All Three Options

TABLE 3

COMPARISON OF NUMBER OF STUDENTS ENTERING THE RADIOLOGICAL TECHNOLOGY PROGRAMS AT DAWSON COLLEGE, WITH THE NUMBER WHO GRADUATED AT THE END OF THE THREE YEARS OF STUDY

*In the first year of its operation, Dawson College offered the radiography program only. Nuclear medicine and radiotherapy were initiated later.

**These figures are approximate.

applicants who have not completed high school may also take a preparatory science year at Dawson; successful completion of which brings their qualifications up to the level required for entrance.

The figures provided in Table 12 (in results section) were obtained from the Dawson College admissions department in June 1976. These figures show there have been comparatively fewer applicants for the radiology technologies as compared to the applicants for medical laboratory technology. The numbers quoted here do not include number of applications for transfer from one program to another within the college.

1.3. Statement of the Problem

There are comparatively fewer applicants for the radiology technology programs at Dawson College than for other medical technologies. Since entrance requirements, length of training, job opportunities, and salary scales are comparative with other medical technology careers, a possible explanation is the lack of information available to potential Dawson College applicants, and to the general public, concerning the radiological technologies.

The main purpose of this study was to increase the availability of information about the radiological technologies by producing three media packages for career orientation, and make these available to potential applicants, high school students, and other interested persons. An attempt was therefore made, via the productions, to partly fulfill the perceived need for more information. Another purpose of the study was to determine if this lack of information on the part of the applicants contributed to the withdrawal rates from the programs of study. Further, one of the chief goals in producing these information packages was to use them to attract more suitable applicants for these programs of study, thereby raising the number of qualified applicants.

The productions were also evaluated by groups of instructors (who act as interviewers of applicants, and

select the successful candidates for entrance in the programs). These viewers were asked to assess the productions for content, usefulness, and accuracy. All viewers including the experts, were additionally asked to evaluate the quality of the productions.

In showing the productions to Dawson College "open house" audiences, to classes of high school students, and to applicants, it was hoped that the level of awareness of radiological technologies would be raised, and that more information would be readily available for those who had not yet made a career choice, as well as for those who had already expressed an interest in this field.

To summarize, then, these were questions I hoped to answer with this study:

1. There is a need for dissemination of more information about the radiological technologies. Do the orientation programs produced for the purpose of this study increase the availability of this information, thus fulfilling this need?
2. Is the lack of information presently available regarding the careers and programs in the radiological technologies a contributing factor to the reduced number of

qualified applicants for these programs at Dawson College?

3. Is this lack of information also a contributing factor to a number of withdrawals from the radiological technology programs of study?

1.4. Review of the Literature

Most central schools offering courses leading to a diploma in radiography, radiotherapy or nucleography provide pamphlets or brochures describing their programs. A survey of these brochures showed that the information was grouped under several headings. The following headings were most frequently seen: (1) definition of the occupation; (2) employment opportunities; (3) entrance requirements, including health requirements; (4) fees; (5) length of the program of study; (6) settings where programs are taught; (7) admission procedures; (8) list of courses.

As early as 1972, Dawson College brochures for all career programs, including the radiology technologies, were made available to high schools in the Montreal area. How useful the brochure was to the students is summarized in an informal survey of 200 students randomly sampled from those who had completed the college registration process.

The survey was conducted by Ray McGrath at Dawson College in September 1974. According to this survey, eighteen 1st, 2nd and 3rd year students from the radiological technologies answered the questionnaire; 20% of these students had first heard about the program of study through the Dawson College brochure, 16% through

the college calendar, newspaper or "open house" visits, and 32% heard of their program through a high school counsellor.

The majority of radiology technology students (58%) reported they were motivated to enter the program because "the program is interesting". Only 6% reported that they were motivated because money and employment prospects seemed attractive (as opposed to 40% of the mechanical technology students, for example).

In a survey of literature available through professional associations describing the radiology technology careers, several brochures were reviewed. One brochure is available from the C.S.R.T. (Canadian Society of Radiological Technicians), Ottawa. The O.R.T.Q. (Order of Radiology Technicians of Quebec) brochure had not received wide circulation and is now out of print. As for other Canadian provinces, according to correspondence with the C.S.R.T., only one province, Ontario, published a career information brochure at the time of this survey.

The Ontario Hospital Association currently distributes up-to-date information on all the health careers[1] but the information is brief. The O.H.A.

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[1] Health Careers, Educational Requirements and Program Locations, 1975, Ontario Hospital Association, Don Mills, Ontario.

booklets are not distributed in the province of Quebec. The Canadian Hospital Directory lists the names of schools offering courses in radiology technology careers across Canada. Radiology technology programs were not described in the Information Canada "Career Outlook"[1] series, at the time of this survey.

In the audio-visual category, there were two training films available which describe health careers in general. Radiology technology was described along with a number of other careers in the medical field. Other materials, produced in the United States, included a series of career orientation slide tape programs, one of which is on the subject of "X-Ray Technology". The Society of Nuclear Medicine circulated a brief pamphlet[2] on nuclear medicine technology. There were also other similar pamphlets available in the United States which described the career but which were not applicable to the Canadian programs of study.[3]

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[1] Career University and Community College Outlook 72/73. Arts & Sciences. Information Canada, Ottawa, 1973.

[2] Nuclear Medicine Technology, Society of Nuclear Medicine, New York, n.d.

[3] Available from Technical Education Research Centres, Cambridge, Mass.

A project carried out by the Educational Development Centre in 1975[1] consisted of collecting career information and trying to standardize it for use by adults. The centre found that the information available was too general, was either designed for counsellors or for young grade school students and not for adults or older students, was often out of date, and was scattered in a wide array of documents.

That there is a need for such career information is supported by most of the literature surveyed on the subject.

Vu-Thu-Huong states:

> "Since decision making is partially influenced by what students know about occupations, exposure to career information materials is necessary and important during the students' developmental process of choice".[2]

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[1] Developing Career-related Materials for use with and by Adults 1975, Career Education Project, Education Development Centre, Newton, Mass.

[2] Vu-Thu-Huong, Catherine. "Decision Making and Vocational Information", Canadian Counsellor, Volume 8, Number 1, January 1974, p. 70.

Ginzberg says:

> "Everybody is confronted repeatedly with the need to make decisions with respect to education and work. These decisions can be facilitated if people have relevant information about the shorter and longer consequences of alternative choices".[1]

In a report to the United States Department of Health, Education and Welfare, Letson[2] reported on the production of four television programs for use by younger students (grades eight and nine), one of which describes radiology technology along with eight other hospital professions. Olson[3] reported that Stanford University used self-administered simulation kits to explore occupations, and one of these occupations was x-ray technology.

Although there were many more resources for the career orientation of potential radiology applicants in the United States, the programs of study described were

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[1] Ginzberg, Eli. Career Guidance: Who needs it, Who Provides it, Who can Improve it. 1971, McGraw-Hill, New York, p. 270.

[2] Letson, J.W., Occupational Information via TV. Occupation Information Project, Atlanta Public Schools, Ga., 1970 Report of the U.S. Dept. of Health, Education and Welfare, Washington.

[3] Olson, Levene A. Career Exploration: Instructional Materials, Evaluative Results and Innovative Programs 1972, Marshall Univ., Huntington, West Va., Dept. of Tech. Educ.

dissimilar to those offered in Canada. American educational programs for radiological technology students were, at the time of the survey, not subject to uniform standards of curriculum and accreditation. There existed, therefore, a very wide variety of training programs available, and the career orientation productions reflected this diversity. In general, the United States produced materials for career orientation in radiologic technologies are unsuitable for the Canadian market.

In his chapter on "Advice for the Advice-Givers", Ginzberg issued a series of challenges to guidance, and stated:

> "While informal advisers such as one's peers and especially one's family help young people to define their goals and initiate them in the ways and institutions of our society, they frequently do not have important information or objectivity".[1]

In a survey of 164 students who used INFOE (Information Needed for Occupation Entry), Cameron reported that students did talk to their parents and asked advice about career choices more often from parents than from counsellors and teachers.[2]

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[1] Ginzberg, Op. Cit.

[2] Cameron, Walter A. Project INFOE: (Information Needed for Occupational Entry) 1972, U.S. Dept. of Health, Educ. and Welfare.

Concerning the effect of the availability of career information upon application rates, very few studies have been done on this subject. Most of the literature concerned preparation and use of career information materials in grade school, and longitudinal studies are not availabe about the users and their career choices. Project INFOE, for example, evaluated how the materials were used by high school students; 70% of the 163 students from thirty schools indicated the INFOE materials, (occupation information microfiche cards stored and used in the school library), helped them select a career, but no follow-up study was available to indicate which programs of study the students eventually selected.

Hardy, in a study conducted among Air Force trainees, attempted to link a priori interests of the students with success in training and later, with success in trade by using an occupational interest inventory scale. The findings supported that a priori identified interests were predictive of success in both training and practice of five trades.[1]

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[1] Hardy, James. A Priori Interests as Predictors of Success in Training. Doctoral Thesis, University of Toronto, 1962.

Concerning whether or not the availability of career information affected withdrawal rates, some of the studies reviewed showed that career information available prior to entry into a program has helped students persist in their chosen programs of study. Most of the studies reviewed reflect the reasons for withdrawal rather than the reasons for persistence in the program, however.

Brooks, for example, in a survey of dropouts from two different colleges (Nova Scotia Teachers' College and State University College, Oneonto, N.Y.) stated:

> "Surely the most pressing reason for students leaving school has to do with their feelings about the worth of the venture when measured against their personal objectives. One outcome of this comparison might be a more careful attempt to aid students to discover their interests and values before they enter college".[1]

Brooks and Emery reported that 29% of the dropouts gave "lack of direction" as their most important reason for leaving, and 39% stated they left because they were "confused about vocational plans".[2]

In a survey of twenty institutions in 1956-1957, Iffert reported that more than 45% of dropouts attributed

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[1] Brooks, W. & Emery, L. "College Dropouts: A view from two Schools" Canadian Counsellor, Volume 8, No. 3, June 1974, p. 150.

[2] Brooks & Emery, Op. Cit., p. 148.

their withdrawal to academic difficulties. The three main categories of reasons for withdrawal in order of importance, were found to be (1) financial, (2) academic and (3) health and family.[1]

In another comprehensive study, Trent and Medsker proposed that motivation to attend college was the most evident feature or characteristic of those students who persisted. Also, persisters were more selective in choosing their colleges and saw more reasons for attending.[2]

In a survey of forty-five nursing students who withdrew by choice from the Vanier College nursing program in Montreal (1973) Minto reported that respondents to a post-withdrawal questionnaire frequently mentioned in their replies that there was a need to have more detailed information in relation to specific content of the program, particularly during the first year.[3] Minto

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[1] Iffert, Robert E. College Applicants, Entrants, Dropouts, 1965 report, U.S. Dept. of Health, Education and Welfare.

[2] Trent, J.W., Medsker, L.L., Beyond High School, 1968, Jossey Boss Inc., San Francisco, p. 126.

[3] Minto, Violet Viyanich. An investigation of reasons for voluntary withdrawal given by former students of the Vanier nursing program, June 1973. Unpublished.

stated that this information could easily have been given to the students during pre-admission interviews. This study suggested, therefore, that career information prior to entry into a program of studies, was important to the success of the student.

1.5. The Hypotheses

The following hypotheses were formulated.

Hypothesis one:

The media productions prepared for this study help fulfill the identified or perceived need for more information on the radiological technologies.

Hypothesis two:

Availability of these productions for applicants and potential applicants will reduce the number of withdrawals.

Hypothesis three:

Showing the productions to high school students will generate more interest in the radiological technologies.

Hypothesis four:

Showing the productions will increase the number of Dawson College applicants for careers in the radiological technologies.

1.6. Rationale for the Hypotheses

Hypothesis one:

As shown by the review of the literature, there was very little information available about the careers in the radiological technologies. The general public is, and was, prior to the making of the productions, often unaware that these professions exist. Patients and patients' relatives, for example, en route through a radiology department often refer to the professionals working there as 'nurses' and doctors.

In 1974, CBC television aired a series of five public information programs on the subject of what services are offered by community hospitals. These were aired in prime time in the Montreal region. One of these programs centered on the services performed by the radiology department. An overview of the services provided through the use of radiology equipment - both diagnostic and therapeutic - and the applications for radionuclides were described as well as the contributions made by various physician-specialists in this branch of medicine. Not one mention was made of the existence or of the role of technicians employed in diagnostic radiology, nuclear medicine, or radiotherapy.

It seems that any contribution to this nearly non-existent bank of information about the radiological

technologies could not but help to achieve a higher level of awareness of these careers and programs of study.

Hypothesis two:

As shown in Table 3 page 11 there are many students who enter the radiological technologies programs but never complete the program. A few of the students are in fact asked to withdraw for academic reasons.[1] No official survey has been done to establish the reasons for voluntary withdrawal from the radiological technologies.

Some nuclear medicine students who withdrew in the course of the 1975 - 1976 academic year gave as their reason that the course load was too heavy. Even brief descriptions of the courses of study and the careers would assist the prospective student in making a more careful and wise choice. Although some of the withdrawal reasons are personal in nature, there is no doubt that a seriously committed student is likely to make every effort to overcome certain personal obstacles and stay in a program of study if he is certain of his career choice.

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[1] Academic regulations allow the full-time student to continue in the program if he has passed 50% of his courses. He must repeat failed courses: there are no supplemental examinations.

The media productions, by outlining the career possibilities and courses as realistically as possible should therefore have helped inform the entrant, who would then be less likely to withdraw, because his expectations did not match the reality of the situation.

Hypotheses three and four:

We have tried to demonstrate that the level of interest in the radiological technologies among high school students and professionals not associated with radiology has been generally low, and although there are no studies to establish how low the level of interest was, prior to showing the productions, it was felt that wide distribution of well-designed media packages would reach a number of previously uninformed viewers, and that this would arouse more interest in the radiology careers.

Logically, high school students cannot apply for a program of study if they have no previous knowledge that such a program exists. Should they select a program merely out of curiosity, or by process of elimination; from a list of career programs offered at Dawson College, for example, they would most certainly want to find out more about the career before proceeding with the application and admission procedures. The admission procedures are so complex that they are almost

guaranteed to discourage the weak of heart.

In creating the media productions, it was hoped that some high school students who had not yet made a firm career choice would at least be given another viable alternative, and, being invited to consider this choice, however briefly, would at least have their interest aroused. The fourth hypothesis is based on the conclusion that this arousal of interest would lead to applications from some persons eligible to apply, but who would not have entertained the possibility of a career in radiology in the absence of information about the careers.

1.7. Significance of the Study

Dawson College is the only anglophone CEGEP offering courses leading to a diploma in radiography, nucleography or radiotherapy. This means that Dawson College is effectively the only manpower source, for the entire province, of anglophone radiology technicians.

Prior to 1969, a number of radiology technicians came to the province of Quebec from other provinces and from other countries which have reciprocity with the Canadian Society of Radiological Technicians. In the 1970's, however, fewer and fewer technicians from other areas have come to Quebec to work because of the French language requirement. Also the Quebec salaries are considerably lower for these health workers than what is curregtly offered in other provinces. This has tended to discourage an influx of trained radiology technicians.

There is an ever-increasing need for radiology technicians, especially since the inception of the provincial health care system.

According to surveys conducted by Dawson College student employment office, only thirteen of all the radiology graduates of 1972, 1973 and 1974 were not either engaged in full time employment or in full time education in late 1974. There was no shortage of jobs for radiology technicians: rather, a shortage of

personnel existed, at least in the anglophone sector.

Availability of the media productions was meant to increase the number of applicants for the radiological technologies and reduce the number of withdrawals from these programs, thus partially filling a real gap in the health manpower sector.

Attendance at a CEGEP is tuition-free for students who are Canadian residents. This means that the cost of the student's education is borne entirely by the taxpayer. The overall cost of post-secondary education in Quebec would probably be reduced with increasingly qualified applicants who persist in CEGEP programs such as the radiological technologies.

A problem experienced by the Dawson College career information office has been to make available to high schools the right amount and kind of information for prospective applicants to all programs offered in the career sector. Often, this means persons selected by the career information office represent the college during career days in the various high schools in and around Montreal. These persons are not necessarily fully conversant with the technologies they represent, and hence have to refer the potential candidates' questions back to the radiological technology department, or ask a department member to attend as many career days

as possible. Additionally, the college operates an annual "open house" and many of the visitors are potential applicants planning to attend the college the following year. The media productions were designed to answer the questions applicants and prospective applicants ask most frequently about these careers.

The making of the productions was considered to be a good idea by a number of viewers not directly associated with the radiology technologies. Hopefully, similar career orientation productions will be produced for other careers, as a result of showing the radiology productions. Since many of the careers offered at Dawson College are still relatively unknown, availability of such productions would be a valuable asset.

Further, after showing these productions to instructors of radiology technologies from areas across Canada, it was brought to the attention of the author that the problem of lack of information about the radiological technologies is evident in other provinces and that there is an inadequate number of qualified applicants in those provinces for radiology technology programs, particularly for nuclear medicine technology.

The productions were designed in two separate parts, part one being applicable to any radiology technology program, and part two being specifically applicable to the Dawson College programs.

Other schools of radiologic technology across Canada may therefore be able to use the first part of these programs for career orientation,[1] adding information specific to their programs for the second part.

The significance of this study therefore rests on the fact that better applicants and more graduates are needed in all radiologic technology options, and that, if, as hypothesized, the productions help increase the number of applicants and reduce the number of withdrawals, a real service will have been provided for both the college and the applicants.

[1]Three requests have already been received for copies of the productions.

CHAPTER II

PROCEDURES

2.1. Samples Who Viewed the Productions

Pilot productions were made late in 1974. These were shown to instructors in the radiological technologies, one guidance counsellor, one media expert, and first and second year students in radiography, radiotherapy and nucleography. These persons were associated with Dawson College and had some familiarity with the programs of study being described.

Their comments were solicited via a questionnaire and also verbally and informally (after viewing the productions), and were used to refine the pilot productions and produce the final documents. The comments and details of how the pilot productions were modified will be found in the section "Design of the Media Productions" below.

All groups who viewed the final productions were asked to evaluate them along some or all of the following lines: (1) content, (2) usefulness, (3) amount and quality of information contained, and (4) quality of the productions.

For the earlier showings, two different questionnaires were used: one for the non-applicants, and one for the applicants. Later, a common questionnaire was used for both groups, and those who were not potential applicants were instructed to omit a certain number of questions on the common questionnaire.

2.1.1. "Expert opinion" group

For purposes of this study the "expert opinion" group was made up of a sample of sixty-one persons who saw the productions in 1975 and filled in the questionnaire. There were ten Dawson College radiological technology instructors, both clinical (hospital-based) and theoretical (college-based); the rest of the instructors (nineteen) saw the productions at a Canadian Society of Radiological Technicians' conference for instructors, held in Winnipeg in June of 1975.

The rest of the expert group was composed of: ten practicing radiology technicians, four parents (visitors to Dawson College "open house"), twelve students from the career sector at Dawson, two guidance counsellors from high schools in the Montreal area, and four other professionals associated with Dawson College, one each from engineering, psychology, nursing and medical laboratory technology.

This particular non-applicant sample was mainly used to verify hypothesis one, and additionally to evaluate the quality of the productions.

2.1.2. Potential applicants

There were four different samples in the potential applicant group: thirty-two grade eleven students, who would be eligible to apply for a program of study at Dawson College for the following September (1976); sixty-three grade ten students and thirty-eight grade nine students. These 133 high school students viewed the productions during career days in their own high schools in Montreal from November 1975 to January 1976. Additionally, a fourth sample of eleven preparatory science students from Dawson College also saw the productions in 1975 in their own classrooms at Dawson College.[1] All these viewers were asked to fill out questionnaires after viewing the productions.

On the questionnaire, thirty-one of the viewers responded that they were planning to attend a CEGEP, and twenty-seven claimed to be prospective applicants for the radiological technologies program of study. These viewers were instructed to answer all questions on the

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[1] Preparatory science students are students taking a make-up year at Dawson College and have not yet made a definite career choice.

questionnaire. Nine of these questions were designed to obtain feedback on how well the potential applicants' questions were answered by the productions. An attempt was made, in the productions, to answer those questions most frequently asked by applicants.

These responses were used to verify hypotheses one, three, and four and additionally to evaluate the quality of the productions.

2.1.3. Potential applicants: "open house" visitors 1975

Another sample was made up of applicants and potential applicants who had previously expressed an interest in the radiological technologies by attending an "open house" at Dawson College, where they visited the radiological technologies display. There were twenty-one such persons who viewed the productions in April 1975. Seventeen of these had already applied to one of the programs of study, one applied after seeing the productions, and two of the others claimed to have become more interested but did not apply.

Of these eighteen applicants, nine were accepted into one of the radiological technologies: six of these are still in the program, three dropped out for a variety of reasons related to course workload; five of the eighteen were refused admission into the program of study because they did not have the prerequisites,

and three of these applied for the preparatory science year at Dawson. Three did not show up for the initial interview, and one changed her mind after the first interview.

This sample was used to verify hypothesis two since some of these viewers entered the program of study in September 1975. It was therefore possible to establish how many of these were still in the program at the end of the first year (June 1976). This sample was also used to verify hypotheses one, three and four.

2.1.4. Potential applicants: "open house" visitors 1976

Another applicant and potential applicant sample was made up of fifteen persons who saw the productions in late January 1976 at a Dawson College "open house". Nine of these viewers were eligible to apply for a program of study beginning in September 1976. Of these, two had already applied and five applied after seeing the productions. As for the sample described in the previous section (2.1.3,) these viewers had already expressed an interest in the radiological technologies by attending the "open house".

For comparison purposes, data was obtained from the Dawson College admissions office concerning the number of applicants for the two other medical technology programs (nursing and medical laboratory

technology) offered in the career sector. Applicants for these programs did not have the benefit of seeing career orientation productions.

A comparison was made of the number of applicants for the years 1974 to 1976 for all three medical technologies, in order to verify hypothesis four.[1]

Finally, the number of entrants and the number of withdrawals were studied for the years prior to showing the productions, for the radiological technologies at Dawson College, in order to test hypothesis two.

[1] Nursing and medical laboratory technology were the only two other medical career programs offered at Dawson College during the years 1974 - 1976.

2.2. Some Problems Encountered in Obtaining the Data

The main problems encountered in collecting the data for this study were due to the CEGEP work stoppages and strikes which affected when and how often the productions could be shown. Dawson College instructors in the career sector occasionally go out to high schools at the request of guidance counsellors and information offices, to give out information about the programs of study in which they teach. There were work stoppages at Dawson College in 1974 - 1975, along with the other CEGEP's and because of this, it was not possible to obtain a large sample of applicants and potential applicants at that time. For the same reason the organization of an "open house" in both the 1975 and 1976 Spring semesters was also made difficult. The 1975 sample was therefore taken in April, a time when most high school students have already made a definite career choice, and therefore it was difficult to say how much the production influenced their career decisions.

Dawson College was also partially closed for much of the Spring semester 1976, and again, comparatively few visits to the high schools were made by the instructors. Simultaneously, the plight of the Quebec health worker was given much publicity in the Montreal press for there were strikes and work stoppages in the hospitals at this

time, and most of these involved the radiological technicians, whether they were unionized or not. The salaries offered in Quebec were approximately $3,000 per annum lower than what was paid in Ontario for the same level of responsibility. According to the Dawson College Department of Radiological Technologies, this situation caused some applicants to withdraw their applications, and at least two students withdrew from the programs of study that year over the question of the low income possibilities.

Additionally, this study has suffered from the absence of control groups. The 1976 "open house" at Dawson was extremely poorly attended and it was in this setting that a control group consisting of visitors to the radiological technologies display area, who did not view the productions, was to be drawn. Fewer than twenty applicants and potential applicants visited the display, however.

Finally, the dramatic drop in the number of applicants at the college for 1976 for all the medical programs has made the pre- and post-treatment (prior to 1975 and after 1975) study difficult, in terms of comparing the number of applicants, which according to hypothesis four should have increased after the productions were made available. Again, the factor

operating to reduce the number of applications appears to be the unrest and strikes in the hospitals in the past year (1976).

2.3. Variables

Hypothesis One:

Independent variable: exposure to media productions.

Dependent variable: (1) expert opinion.

(2) opinion of applicants and potential applicants.

Samples: (1) non-applicants, 61 "experts".

(2) applicants and potential applicants

a) 133 high school students:

32 grade 11 students

63 grade 10 students

38 grade 9 students

b) 11 preparatory science students

c) 21 "open house" visitors, 1975

d) 15 "open house" visitors, 1976

Hypothesis Two:

Independent variable: exposure to the media productions.

Dependent variable: withdrawal rate from radiological technologies, Dawson College.

Samples: 18 applicants and potential applicants who saw the productions prior to their entry into the program of study (1975).

Hypothesis Three:

Independent variable: exposure to media productions.

Dependent variable: responses to interest items on post-view questionnaires.

Samples: (1) 29 high school students

(2) 15 "open house" visitors at Dawson College, 1976

Hypothesis Four:

Independent variable: exposure to media productions.

Dependent variable: number of applicants for the radiological technologies, 1975 and 1976.

Samples: (1) applicants for nursing, medical laboratory technology and radiological technologies at Dawson College 1974, 1975, and 1976.

(2) viewers eligible to apply for radiological technologies:

a) 21 "open house" visitors, 1975

b) 15 "open house" visitors, 1976

c) 32 high school students in grade 11

2.4. Media Productions

2.4. 1. Educational Objectives

The objectives for the three productions were divided into two main categories: (1) to inform the viewer about the careers, (employment opportunities, work settings, professional associations) of radiography, radiotherapy and nucleography, and (2) to show the viewer what steps and procedures are involved in the application-admission process, including a brief description of prerequisites and courses required to complete the program of radiography, radiotherapy, and nucleography at Dawson College.

After seeing the productions, the viewer should come away with a working definition of the three careers described, and be able to initiate and complete the application and admission process, with assistance.

The following items of information were included in all three productions:

Contents of each production

Career information

1. The type of work done by the graduate technician.
2. The usual settings (hospitals, clinics).
3. The special skills involved, and the responsibflities.

4. Some of the specialized apparatus used, when employed in this field.
5. Employment opportunities.
6. Professional memberships and credentials required to practise in the profession, in Quebec and in Canada.

Course and program information with specific reference to the Dawson College programs

1. Hospitals affiliated with the college for each program, and their location.
2. What courses are given and must be successfully completed prior to graduation.
3. Resources and facilities at the college and in the hospitals, for these programs.
4. Approximate size of classes.
5. Length of program.
6. Hospital orientation program.

Application and admission procedures

1. Prerequisites and make-up program.
2. How and where to get additional information.
3. Interview(s).
4. Hospital visit.
5. Health requirements.

The selection of the data to be presented in the productions was made in accordance with Baer's[1] assessment of what items need to be included for effective guidance information. The vast amount of information which could be presented in each production obviously had to be limited, in keeping with Miller's findings that the maximum amount of information that an individual human is able to handle is apparently limited to seven units or bits,[2] unless the individual can group the units in a meaningful fashion.

Since, in each of the three productions, there were less than seven related bits of information per category, it was felt the viewer who was not asked to retain and recall specific skills and information, would be able to handle the amount of information given.

The list of contents presented above was based on a preliminary informal survey conducted among instructors, who regularly interview prospective applicants for careers in the radiological technologies. Based on this abbreviated list, an attempt was made to

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[1] Baer, M.F. & Roeber, E.C., Occupational Information: the dynamics of its nature and use, 1964, Chicago. Science Research Association.

[2] Ball, J. and Byrnes, F.C., Research, Principles and Practices in Visual Communication.

present a production which would meet the following short-term objectives:

(1) arouse the viewer's interest in the careers described;

(2) answer the questions most frequently asked by candidates applying for these careers;

(3) outline the admissions procedures for the Dawson College programs.

The long-term objectives are reflected in the hypotheses and can be summarized as follows: (1) increase the availability of the information about the radiological technologies; (2) increase the number of qualified applicants, and (3) decrease the number of withdrawals.

The second objective above is based on the premise that students cannot apply for a program of study if they do not know it exists. The third long-term objective is based on the assumption that at least some withdrawals were due to the fact that the candidate was uncertain of his choice, or uncertain of the realities and implications of his career choice.

2.4.2. Choice of Medium used for the Productions

The productions were made with 35 mm. color slides and accompanying narration on (cassette) audio tapes, with slide synchronization on the "B track" of the audio tapes to allow automatic change of slides during the presentation.

This medium was chosen for several reasons. First, all three productions describe careers which are changing rapidly. (Some of the slides prepared in 1974 for these productions are already out of date). Minor changes to update the productions can be affected by replacing some of the slides. Major changes may require recording a revised script, but this is less costly and time consuming than replacing an entire 16 mm. film or recording a completely revised TV program, for example. Additional reasons for selecting the slide tape medium can be summarized as follows:

1. Cost: relatively low compared to TV productions and 16 mm. film.
2. Easy to transport and use in any setting.
3. Most projectors can be used with a tape player with slide synchronization feature.
4. Most high schools have the hardware necessary for playback of these productions.
5. May be used by groups or by individuals.

The following were the communication and educational bases for selecting the audio tape/slide combination for the productions:

1. Multiplicity of channels increase communication effectiveness.[1]
2. Color slides permit realistic portrayal through actual photographs of the persons, the work, the tools and the settings.[3]
3. Repetition of important messages possible, as well as use of titles, sub-titles and cues, all elements which make for effective communication.[2]
4. A viewer need not be able to perform a task after viewing the production, rather the viewer's interest needs to be aroused, and he should ideally be able to recall some factual information at a level of partial proficiency.

According to Lonigro[4] the audio/slide combination should meet these needs adequately.

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[1], [2]Ball & Byrnes, Op. Cit.

[3]Chick, Joyce, Innovations in the Use of Career Information, 1970, Houghton Mifflin, Boston.

[4]Lonigro, J.K. & Eschenbrenner, A.J., in Selecting Media for Learning, p. 19.

2.4.3. Design of the Productions

Audio: The narration was done at a rate of 120-150 words per minute. The length of each audio message was kept well under 15 minutes which appears to be the maximum length of time the younger viewer's interest can be held.[1]

Considerable effort was expended to assure that information given or shown would be consistent with reality. Hence, the script was honed carefully to exclude "over-selling"[2] through sensationalism, or over-idealized descriptive passages or photographs. The audio message was designed to be strictly factual.

Secondly, medical and technical jargon, if used, was defined briefly for the listener. At times, other more common words were substituted (e.g. "x-ray picture" for "radiograph"). Certain key phrases were also repeated, particularly in the sections on admissions procedures.

Slides: The photographs were all taken in the actual settings where, for example, (1) applicants are interviewed; (2) classes are given; (3) radiology

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[1] Chick, Joyce. Op. Cit.

[2] Todd, Robert K., "If you teach a trade, tell it 'like it is'.", Canadian Vocational Journal, Vol. 10, No. 2, Aug. 1974.

technicians are employed. Laboratories and apparatus shown are those actually used by the students and their instructors.

Actual patients were not photographed, however, but in most cases, actual students and instructors were photographed.

Some of the photographs were designed to convey impressions, atmosphere and attitudes and were shown in rapid succession. Other, more detailed slides, were not changed as quickly. Some multiple image slides were made to repeat, emphasize, or summarize a certain portion of the information.

Most of the slides were taken with the camera angle consistent with a subjective or viewer position. No cartoons and very few diagrams were used.

The package: Slides, audio tape cassettes, and user's notes together with the Dawson College brochure on Radiological Technologies complete the production packages.

2.4.4. The Pilot Productions

After making pilot productions "What is Radiography"?, "What is Radiotherapy"?, and "What is Nucleography"? in 1974, some changes, as suggested by the viewers, were incorporated. However, the basic format of the presentations remained the same.

These were the viewers' remarks, in reference to the pilot production "What is Radiography"?

1. Radiation protection is not mentioned: this is a question frequently asked by applicants.
2. Salaries are not mentioned. This should be included.
3. Some apparatus shown is obsolete.
4. Pictures of hospitals are shown too rapidly.
5. Audio does not always match the images.

These suggestions were all taken into consideration, with the exception of the suggestion in regard to salaries, in making the final productions. Although salary levels should be mentioned, new salary levels for health workers in Quebec were being discussed and negotiated in 1974-1975 and it was felt that no definite information could be given in the productions.

However, some viewers of the final productions again mentioned that they would have liked to know about the salaries.[1]

Information on radiation protection would have lengthened the productions by a few minutes but it was felt to be an essential piece of information, particularly in the light of growing public concern with radiation hazards.

Pictures of apparatus considered to be obsolete were removed and replaced with up-to-date versions. In order to show pictures of all the ten affiliated hospitals in a short period of time, the pictures were combined on multi-image slides. The audio and visual match was improved wherever possible.

These were the viewers' remarks in reference to the "What is Nucleography"? pilot production:

1. The term nucleography has now been replaced and should be changed to nuclear medicine.
2. Some of the photographs show improper or incorrect technique in the handling of radioisotopes.

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[1] According to several authors surveyed this important item should always be included in guidance information.

3. The pictures do not show a realistic ratio of "in-vitro" to "in-vivo" procedures, and "non-imaging" procedures.[1]
4. The pictures did not show a realistic ratio of male to female technicians.

The last three of the above suggestions were acted upon for the final productions. The in-vivo, in-vitro, and non-imaging terminology was not used in the narration but more photographs of these procedures were included. More photographs of male technicians were included. The "nucleography" term was not changed, since this is the name Dawson College had been using for their program, at the time the productions were made. Photographs showing incorrect technique were replaced with appropriate slides.

There were only minor suggestions for changes in the radiotherapy program. These included:

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[1] IN-VITRO procedures refer to those procedures carried out in a test tube and laboratory, describing the use of the radionuclide procedure as a tool in testing.

IN-VIVO procedures are those examinations where the radionuclide is administered to the patient.

NON-IMAGING procedures are those in which no images are obtained, but laboratory analysis of graphical data and specimens is obtained by the use of detectors outside the patient.

1. Show more pictures of the patient-technician relationships wherever possible.
2. Show more pictures of the students in the hospital environment.

These suggestions were incorporated in the final productions.

There was some controversy among viewers over the use of music. Since the music did not appear to detract from the message, it was not changed in the final productions. An interesting feature of these productions is that part of the audio track, such as the music, can easily be eliminated on playback, by turning down the volume, or erased from the tapes on duplication. The main reason for including the music was to attract attention at the beginning of the message, and to allow reading time of certain slides in the middle of the tapes, and then, to signal the end of the messages at the end of each production.

2.4.5. Production Notes

Some of the photographs (slides) were taken with a Minolta 35 mm. and others with a Nikon 35 mm. camera, using either Kodachrome X or Ektachrome Super X film. A variety of lenses were used, ranging from close-up to wide angle and telephoto. The lens most frequently used was a normal 50 mm. lens. Most pictures were taken on location, at Dawson College, or in the affiliated hospitals in the Montreal area.

Titles and sub-titles were made using the Diazo transfer process. Multi-image slides were produced by combining two or more of the pictures, and using a close-up lens to photograph them. Other than the multi-image slides, no special photographic effects were used.

Audio recordings were made originally on reel-to-reel magnetic tape, and recorded in the Dawson College media resources sound recording studios. They were then duplicated on cassettes. The monaural voice track is recorded on the 'A' track of each cassette. The slide synchronization pulses were recorded on the 'B' track, using a Wollensak tape recorder with slide synchronization feature. Ampex magnetic tape was used. At the beginning of each narration, 30 seconds of music was recorded. A music pause in the middle of the

productions was introduced to allow the viewer to read data on the slides. About twenty seconds of music was inserted at the end of each message, and no background music was used throughout the narration.

2.5. Evaluation of the Productions

The media productions were evaluated to establish whether or not they helped fulfill the perceived need for more information about the radiological technologies (hypothesis one).

Expert opinion was obtained from non-applicants (n = 61) who filled in a questionnaire designed for non-applicants (refer to appendix 1, questionnaire number 1) after they had viewed the productions. Four of the questions on this questionnaire related to viewers' perception or opinion of the content of the production (question numbers 3a, 3b, 3c and 7). Two other questions (question numbers 7 and 8) were asked of the expert group regarding the usefulness of the productions.

The data was summarized and Chi Square analysis was made of the accumulated responses.

Applicants, potential applicants and high school students also had the opportunity to answer questions relating to the content and usefulness of the productions. The questions were optional however, and only those seriously interested in applying to a program of study in the radiological technologies were asked to respond. From a total of 180 viewers in the non-expert category (four samples described previously), an average of forty respondents indicated that they had

questions about the programs of study or the careers of radiography, nucleography or radiotherapy prior to viewing the productions. They were asked to give an opinion as to how well or how poorly their questions were answered by the productions. These responses were summarized and analyzed by Chi Square analysis.

Viewers from all the samples, applicant and non-applicant, expert and non-expert, were asked to evaluate the quality of the productions. A total of 217 responded to this section of the questionnaires. The evaluation of the quality of the productions was done for six aspects relating to both visual and audio effects used in all three of the productions. Chi Square analyses were done for each of the six aspects. Assigning numerical values to the responses a per cent positive value was also taken for each aspect, noting the accumulated responses from all the viewers.

Chi Square analysis was done for withdrawal rates (hypothesis two) from two classes of radiology technician students (class of 1974-1977, class of 1975-1978), and for withdrawal rates of two samples drawn from the Dawson College radiology technology applicants of 1974 and 1975: (1) those who saw the productions prior to entry into the program of study and (2) those who did not see the productions prior to entry.

In testing hypothesis three, in regard to interest generated by the productions, Chi Square analysis was made on the responses to interest-related items on the post-view questionnaires.

To establish whether or not using the productions increased the application rate (hypothesis four), per cent change in number of applicants was compared for medical laboratory technology and nursing (no treatment), and radiological technology applicants (pre- and post-treatment) at Dawson College, over the years 1974 to 1976.

The number of viewers eligible to apply who did apply after viewing the productions was compared with the number who did not apply.

The reliability of the instruments was assessed by computing the Pearson product-moment correlation coefficient following the split-half procedure described by Downie and Heath, Basic Introduction to Statistics.

The items related to interest were not tested for reliability as there were too few questions on the questionnaire related to this category. For the "content and usefulness" items, scores were assigned as follows: +1 for 'yes', -1 for 'no', and 0 for no answer or unrelated answer. Scores were then computed for each respondent in the sample ($n = 61$) using the split-half

method; hence, two scores were obtained for each respondent. The formulas used for computing the reliability coefficient were those recommended by Downie and Heath, as follows:

(1) $r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \, \Sigma y^2}}$ [1]

(2) $r_{tt} = \frac{2r}{1 + r}$ [2]

Using these methods, the "r" for the expert sample (n = 61) for the six items related to usefulness and content was .4886. The r_{tt} was .65645. Using the table for "Values of r for different levels of significance",[3] for 60 df, at a level of significance of .001, the r should be .4078, which places the computed r (.4886) at less than .001 level of significance. This data is reported on Table 7.

To assess the validity of the instrument with reference to the nine items related to information, and to the six items related to quality of the productions (Tables 9 and 10) a random sample of thirty questionnaires

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[1] Downie and Heath, Op. Cit., p. 92 - (Pearson r from the deviation of means).

[2] Downie and Heath, p. 244 - (Spearman-Brown prophecy formula).

[3] Ibid, appendix F, p. 318.

were used. Assigning scores of one to five for the (Likert-type) scaled responses, scores were taken for even and odd-numbered questions on the instruments.

For the nine items related to information, split-half scores were taken and the difference of means computed. The same methods for computing the r were used as for the expert sample. The r in this case was computed as .86, which, for twenty-eight degrees of freedom (n-2), is significant at less than the .001 level.

For the items related to quality of the productions, the answers to six items were used (Table 10) and again, computing the difference of means, as above, for a random sample of thirty respondents, the r value was .88, which for twenty-eight degrees of freedom is significant at less than the .001 level.

This data has been reported on the respective tables, together with the r_{tt} values.

CHAPTER III

RESULTS

3.1. Hypothesis One

The media productions help fulfill the perceived need for more information on the radiological technologies.

Independent variable: exposure to media production

Dependent variable: (1) expert opinion
(2) opinion of applicants and potential applicants

Samples: sixty-one experts and 156 applicants, potential applicants and high school students.[1]

The content of the media productions was evaluated by both experts and applicants, potential applicants and high school students. Four main categories of questions were asked on the post-viewing questionnaires: (1) content, (2) usefulness, (3) information, (4) quality of the production. (Refer to questionnaire number one in appendix one, question numbers 3a, b, c, 7, 8 and 9).

Four questions were asked of the experts regarding the content: i.e., is it (1) realistic, (2) comprehensive,

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[1] refer to section 2.3. (Variables). There were four samples totalling 180 viewers, but only 156 answered the whole questionnaire.

(3) accurate and (4) relevant. Some experts (e.g. parents, some of the students and other professionals) declined to answer some of the questions in this category since they felt unqualified to give an opinion due to lack of knowledge of the professions described in the productions. The other professionals - instructors in the radiological technologies, radiology technicians from all three professions, and guidance counsellors - responded as shown in Table 4.

Two questions were asked of the experts concerning the usefulness of the productions, i.e., (1) would this production help attract the right candidate? and (2) would you or your organization find this production useful? The first question was unfortunately worded in such a way that it presumed a priori knowledge of what is the "right candidate", and so again, some experts declined to answer. The results of the responses to this category are again shown in Table 4, second row. The Chi Square analysis shows that the responses are significantly positive at the .001 level.

Dimension Measured	No. of Questions	Positive Responses		Negative Responses		Other Responses or No Responses		x^2	p = df = 2
		Total	$\bar{X}$ =	Total	$\bar{X}$ =	Total	$\bar{X}$ =		
Content	4	169	42.25	16	4	59	14.75	38.2828	< .001
Usefulness	2	61	30.5	6	3	55	27.5	22.3882	< .001
r = .4886 r_{tt} = .6564		df = 60		p < .001					

TABLE 4

EVALUATION OF PRODUCTIONS BY NON-APPLICANTS FOR CONTENT, APPARENT USEFULNESS

n = 29 instructors (14 from provinces other than Quebec).
10 practicing radiology technicians.
4 parents ("open house" visitors).
12 students in various career programs at Dawson
2 guidance counsellors.
4 from other professions.
61

$\bar{X}$ = mean, of number of respondents who gave a particular answer ("yes", "no", or "other") to each question.

r = split-half correlation

r_{tt} = Spearman Brown reliability coefficient

Table 5 lists nine aspects described in the productions, which are:

1. Type of work.
2. Employment opportunities.
3. Employment - location.
4. Admission prerequisites.
5. Admission procedures.
6. Hospital selection.
7. College facilities.
8. What courses make up the program of study.
9. Level of difficulty of the courses.

These aspects were described, explained or displayed in the productions and correspond closely to the educational objectives of the productions.

The respondents were instructed to indicate which questions they had asked themselves prior to viewing the productions, and, of these, which had been answered and how well by the productions. The number of respondents who had questions about the aspect listed is shown in column two of Table 5. An average of forty respondents had questions about each one of the aspects listed. How well their questions were answered is indicated by the three categories of responses, "not at all", "somewhat", and "well", shown in columns 3, 4 and 5. This part of the study was conducted only for applicants and potential applicants. Chi Square analyses were done for each aspect. With the exception of the "difficulty of courses" aspect,

responses for all questions were significantly positive at the .001 level. Three of the respondents indicated they had questions about salary levels, which were not answered by viewing the productions.

Question	How Questions Were Answered by Production					
	n =	Not at All	Somewhat	Well	x^2	p = df = 2
Type of work	42	4	10	28	22.28	< .001
Employment - opportunities	39	2	10	27	25.0768	< .001
Employment - location	37	3	9	25	20.9785	< .001
Admission - prerequisites	43	2	10	31	31.3095	< .001
Admission - procedures	44	2	11	31	30.059	< .001
Hospital selection	39	2	13	24	18.6152	< .001
College facilities	35	1	16	18	12.407	< .01
What courses	40	1	11	28	27.9569	< .001
Difficulty of courses	41	6	14	21	8.2478	< .02
	$r = .86$ $r_{tt} = .92$		df = 28	p = < .001		

TABLE 5

EVALUATION OF PRODUCTIONS FOR AMOUNT OF INFORMATION BY APPLICANTS, POTENTIAL APPLICANTS AND HIGH SCHOOL STUDENTS.

n = Number of respondents who had questions about that aspect, prior to seeing the production, (according to a post-view questionnaire).

r = split-half correlation

r_{tt} = Spearman-Brown reliability coefficient

Aspect	Responses				x^2 =	p = df = 3	% Positive Responses
	Yes	Somewhat	No	No Answer			n = 61
Images - Aesthetics	39	21	0	1	67.7212	< .001	81.1
	Clear	Somewhat	Unclear	No Answer			n = 12
Images - Clarity *	8	2	2	0	9.33	< .05	66.6
Audio - Comprehensibility	34	17	7	3	37.554	< .001	n = 61 63.9
	Adequate	Too Fast	Too Slow	No Answer			n = 61
Pace	50	5	1	5	106.2785	< .001	77
	Good	Fair	Poor	No Answer			n = 12
Image/Audio Match *	6	4	0	2	3.83	< .001	66.6
	Adequate	Too Short	Too Long	No Answer			n = 61
Length of Production	47	13	0	1	94.999	< .001	66.3

TABLE 6

ASSESSMENT OF QUALITY OF THE PRODUCTIONS BY "EXPERTS" AND NON-APPLICANTS

* these questions were omitted on an earlier questionnaire.

Aspect	Responses			n = 156	x^2 =	p = df = 3	% Positive Responses
Images - Aesthetics	Yes	Somewhat	No	No Answer			
	92	30	26	8	103.07	< .001	60.2
Images - Clarity	Clear	Somewhat	Unclear	No Answer			
	116	12	20	8	204.612	< .001	71.8
Audio - Comprehensibility	115	26	7	8	203.3332	< .001	79.8
Pace	Adequate	Too Fast	Too Slow	No Answer			
	138	8	3	7	335.435	< .001	84.9
Image/Audio Match	Good	Fair	Poor	No Answer			
	104	26	18	8	148.615	< .001	69.2
Length of Production	Adequate	Too Short	Too Long	No Answer			
	85	42	20	9	86.8204	< .001	34.6
	$r = .88$ $r_{tt} = .93$		df = 28 (n -2)		p = < .001		

TABLE 7

ASSESSMENT OF THE QUALITY OF THE PRODUCTION BY THE APPLICANTS, POTENTIAL APPLICANTS AND HIGH SCHOOL STUDENTS

Table 5 shows, then, that the educational objectives were met for most aspects described in the productions. According to the data collected, the productions, on the whole, were judged to be useful, accurate and comprehensive, and, as hypothesized, informative.

The quality of the productions was measured by questions relating to:

1. quality of the images (aesthetic appeal)
2. clarity of the images
3. comprehensibility of the audio
4. pace of narration and images
5. image/audio match
6. length of production

All viewers who filled in questionnaires were asked to indicate their perception of these characteristics. Table 6 summarizes the responses of one sample of viewers i.e., 61 experts and non-applicants. Table 7 summarizes the responses of 156 high school students, applicants and potential applicants. Table 8 compares the responses of these two samples of viewers.

Responses to all the characteristics were positive at the .001 level. Table 8 compares the per cent positive response for both groups.

The final column in Tables 6 and 7 gives a per cent score for the positive responses, based on assigned values for all responses as follows:

+ 2 = positive

+ 1 = somewhat positive

0 = no answer

- 1 = negative

Aspect	Respondents	Summary of Responses				% Positive Responses
		Yes	Somewhat	No	No Answer	
Images - Aesthetics	n_1 = 61	39	21	0	1	81.11
	n_2 = 156	92	30	26	8	60.21
		Clear	Somewhat	Unclear	No Answer	
Images - Clarity	n_1 = 12	8	2	2	0	66.6
	n_2 = 156	116	12	20	8	71.8
Audio - Comprehensibility	n_1 = 61	34	17	7	3	63.9
	n_2 = 156	115	26	7	8	79.8
		Adequate	Too Fast	Too Slow	No Answer	
Pace	n_1 = 61	50	5	1	5	77
	n_2 = 156	138	8	3	7	84.9
		Good	Fair	Poor	No Answer	
Image/Audio Match	n_1 = 12	6	4	0	2	66.6
	n_2 = 156	104	26	18	8	69.2
		Adequate	Too Short	Too Long	No Answer	
Length of Production	n_1 = 61	47	13	0	1	36.3
	n_2 = 156	85	42	20	9	

TABLE 8

COMPARISON OF RESPONSES FROM EXPERTS AND NON-APPLICANTS (n_1) TO APPLICANTS, POTENTIAL APPLICANTS AND HIGH SCHOOL STUDENTS, (n_2) IN ASSESSING THE QUALITY OF THE PRODUCTIONS

The responses for the expert viewers are more evenly distributed from positive to negative than they are for the applicant sample, and this would indicate that they gave fewer positive responses on the whole, and more negative responses, with the exception of the question related to the length of production. Proportionately, then, the experts were more critical of the quality of the productions than the applicant group, which was expected.

The best production characteristics, according to the applicant and potential applicant viewers, appeared to be the pace, the audio comprehensibility and the clarity of the images, in that order. The worst characteristic was the length of the productions. Many viewers felt they were too short. According to the expert opinion sample, the best characteristics were the aesthetic appeal of the images and the pace. The worst characteristic was the audio comprehensibility. It should be noted some expert viewers objected to the music at the beginning and at the end of each audio message, particularly the choice of music. By contrast, high school students and applicants commented on the music favorably. This may account for the difference in the two groups, when rating the effectiveness of the audio track. Moreover, the expert viewers were most of the time forced to view the productions under less than ideal conditions,

i.e., during a convention, for example, while the high school students and potential applicants generally viewed and listened to the productions under more quiet conditions, in a classroom.

3.2. Hypothesis Two

Availability of the career orientation productions will reduce the number of withdrawals from the programs of radiography, nucleography and radiotherapy.

Independent variable: exposure to media production.

Dependent variable: withdrawal rate from the radiological technologies program at Dawson College.

Samples: 18 applicants and potential applicants who saw the productions prior to their entry into the program of study in 1975.

The productions were shown to twenty-one applicants and potential applicants at a Dawson College "open house" in the Spring of 1975. Eighteen of these persons applied and nine were accepted in the program beginning in September 1975.

Table 9 compares the number of candidates who entered the programs of study in 1974, to those who entered in 1975, along with the number who withdrew from the program of study in the course of the first year of the program for both classes of students. Although there were seven more entrants, there were four less withdrawals in 1975 than in 1974. The Chi Square analysis shows the probability of this outcome is $p = 0.5$.

Candidates	Class of 1974 - 77	Class of 1975 - 78
Entered	44	51
Dropped out	18	14
$x^2 = .5$, $p < .50$ for $df = 1$		

TABLE 9

COMPARISONS OF WITHDRAWALS FOR TWO CLASSES OF RADIOLOGY TECHNOLOGY STUDENTS, 1974-77, 1975-78

Note: productions were first shown in 1975.

Table 10 compares the number of entrants to the program in 1975 who did not view the productions and subsequently withdrew, to the number of entrants who saw the productions prior to entry into the program and subsequently withdrew. In this part of the study an attempt was made to measure the effect of the productions in terms of withdrawal rates. The viewer sample (nine) is much smaller in size than the non-viewer sample (forty-two). The withdrawal rates should probably be compared for an entire class of viewers over a period of more than one year. To further validate the study, data should also be obtained concerning reasons for withdrawal. It is not known whether the withdrawals shown here were for academic or personal reasons. Chi Square analysis shows that the outcome has a probability of $p = 0.5$.

On the basis of this information, then, hypothesis two is not supported since showing the productions did not significantly alter the withdrawal rates.

Prior to Entrance	n	Accepted	Withdrew
Viewed Productions	18	9	3
Did not view Productions	110	42	11
$x^2 = .73110$	df = 2	$.30 < p < .50$	

TABLE 10

COMPARISON OF WITHDRAWALS, FOR THOSE WHO VIEWED THE PRODUCTIONS PRIOR TO ENTRY AND FOR THOSE WHO DID NOT VIEW THE PRODUCTIONS PRIOR TO ENTRY, FOR THE CLASS OF 1975

3.3. Hypothesis Three

Showing the productions will generate more interest in the radiological technology programs.

Independent variable: exposure to media production.

Dependent variable: responses to interest items on post-view questionnaires.

Samples: (1) 15 "open house" applicants and potential applicants.

(2) 29 high school students planning to attend a CEGEP who identified themselves as potential applicants for the radiological technologies.

Table 11 shows the level of interest indicated by the respondents, on a post-view questionnaire when answering questions related to the interest generated by the productions.

For n_1 the response pattern is significantly positive at the .001 level. This group was drawn from high school students in the Montreal area who saw the productions during career days in their own high schools. For n_2 a group who had already expressed interest by coming to an "open house" at Dawson College, interest level shown through their responses is significantly positive at the .01 level.

	Became Interested	Not or Less Interested	x^2 =	df = 1, p =
n_1 = 29	27	2	21.55	< .001
n_2 15	13	2	8.06	< .01
x^2 = .4970; .30 < p < .50 for df = 1				

TABLE 11

COMPARISON OF INTEREST GENERATED IN THOSE WHO SAW PRODUCTIONS

n_1 = of 144 high school students answering the questionnaire, 29 indicated they were planning to attend a C.E.G.E.P. and were instructed to answer this question.

n_2 = 15 applicants or potential applicants who already expressed an interest in the career by attending "open house" for radiolo[illegible] at Dawson College.

As hypothesized, the productions generated interest in the radiological technologies.

3.4. Hypothesis Four

Showing the productions will increase the number of Dawson College applicants for careers in the radiological technologies.

Independent variable: exposure to media productions.

Dependent variable: number of applicants for radiological technologies.

Samples: (1) applicants for 1974, 1975, 1976, for nursing, medical laboratory, and radiological technologies at Dawson College.

(2) viewers eligible to apply for radiological technologies 1975, 1976.

Table 12 compares the number of applicants for the three medical technologies or careers offered in the career sector at Dawson College for the years 1974, 1975, and 1976. This table shows that although the number of applicants have dropped off considerably for all three medical career programs, over the three years, the drop off is less for the radiological technologies.

There was a thirty-six per cent increase in the number of applicants from 1974 to 1975 for the radiological technologies, while a decrease of .58% occurred for nursing and 13.6% for medical laboratory.

Program	No. of Applicants for			% Change in Applications 74 - 75	% Change in Applications 75 - 76
	1974	1975	1976		
Medical Laboratory	146	126	100	- 13.6	- 20.6
Nursing	344	342	227	- 0.58	- 33.6
Radiology Technology	94	128	116	+ 36	- 9.3

TABLE 12

COMPARISON OF NUMBER OF APPLICANTS FOR RADIOLOGICAL TECHNOLOGY AND OTHER MEDICAL PROGRAMS OFFERED AT DAWSON COLLEGE FOR THE YEARS 1974, 1975, 1976. (PRODUCTIONS WERE FIRST SHOWN IN 1975)

From 1975 to 1976 there were fewer applicants for all three programs, but the reduction is less for the radiological technologies (9.3%) than for nursing (33.6%) or medical laboratory technology (20.6%).

	Nursing	Medical Laboratory	Radiology Technology
1974-75	- 22	- 20	+ 34
1975-76	-115	- 26	- 12
Totals	-137	- 46	+ 22

TABLE 13

CHANGE IN THE NUMBER OF APPLICANTS FOR NURSING, MEDICAL LABORATORY TECHNOLOGY, RADIOLOGY TECHNOLOGY AT DAWSON COLLEGE, FOR THE YEARS 1974, 1975, 1976

Productions were shown in 1975, to a limited number of applicants and potential applicants for the radiological technologies. No orientation programs were shown to nursing or medical laboratory applicants or potential applicants.

Table 13 indicates that in fact the number of applicants for the radiological technologies increased since 1974 while the numbers decreased for both nursing and medical laboratory technology. These three medical career programs were the only medical programs offered at Dawson College at the time of this study. The figures used for this study were obtained from the Dawson College office of admissions.

The overall drop off in number of applications for the medical careers has been attributed to a number of factors, in particular: (1) the widely publicized hospital strikes over the past year and (2) teacher strikes in the CEGEP's during the Spring of 1976, the period when most of the information dissemination to high schools usually takes place. The drop off for medical laboratory technology from 1975 to 1976 is further attributed to information given to guidance counsellors in high schools regarding the high standards required for entrance in this program of study. The standards have remained the same for the three years, but it was emphasized that the standards are high and this may have discouraged some applications.

Table 14 shows the number of viewers eligible to apply who did apply after seeing the productions. It is not known whether these viewers would have applied in the

absence of treatment, since we do not have a control group available.

However, taking this data together with the fact that production generated interest (Table 14), one can speculate that seeing the productions was perhaps one positive factor in maintaining the rate of applications in comparison with other medical fields.

Viewers	Eligible to Apply	Applied	% Eligible who did Apply
n_1 = 36	11	5	45.5
n_2 = 95	32	9	28.1

TABLE 14

COMPARISON OF NUMBER OF VIEWERS, ELIGIBLE TO APPLY WHO APPLIED AFTER SEEING THE PRODUCTIONS

n_1 = these viewers had already shown an interest in these programs of study by going to an "open house" at Dawson College, for the radiological technology.

n_2 = high school students from grades 9, 10, 11 who saw the programs during "career days" in high school who previously showed no interest in radiological technology.

CHAPTER IV

CONCLUSIONS AND DISCUSSION

The findings of this study led to the following conclusions.

1. The media productions, prepared for purposes of this study helped fulfill a need for more information about the radiological technologies.
2. Most of the applicants and potential applicants for radiology technology programs of study at Dawson College who viewed the productions, found them to be informative. They indicated that the productions helped answer their questions about the program facilities and courses, the admission and application procedures, the employment settings and opportunities.
3. The quality of the productions received favorable or positive ratings by the majority of the viewers, who were asked to evaluate the productions for aesthetic appeal, clarity, comprehensibility, pace and length of the presentations.
4. Availability and use of the productions did not significantly affect the withdrawal rates of students enrolled in the radiology technology programs of

study, during the period 1975 - 1976, when the productions were used.

5. Interest was generated in the radiology technologies, as a result of seeing the productions.

6. While the application rate did not increase, it was reduced significantly less for the radiology technologies for the two years the productions were made available for career orientation, as compared to the number of applicants for nursing and medical laboratory technology, at Dawson College.

The first three conclusions above certainly show that the productions were highly effective and useful. However, the review of literature also shows that so little information is presently available on the Canadian scene for career orientation of high school students contemplating a course of study in the radiology technologies, that one should interpret these findings with caution. The productions were probably well received partly because of the inadequacy of information on this subject. The productions were evaluated by an audience who could not be too critical, in the absence of other career information documents or materials for comparison.

To draw more significant conclusions about the long-range effectiveness and quality of these productions, a comparison with other career orientation documents and their comparative effectiveness would have to be made. However, there is no

question that although the productions did not produce the desired effect in terms of withdrawal rates, and did not dramatically influence the application rates, they were, according to the surveys done, considered to be very useful. The productions and the surveys conducted also produced some valuable side benefits which were not measured or analyzed for this study. One of these benefits concerns the interest which was generated among instructors and administrators from both inside and outside the Dawson College radiological community. Viewers, when asked if they could adapt the productions to the needs of their own programs, began thinking in terms of producing similar documents for the career orientation of their own applicants and potential applicants.

Another benefit to the study was the preparation of the productions which have now been made available and can be used on an on-going basis by the department of radiological technologies to assist future potential applicants and high school students in making career decisions. The documents will have to be updated annually as the technologies described by the productions are rapidly expanding and changing. These changes will be reflected in revised course content, in different facilities and settings for training. Admission procedures and requirements may also change from time to time. The format chosen for these productions makes updating relatively easy.

In interpreting the findings of the study relative to withdrawal and application rates, due consideration must be given to a great number of factors, both obvious and not so obvious. The productions were not necessarily intended for recruitment, but rather, their main objective was to inform. Many of the factors operating to affect application and withdrawal rates are not necessarily related to available information. In the section on procedures, for example, reference was made to the problems encountered in obtaining the data, and these problems no doubt affected the potential student's attitude towards a career in the health technologies. The adverse publicity on salaries, for example, seems to have played an important role in the withdrawal of at least some of the students from the program. Since the application rates for other medical technologies were lowered somewhat dramatically, we can also speculate that some factor not related to career information was operating to affect the overall rate of application during the past two years.

The review of the literature also pointed out that there were many other factors to consider, and that the dropout or withdrawal problem, in particular, is considered by most authors to be an extremely complex problem.

One of the factors affecting withdrawals, which was not mentioned in our study, is that of the academic preparation and background of the average candidate applying

for the radiological technologies. Marks and prerequisite courses have traditionally been used as part of the criteria for selecting candidates for the program. For the radiology technology applicants, however, the selection procedures also involve an appreciation of the applicant's suitability for hospital work, and work with patients. Most interviewers of applicants feel that the field of radiology technology is one where technical expertise and ability to relate to people are equally important. Secondly, the number of students enrolled in the program has obvious funding implications and there is a certain amount of pressure to "fill the quota". When the number of highly qualified applicants is low, the tendency is to try to complete the program's quota with candidates who are less academically qualified, but who have all the personality characteristics for the career, including maturity and motivation. The past academic performance of these candidates, however, may hamper their best efforts, and they eventually drop out of the program because they are unable to meet the academic demands of the first year. There are academic difficulties which even the highly-motivated, well-informed candidate cannot overcome.

Another factor previously mentioned which could have affected application and withdrawal rates is the present status of the radiology technology professional in the province of Quebec. As of 1977 graduates may have to forfeit portability of credentials, since there is a strong movement

afoot to sever ties with the national society of radiology technicians, and to have Quebec graduates certified at the provincial level only. Efforts to arrange for students to write the nationally approved C.S.R.T. (Canadian Society of Radiological Technicians) examinations have been hampered by a number of complications. The C.S.R.T. enjoys reciprocity with a number of countries, and there is total portability of qualifications, from province to province, and country to country. Provincial certification would not permit this portability, and this may have discouraged some non-Quebec residents from applying and staying in the program, especially if they were anticipating practise in another country or province.

There were several shortcomings to this study. First, there was an absence of pre-test information. Pre- and post-view comparisons would have been helpful in assessing the effect on viewer samples and in measuring exactly how much was learned from the productions. This, however, was not a serious limitation, since other pre- and post-view measures were taken, such as application rates. Secondly, the productions were not intended to be used in the teaching of a skill or concept, but rather to generate interest in the radiological technologies.

The study also suffered from lack of control groups. Control groups who did not view the productions would have

been needed to compare withdrawal and application rates. The control groups were to be drawn from the population of "open house" visitors at Dawson College in 1975 and 1976, but, as mentioned earlier, the visitor groups were quite small.

It should also be mentioned that all applicants who are accepted into the radiological technologies undergo a hospital orientation program prior to beginning the first year of classes (and prior to the registration process). Although no studies have been made, the hospital orientation probably accounts for some withdrawals since it is specifically designed to show the prospective student exactly what type of work the radiology technician does. How much effect, compared to the orientation, can the media productions have, with reference to giving the candidate adequate information about the career? A further study should probably be done to measure the number of withdrawals due to the hospital orientation, as opposed to withdrawals which occur during the course of the three years of study, comparing viewers and non-viewers of the career orientation productions.

The limitations and shortcomings surrounding this study invite further research into some of the problems encountered. Perhaps the two most serious problems affecting the success of the radiological technology programs at Dawson College are related to the lack of a sufficient number of qualified applicants and the high failure rate at the level of the national qualifying examinations. These phenomena are no

doubt related to one another. Further research could well point to the fact that something more needs to be done to raise the academic suitability of the applicant. There may also be deficiencies in the present selection procedure, and further studies should be conducted in this area. One of the secondary findings of this study must surely be that providing career information to large numbers of high school students is only part of thesolution to the applicant and withdrawal problems experienced by the radiological technology programs at Dawson College.

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APPENDICES

APPENDIX 1

QUESTIONNAIRE #I

ORIGINAL QUESTIONNAIRE USED FOR NON-APPLICANTS

QUESTIONNAIRE FOR NON-APPLICANTS

Please complete after seeing the program. Fill in one for each program seen.

1. Name of program seen:

   (1) What is nucleography ☐

   (2) What is radiography ☐

   (3) What is radiotherapy ☐

2. Are you a(n):

   Instructor ☐

   Radiographer ☐

   Radiotherapy Technician ☐

   Nuclear Medicine Technician ☐

   Technical Representative ☐

   Other - please specify ☐

3. Please comment regarding the program content:

   (a) is it realistic? _____

   _____

   (b) does it accurately portray the career it describes?

   _____

QUESTIONNAIRE #I - Continued

(c) does it cover most aspects of the profession? _____

_____

of the program (at Dawson College) _____

_____

4. Did you find the images enjoyable?

Very	Somewhat	No

5. How was the length of the production?

Too short	Just right	Too long

6. Was the voice track (audio) easy to understand?

Too fast		Just right		Too slow

Difficult to understand				Easy to understand

7. In your opinion would this program encourage the "right kind of candidate" to apply? _____

_____

8. Would your hospital or organization find it useful to have such a program to show prospective applicants? _____

If not, where would such a program be most useful?

_____

9. Does this program answer most questions you have been or are asked about the profession or program? _____

_____

QUESTIONNAIRE #I - Continued

10. Please make any suggestions for improving the program.

_____

_____

_____

_____

QUESTIONNAIRE #2

ORIGINAL QUESTIONNAIRE USED FOR APPLICANTS OR PROSPECTIVE APPLICANTS

QUESTIONNAIRE for applicants or prospective students viewing information programs on Radiological Technologies.

Thank you for watching the program!

We ask you to fill in this questionnaire immediately after seeing the programs. Your feedback is very valuable. We need your opinion. Thank you for your cooperation.

INSTRUCTIONS: CHECK APPROPRIATE BOXES FOR STATEMENTS WHICH APPLY TO YOU OR WHICH YOU AGREE WITH.

1. Name of program(s) seen:

   (1) What is nucleography? ☐

   (2) What is radiography? ☐

   (3) What is radiotherapy? ☐

2. Before seeing this program, I had applied for:

   ☐ Nucleography

   ☐ Radiography

   ☐ Radiotherapy

3. I was interested but did not apply because:

   ☐ I have not yet completed high school

   ☐ I lack the pre-requisite(s)

   ☐ I did not know enough about the program

   ☐ I was undecided

   ☐ I was not interested in any of these programs

QUESTIONNAIRE #2 - Continued

☐ Other

Prior to viewing the program,

4. I had questions about:

(Check ☐ if you had questions about the following)	The program answered these questions: Check one box per line only.				
	Not at all	Vaguely	Somewhat	Well	Very well
☐ Radiography, nucleography, or radiotherapy, as a career.	☐	☐	☐	☐	☐
☐ Employment advantages, opportunities.	☐	☐	☐	☐	☐
☐ Pre-requisites.	☐	☐	☐	☐	☐
☐ Admission procedures.	☐	☐	☐	☐	☐
☐ Hospital selection.	☐	☐	☐	☐	☐
☐ Courses given within the program.	☐	☐	☐	☐	☐
☐ How difficult/easy the program is.	☐	☐	☐	☐	☐
☐ Type of work I would expect to do when I graduate.	☐	☐	☐	☐	☐
☐ Facilities at the College for studying these courses.	☐	☐	☐	☐	☐

☐ I had no questions.

☐ Other questions.

QUESTIONNAIRE #2 - Continued

5. Did you find the images enjoyable?

Very	Somewhat	No

6. How was the length of the production?

Too short	Just right	Too long

7. Was the voice track (audio) easy to understand?

Too fast		Just right		Too slow

Difficult to understand				Easy to understand

8. Was the program accurate in your opinion?

Yes	Some inaccuracies	No

9. Did seeing this program encourage you to apply? (check only 1 box please)

(a) I wanted to apply but I changed my mind after seeing the program. ☐

(b) I wanted to apply but did not know what option and now I'm more certain of my choices. ☐

(c) I have applied. ☐

(d) I was encouraged to apply for _____ by seeing this program. ☐

QUESTIONNAIRE #2 - Continued

10. (a) Please give your name and address:

_____

_____

_____

_____

(b) are you 1. a high school student? yes ☐

2. a prep-science student? yes ☐

3. a Dawson student? yes ☐

4. Other - please specify:

_____

QUESTIONNAIRE #3

COMMON QUESTIONNAIRE USED FOR BOTH APPLICANTS AND NON-APPLICANTS AND ADOPTED IN JAN. 1975

QUESTIONNAIRE FOR VIEWERS OF RADIOLOGY PROGRAMS

Date: _____ Where and on what occasion did you see the program? _____

1. Please indicate which program you have seen.

   ☐ What is radiography? ☐ What is radiotherapy?

   ☐ What is nucleography, or nuclear medicine?

2. Your present occupation:

   College or C.E.G.E.P. student ☐ What discipline _____

   _____

   High School Student ☐ What grade? _____

   Planning to attend a C.E.G.E.P. in the future? ☐

   Other ☐ Please specify: _____

3. Are you now, or were you, (prior to seeing this program) a prospective applicant for the course of studies described by the program? _____

> If YES, please answer all the questions on this questionnaire.
>
> If NO, please skip questions 4 to 16 and go to question 17.

QUESTIONNAIRE #3 - continued

4. As a result of seeing this program,

I have become interested ☐

I have become more interested ☐

I have become less interested ☐

I am not interested ☐

in taking this course of studies.

Prior to seeing this program I had questions about: (check ✓ if you had questions).

		The program answered these questions (check 1 box per line only):				
		Not at All	Vaguely	Some-what	Well	Very Well
5.	☐ Nuclear Medicine, Radiography, or Radiotherapy as a career - i.e. the type of work.	☐	☐	☐	☐	☐
6.	☐ Employment opportunities.	☐	☐	☐	☐	☐
7.	☐ Prerequisites.	☐	☐	☐	☐	☐
8.	☐ Admission procedures.	☐	☐	☐	☐	☐
9.	☐ Hospital selection.	☐	☐	☐	☐	☐
10.	☐ Courses.	☐	☐	☐	☐	☐

QUESTIONNAIRE #3 - continued

	Not at All	Vaguely	Some-what	Well	Very Well
11. ☐ How difficult/easy the courses are.					
12. ☐ Where I could work as a graduate.					
13. ☐ Facilities at the school/college for giving these courses.					
14. ☐ I had no questions.					

15. I had some questions which were not answered by viewing this program (specify): _____

16. Please give your name and address: _____

QUESTIONS REGARDING PROGRAM PRESENTATION

17. Was the voice (audio) track adequate?

Too fast		Adequate		Too slow

18. Was the audio track easy to understand?

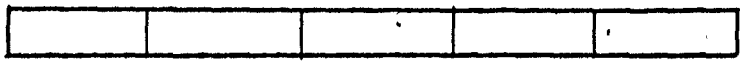
Difficult to Understand				Easy to Understand

19. Did the images and audio track match or complement each other well?

Good Match				Poor Match

20. Did you find the images enjoyable?

Very No



21. Were the images clear?

Clear Unclear

22. How was the length of production?

Too Short Too Long

23. Did you have any further comments regarding the program?

Thank you for taking the time to answer this questionnaire.

APPENDIX 2: COURSES WHICH MAKE UP THE RADIOLOGY TECHNOLOGY PROGRAMS AT DAWSON COLLEGE.

First Semester:	English, Humanities, Human Biology 1, Human Anatomy 1, Applied Microbiology, Introduction to Health Technologies, Electricity and Magnetism.
Second Semester:	English, Humanities, Human Biology 2, Human Anatomy 2, Radiographic Photography, Radiography 1, Optics and Structure of Matter.
Third Semester:	English, Humanities, Radiography 2, Radiographic Anatomy 1, Nursing, Radiobiology and Protection.
Fourth Semester:	Clinical Experience I.
Fifth Semester:	Clinical Experience II.
Sixth Semester:	English, Humanities, Special Procedures, Apparatus and Construction, Radiographic Anatomy 2, Pharmacology.

COURSES WHICH MAKE UP THE RADIOGRAPHY PROGRAM
AT DAWSON COLLEGE (1975).

First Semester:	English, Humanities, Human Biology 1, Human Anatomy 1, Applied Microbiology, Introduction to Health Technologies, Electricity and Magnetism.
Second Semester:	English, Humanities, Human Biology 2, Human Anatomy 2, Radiographic Photography, Optics and Structure of Matter.
Third Semester:	English, Humanities, Apparatus of Radiotherapy, Fundamentals of Nuclear Medicine, Nursing, Radiobiology and Protection.
Fourth Semester:	Clinical Experience I.
Fifth Semester:	Clinical Experience II.
Sixth Semester:	English, Humanities, Dosimetry, Pathology and Treatment, Pharmacology, Properties of Radiation.

COURSES WHICH MAKE UP THE RADIOTHERAPY PROGRAM
AT DAWSON COLLEGE (1975)

First Semester:	English, Humanities, Human Biology 1, Human Anatomy 1, Introduction to Health Technologies, Calculus 1, General Chemistry, Electricity and Magnetism.
Second Semester:	English, Humanities, Human Biology 2, Human Anatomy 2, Statistics, Organic Chemistry 1, Optics and Structure of Matter.
Third Semester:	English, Humanities, Biochemistry 1, Applied Radioisotopes 1, Fundamentals of Nuclear Medicine, Radiobiology and Protection, Nursing.
Fourth Semester:	Clinical Experience I.
Fifth Semester:	Clinical Experience II.
Sixth Semester:	English, Humanities, Biochemistry 2, Applied Radioisotopes 2, Apparatus of Nuclear Medicine, Pharmacology.

COURSES WHICH MAKE UP THE NUCLEOGRAPHY PROGRAM
AT DAWSON COLLEGE (1975)

SCRIPT FOR SLIDE-TAPE PRESENTATION

"What is Radiotherapy"?

Start on slide 1.

(black slide) Music - 30 seconds.

slide 2 ---------- What is Radiotherapy?

slide 3 ---------- The radiotherapy technician is required to use x-rays and other forms of radiation in the treatment of cancers and some non-cancerous conditions

slide 4 ---------- as prescribed and directed by the radiotherapist, a physician who has specialized in this branch of medicine.

slide 5 ---------- Modern radiation therapy is carried out by means of x-ray, radioactive cobalt and

slide 6 ---------- cesium machines, radium,

slide 7 ---------- and several isotopes. In addition to these sources of ionizing radiation many complex drugs and chemicals are being used with increasing frequency for some conditions.

slide 8 ---------- The radiotherapy technicians' responsibilities lie in the day to day application of the treatment prescribed by the radiotherapist and

slide 9 ---------- assisting and caring for the general health and welfare of the patient as well as the maintenance of

slide 10 ---------- accurate records of any treatment that has been given.

slide 11 ---------- There are many aspects to the work apart from the actual treatment so that the radiotherapy technician's working day may involve any of the following activities. Primarily it will be to apply the prescribed treatment.

slide 12 ---------- This will entail positioning the patient, directing the beam of radiation accurately and checking that all the technical factors are correct before

slide 13 ---------- starting the treatment, and observing the patient during this

time since the technician does not stay in the treatment room.

slide 14 ---------- It may be making the calculations required for a particular treatment plan, the

slide 15 ---------- preparation of radium and other radioactive sources,

slide 16 ---------- the preparation of a patient for a clinical examination,

slide 17 ---------- the carrying out of simple nursing procedures, and on occasion working in the operating room.

slide 18 ---------- In addition the radiotherapy technician will ensure that the advice and practical care given to each patient will help to relieve his problems.

slide 19 ---------- All procedures must be carried out quietly, confidently as quickly as is consistent with accuracy and the need of the individual patient.

slide 20 ---------- The qualified radiotherapy technician is a person

slide 21 ---------- in whose technical ability both

doctor and patient have complete confidence upon whom the patient looks to as an encouraging and understanding friend.

slide 22 ---------- Of all the radiological technologies this field requires the closest long term patient contact since the radiotherapy technician will see the

slide 23 ---------- same patient for several visits over a period of months or maybe even years.

slide 24 ---------- The technician must work closely then with both patient, physicians and physicists, as well as other members of the medical profession.

slide 25 ---------- Communication skills are very important.

The technician may also be called to help in some

slide 26 ---------- office procedures, in research and in teaching other hospital personnel. Both men and women are employed in this field.

slide 27 ---------- A radiotherapy technician practices in a hospital large

enough to have a radiotherapy department which is often located near the diagnostic radiology department.

slide 28 ---------- In Quebec in order to practice as a radiotherapy technician you must be registered with the Order of Radiological Technicians of Quebec or with the

slide 29 ---------- Canadian Society of Radiological Technicians. The Dawson College

slide 30 ---------- radiotherapy program is taught in conjunction with two affiliated hospitals. These are the

slide 31 ---------- Montreal General and The Royal Victoria

slide 32 ---------- Hospitals. Because these hospitals are part of the McGill radiotherapeutic program the students of Dawson College have many

slide 33 ---------- resource personnel to help in teaching of speciality courses. The student rotates to both hospitals for clinical practice.

slide 34 ---------- and in this way has a chance to see many different techniques and machines.

slide 35 ---------- At the college the radiotherapy student takes some courses with nucleography and radiography students and others with

slide 36 ---------- science students. In September 1975

slide 37 ---------- the college will accept about fifteen students per year. The student must be prepared to do some studying

slide 38 ---------- on his own, and must learn to use the proper

slide 39 ---------- college and hospital resources during the full three years.

slide 40 ---------- While in the hospital the radiotherapy student, being a member of a small class gets individual attention from various members of the radiotherapy department,

slide 41 ---------- but he is also expected to do much studying and learning on his own as well as with his classmates.

This is what the pattern of study looks like for the three years.

slide 42 ----------

slide 43 ---------- (Music)

slide 44 ----------

After

slide 45 ---------- three years of study and upon successful completion of your courses you will be eligible to write the national qualifying examinations allowing you to become a member of a professional society.

slide 46 ---------- You would then be permitted to practice as a radiotherapy technician in Canada and several other countries.

If you are

slide 47 ---------- interested in radiotherapy you need the following prerequisites. A high school leaving certificate or the equivalent including high school physics, functions and chemistry. If you do not have all these prerequisites it may be possible to take one or two of these at the college during the

summer prior to the first year.

slide 48 ---------- Once you apply at the college you will be given an interview appointment by the radiology technology department.

slide 49 ---------- You must be accepted both by the college and the affiliated hospitals. We will therefore arrange for you to have an appointment at the hospital

slide 50 ---------- so you can spend at least a day there finding out about your chosen career. Finally you will be interviewed

slide 51 ---------- at the hospital by a clinical instructor and perhaps another hospital representative. Should you be accepted there are health requirements to fulfill including a physical examination

slide 52 ---------- and immunizations. You will also be invited to spend two to four weeks

slide 53 ---------- during the summer for hospital orientation. The Dawson portion of this program is offered at the

Selby campus.

slide 54. ---------- Now doubt after seeing this program you will still have many questions. Perhaps some of these may be answered in

slide 55 ---------- the college brochure. Many candidates also have questions regarding the radiation hazards and the protection offered to the personnel employed in this field.

slide 56 ---------- These questions will best be answered by speaking to an instructor in radiotherapy, or by making an appointment to visit a

slide 57 ---------- radiotherapy department in one of the affiliated hospitals.

Music - 30 seconds.

slide 58 ----------

slide 59 ----------

slide 60 ----------

END

APPENDIX #3 - continued

SCRIPT FOR SLIDE-TAPE PRESENTATION

"What is Nucleography"?

Start on slide 1.

(black slide) Musit - 30 seconds.

slide 2 - Title ------- What is Nucleography?

Nuclear

slide 3 ---------- Medicine technology is the newest of the radiological technologies. It is a profession which helps in diagnosis and some treatment of certain diseases. The practice of nuclear medicine involves

slide 4 ---------- using radioisotopes or radiopharmaceuticals purposely selected and given to the patient to help a physician diagnose the patient's illness. A nuclear medicine technologist or technician

slide 5 ---------- works closely with physicians specialized in this field of medicine. For diagnosis, small amounts of radioactivity are used.

slide 6 ---------- The patient is given the material

by mouth or by means of an injection. Once the radiopharmaceutical has been given the patient will be placed under a special camera

slide 7 ---------- and by scanning and counting the course of the material will be traced to the organ under study. Finally, various types of images are displayed and recorded showing the radioactivity

slide 8 ---------- of the organ being examined.

slide 9 ---------- A nuclear medicine technician practices in a hospital which has a nuclear

slide 10 ---------- medicine department usually located near or within the radiology department.

The nuclear medicine technicians' responsibilities

slide 11 ---------- involve caring for and working with patients and/or doing some studies in a labgratory.

slide 12 ---------- In both instances the technician requires precise and meticulous

slide 13 ---------- working habits, and a strong

slide 14 ---------- sense of responsibility. The technician operates fairly complex equipment.

slide 15 ---------- The nuclear medicine technician must know and understand the principles involved in the diagnostic or therapeutic procedures as well as how to do the examination itself and explain to the patient the preparation required for the test.

slide 16 ---------- Communication skills are therefore required since the technician works closely with physicians and other members of the medical profession. The technician must also inspire

slide 17 ---------- confidence in the patient and often reassure him. The technician may also be called to help in some office procedures,

slide 18 ---------- in research and in teaching other hospital personnel.

slide 19 ---------- Both men and women are employed in this field.

In Canada in order to practice nuclear medicine

slide 20 ---------- the technician must be registered with a provincial society or with the Canadian Society of Radiological Technicians

slide 21 ---------- The Dawson College nucleography program is taught in

slide 22 ---------- conjunction with three affiliated hospitals. The Montreal General

slide 23 ---------- Hospital where most of the specialty courses are given

slide 24 ---------- as well as the Jewish General and Royal Victoria hospitals for clinical practice.

slide 25 ---------- The students will rotate throughout these three hospitals during clinical practice. At the college the nucleography

slide 26 ---------- student takes some courses with radiography and radiotherapy students and others with science students.

slide 27 ---------- As of September 1975

slide 28 ---------- the college will accept about ten students per year in this

program. The student must therefore be prepared to do

slide 29 ---------- some studying on his own being a member of a very small class and must learn to use the proper

slide 30 ---------- college and hospital resources during the full three years of his program. This is what the pattern of study looks like for the three years.

Music - 30 seconds.

slide 31 ----------

slide 32 ----------

slide 33 ----------

If you are interested in nuclear medicine you need the following prerequisites

slide 34 ---------- a high school leaving certificate or the equivalent including high school physics, functions and chem study. If you do not have all these requirements it may be possible to take one or two of these at the college during the summer prior to the first year of the program. Once you apply

slide 35 ---------- at the college you will be given an interview appointment by the radiological technology

slide 36 ---------- department. You must be accepted both by the college and the hospital. We will therefore

slide 37 ---------- arrange for you to have an appointment at the hospital so that you can spend at least a day there finding out about your

slide 38 ---------- chosen career. Finally, you will be interviewed at the hospital by a clinical

slide 39 ---------- instructor and perhaps another hospital representative. Should you be accepted there are health

slide 40 ---------- requirements to fulfill including a physical examination and some immunization

slide 41 ---------- tests. You will also be invited to spend two to four weeks during the summer doing hospital orientation.

slide 42 ---------- The Dawson portion of this program is offered at the Selby

campus. No doubt

slide 43 ---------- after seeing this program, you will still have many questions. Perhaps some of these may be answered

slide 44 ---------- in the college's brochure.

slide 45 ---------- Many candidates also have questions regarding the radiation hazards and the protection offered to personnel employed in this field.

slide 46 ---------- These questions will best be answered by speaking to an instructor in nuclear medicine or by making an appointment to visit a nuclear medicine department at one

slide 47 ---------- of the affiliated teaching hospitals.

Music - 30 seconds.

slide 48 ----------

slide 49 ----------

slide 50 ----------

END

SCRIPT FOR SLIDE-TAPE PRESENTATION

"What is Radiography"?

Start on slide 1.

(black slide) — Music - 30 seconds.

slide 2 - Title ---------- What is Radiography?

Radiography is the practice

slide 3 ---------- of carrying out examinations by means of producing images which help a physician to diagnose a patient's illness.

These x-ray examinations are

slide 4 ---------- requested by the patient's physician and interpreted by radiologists who are physicians specialized in this field of medicine. A great many diseases and injuries may be

slide 5 ---------- diagnosed by the use of these x-ray images, called radiographs.

slide 6 ---------- The radiographer, who is also called an

slide 7 ---------- x-ray technologist may carry out the procedure on his own, or he/she may assist a radiologist

during an examination.

slide 8 ---------- During any x-ray examination or procedure, the radiographer must care for the patient. A desire to be of service

slide 9 ---------- to the sick is therefore a requirement for this profession. Examinations are carried out by means of

slide 10 ---------- radiography, fluoroscopy, videorecording and other methods of obtaining images. While many of the examinations

slide 11 ---------- are done for bones and soft tissues, other systems can be examined

slide 12 ---------- as well, for example, parts of the digestive tract, as shown here. For these examinations,

slide 13 ---------- the patient must undergo a special preparation. It is often the responsibility of the radiographer to ensure that the patient receives and carries out instructions.

For the radiographer then

slide 14 ---------- communication skills are essential, since he or she works closely with physicians and other members of the medical profession. The technologist must also inspire

slide 15 ---------- confidence in the patient and often reassure him. Most of the radiographer's daily work entails positioning

slide 16 ---------- the patient so that the part of the body undergoing investigation will show to best advantage. This entails

slide 17 ---------- a thorough knowledge of anatomy and image recording principles. In order to accomplish these positions, the radiographer

slide 18 ---------- uses complex equipment and must make correct exposures to produce useful

slide 19 ---------- images and is responsible for the processing of the resulting films. In addition the radiographer must keep

slide 20 ---------- accurate records of the patient's

identity and examination.

There are many

slide 21 ---------- different kinds of procedures as well as a great variety of radiological apparatus.

slide 22 ---------- It is the radiographer's responsibility to operate the equipment

slide 23 ---------- correctly and to produce accurate images. The radiographer must therefore have precise and meticulous working habits and a strong sense of responsibility. Since x-ray images are produced by the use of potentially harmful radiation, the radiographer must use protective measures for the patient and for himself. Some of these measures

slide 24 ---------- include careful documentation of all exposures, and total accuracy in using the equipment.

As for all

slide 25 ---------- personnel working with radiation, the radiographer wears a device for monitoring radiation.

The device worn by the radiographer in this picture is called a film badge and is shown in the lower left hand corner of the picture.

In the course of the radiographer's training, he is taught

slide 26 ---------- all aspects of radiation protection.

A radiographer, upon successful completion of a prescribed course of studies, will qualify

slide 27 ---------- to become a member of a professional society.

In Canada the Canadian Society of Radiological Technicians is the national organization. As a member of this society, he or she

slide 28 ---------- may work in a hospital, where he will be expected to do some evening or weekend duty.

He may also work in a clinic, where the hours

slide 29 ---------- would be more regular, and where he or she would be expected to

perform extra office duties.
The radiographer's career
slide 30 ---------- is one which is involved both with
people as well as with machines.
Depending on where he/she is
employed, there will be a variety
of work and some opportunities
for career advancement.
The salaries are commensurate with
that of other allied health
professionals. In Canada this
varies somewhat from province to
province.
slide 31 ---------- The Dawson College radiography
program is taught in conjunction
with ten affiliated hospitals.
These are the:
slide 32 ---------- J.G.H.
the M.G.H.
the Q.E.H.
the Q.M. Vet.
the Reddy M.
the R.V.H.
the St. Mary's Hospital
the Sherbrooke Hospital in
Sherbrooke

slide 33 ---------- Beginning in the upper left hand corner of this picture, and going clockwise, are the
R.V. Hospital
J.G. Hospital
St. Mary's Hospital
the Reddy Memorial
the Montreal General Hospital
the Queen Mary Veterans Hospital

slide 34 ---------- This picture shows the entrance to the Queen Mary Veterans and the Q.E. Hospital on the right.

slide 35 ---------- Most students also rotate through the M.C.H. and the Neurological Hospital for some

slide 36 ---------- specialized portions of their clinical practice.

slide 37 ---------- At the college the radiography student takes some courses with nuclear medicine and radiotherapy students and others, with

slide 38 ---------- science students.

The college accepts about forty-five radiography students per year.

During the first year

slide 39 ---------- most courses taken are science subjects along with English and humanities.

slide 40 ---------- The student is also encouraged to visit his hospital frequently.

The radiography laboratories

slide 41 ---------- at the college allow the student to practice some of the theory learned in speciality courses.

Experiments

slide 42 ---------- are carried out on phantoms or objects which have the same thickness and give off the same images as the human subject does.

slide 43 ---------- The program becomes more specialized during the second year. At this time the student also enters the

slide 44 ---------- hospital full time for clinical practice. This is what

slide 45 ---------- the pattern of study looks like for the three years:

slide 46 ----------

slide 47 ----------

slide 48 ----------

Music - 30 seconds.

At the end of the three years of study and upon successful

slide 49 ---------- completion of all the courses, the graduate is eligible to write a qualifying examination. Upon passing this examination he/she is made an R.T. or registered technologist.

This examination is arranged

slide 50 ---------- through the provincial branch of the C.S.R.T., which in Quebec is called the Order of Radiological Technicians of Quebec.

Membership in the C.S.R.T.

slide 51 ---------- and O.R.T.Q. permits the registered member to practice radiography in several countries. Are you interested in studying radiography

slide 52 ---------- at Dawson College? If so, you need the following prerequisites. A high school leaving certificate or the equivalent including high school physics, functions and

slide 53 ---------- chemistry. If you do not have

all the requirements it may be possible to take one or two of these during the summer prior to the first year.

Once you apply

slide 54 ---------- at the college you will be given an interview appointment by the radiology technology department.

An interview will

slide 55 ---------- take place with one or two instructors. Since you must also be accepted by an affiliated teaching hospital, we will

slide 56 ---------- arrange for you to have an appointment at the hospital so that you can spend at least a day there finding

slide 57 ---------- out about your chosen career.

Finally you will be interviewed

slide 58 ---------- at the hospital by a clinical instructor and perhaps other hospital representatives. Should you be accepted

slide 59 ---------- there are health requirements to fulfill, including a physical examination and necessary

slide 60 ---------- immunizations.
You will also be invited to spend two to four weeks during the summer for hospital
slide 61 ---------- orientation, where you will get some preliminary exposure to the career of radiography.
The whole program
slide 62 ---------- as we have described it here as well as the requirements are listed in the Dawson brochure.
Although the admissions procedure
slide 63 ---------- sounds quite complex, every applicant is given documentation which explains each step of the process.
At present the radiography course is given at the Selby Campus of Dawson College.
slide 64 ---------- For further information please call the department of radiological technologies and speak to any staff
slide 65 ---------- member. A personal visit to the radiological technology department or to one of the affiliated hospitals will also be quite

slide 66 ---------- helpful for you.
However, please do call and make an appointment with a clinical instructor before you visit a hospital.

slide 67 ----------

slide 68 ---------- "Music".

slide 69 ----------

slide 70 ----------

END

APPENDIX 4

Users' Guide for the Productions Entitled:

"What is Radiography"?
"What is Nucleography"?
"What is Radiotherapy"?

1. Brief description of the productions

Each production consists of a package containing copies of the Dawson College brochure, 35mm. color slides, and audio tape cassette, users' notes, and script. The music and voice are recorded on track A of each audio tape. Pulses have been recorded on track B to permit automatic change of slides throughout the program. Each production is approximately ten minutes long.

2. Objectives of the productions

These three productions have been prepared for the purposes of career orientation:

1. To describe the career and program of study for radiography, nucleography (or nuclear medicine technology) and radiotherapy as these are given at Dawson College and its affiliated hospitals.
2. To explain the admissions procedures, prerequisites and courses of study for these career programs, as offered at Dawson College.

3. To list the employment opportunities and the settings for training for all three careers.

3. Intended Audiences

1. High school students.
2. Applicants and prospective applicants for the above named programs of study at Dawson College.

4. Equipment Required

Each production may be used as a single unit. For each showing, the following equipment is required:

1. Carousel type 35 mm. slide projector (Kodak) with carousel slide tray is preferable, one for each production. Other projectors with remote-control operation may also be used.
2. Cassette tape player, with slide synchronization feature. Pulses were recorded on a Wollensak tape recorder. In the absence of this type of tape recorder, the tape and slides should be played ahead of showing time, to test the compatibility of the equipment.
3. Appropriate connectors between the tape player and the carousel projector.

The programs may be used for individual viewing, where it would be useful to have headphones, for private listening.

5. Instructions for use

1. If slides are not pre-loaded, load tray in sequence, with colored dot on each slide appearing in upper right hand corner.
2. The slide tray should be placed in the projector.
3. Advance the tray to slide number two position and adjust the image size and focus prior to beginning the program. Reverse the tray to slide number one which is a blank or black slide.
4. Place cassette in the cassette tape player with side A in playback position. Tape should be fully rewound back to "0".
5. Follow manufacturer's instructions for connecting tape player to projector and for playing the audio tape so that the recorded message is heard clearly, and the recorded slide synchronization pulses permit the slide projector to advance as cued.

6. If you are not using a Wollensak tape recorder, it is recommended you run through the program prior to using it to ensure that the slides are changing at the appropriate times. You may check this by using the written script provided with the package.
7. Further information about the careers described, application forms, and details of admission procedures are available from: Dawson College, Department of Radiological Technology.
8. Copies of the current Dawson College brochure is enclosed with the package for the information of those considering applying for one of these programs of study at Dawson College.
9. Production packages are the property of Dawson College, Department of Radiological Technologies and should be returned as soon as possible after use.
10. Loss or damage to the programs or parts of the package should be reported to the Radiological Technology Department.