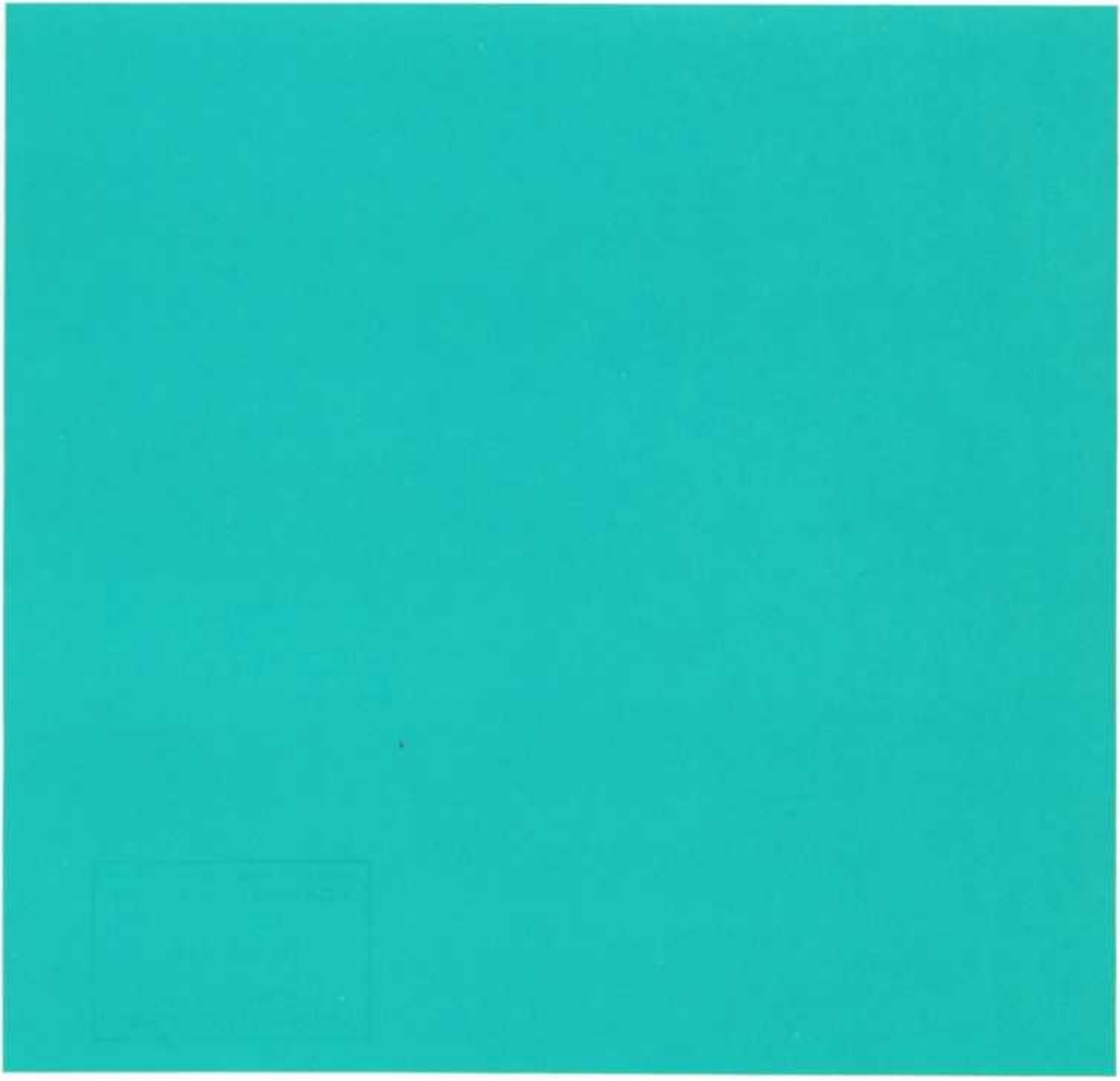
Instructional media in universities of the Atlantic provinces

1972



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INSTRUCTIONAL MEDIA IN UNIVERSITIES OF THE ATLANTIC PROVINCES

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PREFACE

This publication is the first Statistics Canada report on education facilities in Canada. Data on instructional media in universities in the Atlantic provinces are presented, for the reference period January to April, 1972. Data which are provided on media utilization in different disciplines, include statistics on courses, course registrants, hours, types of media, and types of media production.

This education facilities report will be followed by additional publications on media in other regions in Canada, and on pupil transportation. Requests for additional information should be directed to Yvon Fortin, Acting Director, Education Division.

Sylvia Ostry

Chief Statistician of Canada

SYMBOLS

The following standard symbols are used in Statistics Canada publications:

.. figures not available.

... figures not appropriate or not applicable.

— nil or zero.

-- amount too small to be expressed.

p preliminary figures.

r revised figures.

FOREWORD

This survey report presents a statistical profile of instructional media utilization in major universities of the Atlantic region. Specifically, the report provides quantitative data on the types and amounts of media used by discipline or subject-matter areas indicating student involvement and sources of media production. The survey covers the university term January to April, 1972.

This survey is a preliminary venture into a new area of educational statistics on a national scale. The initial undertakings in the Atlantic region and Ontario (now in progress) serve as an orientation and a guide to the development and improvement of the survey tools for more refined data collection on this topic.

The survey has certain limitations which data users should consider in their evaluation and application of findings. The 20% sampling fraction of university teachers provided limited subject-matter representation once the non-response factor was taken into account. Therefore the objective of quantifying media utilization for all subject-matter departments was not possible. However, returns for certain departments did warrant this level of tabulation. Another limitation is that the survey did not include universities and colleges with less than 100 full-time teachers.

Although no attempt was made to evaluate the qualitative aspects of the instructional materials or the technology of instructional application, it is hoped that the available quantitative statistics will provide a valuable information service on the media for data users in the Atlantic Provinces. Further, when followed by similar surveys in other regions, inter-regional comparisons will be possible in the context of a national profile.

In addition to the current media utilization survey, Statistics Canada has tentative plans to conduct surveys on: the identification of types and quantities of stored media resources; characteristics of inter-campus media exchange; production facilities; and on-campus dissemination systems. Such information would be valuable in providing a comprehensive statistical picture of educational technology in Canadian Universities.

This study was conducted by the Facilities Section, Education Division, under the direction of Wallace Roberts and Louis A. Lefebvre. Valuable assistance was provided by Dr. David Dodds and Gary Davidson of the Methodology and Systems Branch. While space does not permit a proper acknowledgement to the many other people whose time and knowledge was devoted to the preparation of the survey and the report, reference must be made to the generous co-operation and assistance provided by university officials. In addition, the vital contribution of faculty members in completing the questionnaire is particularly appreciated.

Yvon Fortin
Acting Director
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SURVEY METHODOLOGY

The population to be sampled was defined to be all full-time academic staff members (excluding those on leave of absence) of the nine institutions in the Atlantic provinces employing over 100 full-time academic staff members in the 1971-72 school year. The sampling frame was based on lists obtained from these nine institutions in response to a survey conducted on the characteristics of full-time academic staff in Canadian universities and colleges (names of staff members were not collected in this survey). Any staff members on leave of absence during the 1971-72 school year were not included in the sampling frame. Also the sampling frame was ordered by faculty and department within each institution to ensure that a representative cross-section would be selected.

For each institution the sample consisted of two replicates systematically selected without replacement, the sampling interval in each replicate being 10. Thus the overall sampling fraction was 1 in 5, or 20%. The sample selection procedure was as follows:

For each institution two different random numbers lying between 01 and 10 inclusive were selected. Suppose, for example, the two numbers chosen for a particular institution were 03 and 07. Then the third staff member on that institution's sampling frame list and every tenth staff member thereafter would be selected (i.e. 03, 13, 23, etc.), thus, forming replicate 1. Similarly, the seventh staff member and every tenth staff member thereafter would be selected (i.e. 07, 17, 27, etc.), forming replicate 2.

As the names and addresses of the selected staff members were not available, the questionnaires, with the selected identification numbers coded on them, were mailed to each institution where the corresponding names and addresses were indicated on the envelopes prior to distribution via the institution's internal mail service.

Since the questionnaires were not distributed until the early part of April 1972, time for a thorough follow-up procedure was not available. However, reminder cards were mailed to each institution where they were addressed and distributed to the non-respondents in an effort to solicit their participation in the survey.

Certain questionnaires received were not usable for tabulation purposes as key data items were not answered. However, the usable questionnaires were edited prior to manual tabulation of the data items.

The total sample size for all nine institutions was 501. The amount of sample non-response varied for each institution, however, overall the sample non-response was approximately 45%. Some allowance for this non-response has been made in the estimation procedure appearing in Appendix A.

DEFINITION OF TERMS

The following terms are explained in order to facilitate their correct interpretation for the purposes of this survey.

MEDIA: "Media" refers to the types of instructional resources listed in the questionnaire: Transparencies, slides, filmstrips, film cassettes, 8mm film, 16mm film, video tapes, video cassettes, records (discs), audio tapes, and audio cassettes.

UNIT: "Unit" or "media unit" refers to each individual piece of instructional media material, e.g., a 16mm film is a "unit", an overhead transparency is one "unit".

SEMESTER: The academic teaching period from January to April 1972.

DISCIPLINE: A branch of knowledge or instruction comprised of related subject-matter departments. Eight major disciplines were associated with this survey: Education, Fine and Applied Arts; Humanities and Related; Social Sciences and Related; Agricultural and Biological Sciences; Engineering and Applied Sciences; Health Professions and Occupations; and Mathematics and the Physical Sciences.

DEPARTMENT: An administrative unit associated with the management of related subject matter courses.

COURSE: This survey did not differentiate between full and half courses because media utilization was measured as a percent of actual teaching time for the academic period January to April 1972.

COURSE REGISTRANTS: The number of students registered in the courses reported. It should be noted that the total number of course registrants in all courses offered by an institution may be four or five times larger than the total institution enrolment.

CLASSROOM TEACHING: Regularly scheduled teaching activity that can take place in a regular classroom and does not require special built-in equipment tailored to meet specific needs.

LABORATORY ACTIVITIES: Regularly scheduled teaching-learning activities that take place in a special classroom provided with special built-in equipment, for student participation in learning activities involving scientific experimentation and other experiences. Examples are chemistry, biology, physics and language laboratories.

OBSERVATIONS

The main objective of this report is to provide users with basic current regional data, documented and tabulated in such a manner as to permit an observation of the regional utilization patterns by discipline and where possible, by subject-matter departments.

This survey report does not attempt to provide a comprehensive analysis or an evaluation of the instructional media. This would be best performed when the various regional surveys are synthesized on a national scale.

The complete data base is provided in Table 1, parts "A" to "I", disaggregated by the 8 major disciplines (Education; Fine and Applied Arts; Humanities and Related; Social Sciences and Related; Agricultural and Biological Sciences; Engineering and Applied Sciences; Health Professions and Occupations; Mathematics and the Physical Sciences). Additional tables summarize the total discipline and provide key statistical extrapolations.

Some of the statistical patterns and highlights of the survey are provided below.

Table 1A to I

These tabulations give a general picture of the media activity in each discipline: data on courses, course registrants, hours and the various types of media units are tabulated by source of production.

By examining table 1(A), we notice that 51.6% of all courses, in all disciplines, reported some type of media utilization. Similarly, 58.7% of all course registrants are exposed to media.

Education, Health Professions and Occupations, Fine and Applied Arts are the three disciplines which are the greatest users of instructional media in terms of the percentage of actual number of courses using media. Between 60% and 70% of the courses in these disciplines had some form of media used in the teaching presentation. However, although a discipline may have a high percentage of its courses using media it may have fewer hours of media use per course and vice versa. Such observations can be gleaned from table 4.

Table 1 parts "A" to "I" enables the user to derive many other combinations of data than are presented in this survey report. This, then, is the prime reason for including the data bank tables since it is felt that no fixed set of tabular arrangements can meet the complete range of data user needs.

Table 2

This table presents a statistical view of the percentage of each type of media used by the various disciplines. For example, it indicates those disciplines where transparencies, slides, and films are used most. One finds that the greatest use of transparencies is associated with the Social Sciences, and that the use of audio tapes occurs mainly in the Humanities because of their extensive use in language labs.

In terms of hours of use, transparencies ranked highest when aggregrated for all disciplines. Audio tapes and 16mm films held second and third place respectively as the types of media having the highest concentration of media usage expressed in terms of hours. The newer media materials, as could be expected, are low in terms of hours of use and their usage is dispersed throughout the disciplines.

Table 3 A and B

These tables indicate media utilization within disciplines and selected departments. It represents an attempt to illustrate the relative importance, in terms of hours of utilization, of each type of media within a given discipline or department. For example, in Education, video-tape is the most commonly used type of media while in Engineering and Applied Sciences, transparencies are used most. One notes the great popularity of transparencies in Science oriented courses. They account for at least 40% of the time allocated to media by these disciplines.

Part B provides a more detailed presentation of the data through a breakdown tabulation of selected departments within a discipline. One can notice that the traditional media formats, i.e. transparencies, 16mm film slides (silent) and filmstrips, are common to most of these departments. Records (discs), audio tapes and 16mm films represent a substantial percentage of media use in hours, particularly in the subject matter departments of the Humanities and Social Sciences.

Table 4

The media utilization totals per discipline may be more meaningful when viewed in the context of the total number of teaching hours per discipline. For example, Table 3 provides the total number of hours in the Education discipline which is devoted to media presentation. In table 4, these totals are compared with the total number of teaching hours in the discipline thus becoming a better criterion for evaluating media usage. In Education, media presentation accounts for 19% of the total number of teaching hours.

Education and Fine and Applied Arts are the two disciplines that account for the greatest use of media as a percentage of total teaching time. Mathematics and the Physical Sciences is the discipline which makes the least use of media in this context. However, in respect to this discipline, an examination of table 3 (B) will show that approximately half of the media hours used were associated with the Geology courses, where nearly 20% of the teaching time took the form of media presentation.

This table incorporates a comparison of the total number of course registrants for the various disciplines, and selected departments, with the total number of course registrants exposed to media. For example, in Agricultural and Biological Sciences nearly 91% of the course registrants were exposed to media while in Mathematics and the Physical Sciences only 36% were exposed. The average for all disciplines was 59%. Within a specific discipline large differences may appear between two departments. In the case of Chemistry and Geology within Mathematics and the Physical Sciences, 46.8% and 93.9% respectively of course registrants were exposed to media.

Chart 1

This chart illustrates the percentage of course registrants exposed to media in comparison with the total number of course registrants for each discipline. The numeric values for this chart are presented in table 4.

Table 5

Table 5 presents a comparative picture of the average number of course registrants in courses using media with those in courses where media is not used. Generally, in courses where media are used, the number of course registrants is substantially greater than in courses where media is not used. This appears to be true for most disciplines with the exception of Mathematics and the Physical Sciences. "Course registrants media use ratio" column indicates this clearly with a high of 6.00 for Agricultural and Biological Sciences, a low of 0.97 for Mathematics and the Physical Sciences, and an average of 1.35 for all disciplines.

Table 6

This table presents the number and type of media units produced with or by university media services for each discipline. With respect to the number of units produced, transparencies and slides account for more than 75% of total production. There appears to be a direct relationship between the type of materials produced by media centres and the materials most commonly used by all disciplines.

Chart 2

This chart illustrates the source of media production on university campuses. It gives a comparative picture of the relative importance of each type of production for each discipline. Table 1 provides more specific details by source of production in terms of units and hours for each discipline.

Conclusion

Hopefully these observations will have served the purpose of introducing the data. We wish to emphasize that upon the establishment of a data bank for all regions a more comprehensive and complete analysis of media utilization can be achieved.

TABLE 1A. Media Utilization by Type and Source of Production, All Disciplines

(i) Total No. of courses 5,551
(ii) Total No. of course registrants 205,030
(iii) Total No. of courses using media 2,862 as a percentage of (i) 51.6%
(iv) Total No. of course registrants in courses using media 120,426
... as a percentage of (ii) 58.7%
(v) Total No. of hours (for courses using media) 154,636
(vi) Total No. of hours (for all courses) 294,794

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	53,155	11,641	6,665	2,730	7,816	82,007	7,672
2. Slides (silent)	31,433	12,311	3,428	9,813	9,101	66,086	1,888
3. Slides (sound)	–	–	–	1,230	–	1,230	31
4. Filmstrips	108	38	20	377	651	1,194	667
5. Film cassettes	40	–	–	502	644	1,186	797
6. Films 8mm (on projector)	162	232	40	212	334	980	829
7. Films 16mm (on projector)	49	248	–	1,543	2,880	4,720	3,807
8. Films (on CCTV)	14	54	15	–	–	83	31
9. Video tapes	660	593	847	90	115	2,305	1,602
10. Video cassettes	–	35	–	43	5	83	42
11. Records (discs)	214	143	15	406	9,300	10,078	2,089
12. Tapes (audio)	4,380	959	2,386	1,092	2,571	11,388	6,005
13. Audio cassettes	252	135	25	41	213	666	486
Totals	90,467	26,389	13,441	18,079	33,630	182,006	25,946

TABLE 1B. Media Utilization by Type and Source of Production, for Education

(i) Total No. of courses	490
(ii) Total No. of course registrants	19,190
(iii) Total No. of courses using media 340 as a percentage of (i)	69.4%
(iv) Total No. of course registrants in courses using media	14,715
... as a percentage of (ii)	76.7%
(v) Total No. of hours (for courses using media)	13,846
(vi) Total No. of hours (for all courses)	20,104

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	7,755	925	650	–	830	10,160	679
2. Slides (silent)	2,155	–	1,850	1,000	180	5,185	71
3. Slides (sound)	–	–	–	10	–	10	5
4. Filmstrips	90	–	20	145	360	615	306
5. Film cassettes	30	–	–	160	90	280	85
6. Films 8mm (on projector)	15	–	40	80	160	295	208
7. Films 16mm (on projector)	20	75	–	315	829	1,239	756
8. Films (on CCTV)	–	–	–	–	–	–	–
9. Video tapes	481	260	200	5	110	1,056	843
10. Video cassettes	–	35	–	15	5	55	28
11. Records (discs)	–	–	–	–	318	318	347
12. Tapes (audio)	33	75	370	115	223	816	448
13. Audio cassettes	10	–	–	–	35	45	20
Totals	10,589	1,370	3,130	1,845	3,140	20,074	4,796

TABLE 1C. Media Utilization by Type and Source of Production for Fine and Applied Arts

(i) Total No. of courses	165
(ii) Total No. of course registrants	2,782
(iii) Total No. of courses using media 110 as a percentage of (i)	66.7%
(iv) Total No. of course registrants in courses using media	1,884
... as a percentage of (ii)	67.7%
(v) Total No. of hours (for courses using media)	6,838
(vi) Total No. of hours (for all courses)	11,398

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	2,987	991	733	–	–	4,711	289
2. Slides (silent)	–	–	–	–	–	–	–
3. Slides (sound)	–	–	–	–	–	–	–
4. Filmstrips	–	–	–	–	40	40	30
5. Film cassettes	–	–	–	–	–	–	–
6. Films 8mm (on projector)	100	60	–	–	–	160	159
7. Films 16mm (on projector)	29	40	–	–	–	69	97
8. Films (on CCTV)	–	–	–	–	–	–	–
9. Video tapes	–	–	–	–	–	–	–
10. Video cassettes	–	–	–	–	–	–	–
11. Records (discs)	142	43	–	–	7,175	7,360	795
12. Tapes (audio)	561	–	396	–	–	957	568
13. Audio cassettes	–	57	–	–	–	57	99
Totals	3,819	1,191	1,129	–	7,215	13,354	2,037

TABLE 1D. Media Utilization by Type and Source of Production, for Humanities and Related

(i) Total No. of courses	1,524
(ii) Total No. of course registrants	46,329
(iii) Total No. of courses using media 752 as a percentage of (i)	49.3%
(iv) Total No. of course registrants in courses using media	24,309
... as a percentage of (ii)	52.5%
(v) Total No. of hours (for courses using media)	34,558
(vi) Total No. of hours (for all courses)	71,822

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	996	1,800	–	886	–	3,682	281
2. Slides (silent)	14,837	1,342	750	3,085	4,932	24,946	485
3. Slides (sound)	–	–	–	720	–	720	18
4. Filmstrips	–	10	–	120	–	130	93
5. Film cassettes	–	–	–	–	–	–	–
6. Films 8mm (on projector)	23	5	–	–	–	28	17
7. Films 16mm (on projector)	–	10	–	100	193	303	306
8. Films (on CCTV)	–	–	15	–	–	15	15
9. Video tapes	–	–	–	15	–	15	4
10. Video cassettes	–	–	–	–	–	–	–
11. Records (discs)	72	100	–	214	1,231	1,617	714
12. Tapes (audio)	664	570	20	941	2,031	4,226	4,877
13. Audio cassettes	97	50	20	41	85	293	216
Totals	16,689	3,887	805	6,122	8,472	35,975	6,026

TABLE 1E. Media Utilization by Type and Source of Production for Social Sciences and Related

(i) Total No. of courses	1,415
(ii) Total No. of course registrants	69,584
(iii) Total No. of courses using media 690 as a percentage of (i)	48.8%
(iv) Total No. of course registrants in courses using media	38,268
... as a percentage of (ii)	55.0%
(v) Total No. of hours (for courses using media)	32,962
(vi) Total No. of hours (for all courses)	62,770

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	13,847	3,348	474	150	3,246	21,065	2,687
2. Slides (silent)	477	178	–	2,510	1,560	4,725	233
3. Slides (sound)	–	–	–	–	–	–	–
4. Filmstrips	18	–	–	–	61	79	43
5. Film cassettes	–	–	–	–	–	–	–
6. Films 8mm (on projector)	–	–	–	71	174	245	152
7. Films 16mm (on projector)	–	5	–	164	1,006	1,175	1,257
8. Films (on CCTV)	–	–	–	–	–	–	–
9. Video tapes	151	188	288	70	5	702	572
10. Video cassettes	–	–	–	–	–	–	–
11. Records (discs)	–	–	–	80	576	656	176
12. Tapes (audio)	3,091	298	1,600	23	317	5,329	1,067
13. Audio cassettes	20	–	5	–	93	118	63
Totals	17,604	4,017	2,367	3,068	7,038	34,094	6,250

TABLE 1F. Media Utilization by Type and Source of Production, for Agricultural and Biological Sciences

(i) Total No. of courses	280
(ii) Total No. of course registrants	11,655
(iii) Total No. of courses using media 177 as a percentage of (i)	63.2%
(iv) Total No. of course registrants in courses using media	10,583
... as a percentage of (ii)	90.8%
(v) Total No. of hours (for courses using media)	13,597
(vi) Total No. of hours (for all courses)	20,847

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	4,617	708	500	–	854	6,679	667
2. Slides (silent)	3,340	3,250	750	–	1,150	8,490	235
3. Slides (sound)	–	–	–	–	–	–	–
4. Filmstrips	–	–	–	–	175	175	120
5. Film cassettes	10	–	–	30	360	400	291
6. Films 8mm (on projector)	–	–	–	5	–	5	5
7. Films 16mm (on projector)	–	75	–	10	415	500	333
8. Films (on CCTV)	–	–	–	–	–	–	–
9. Video tapes	–	–	–	–	–	–	–
10. Video cassettes	–	–	–	–	–	–	–
11. Records (discs)	–	–	15	–	–	15	15
12. Tapes (audio)	–	–	–	–	–	–	–
13. Audio cassettes	–	–	–	–	–	–	–
Totals	7,967	4,033	1,265	45	2,954	16,264	1,666

TABLE 1G. Media Utilization by Type and Source of Production, for Engineering and Applied Sciences

(i) Total No. of courses	313
(ii) Total No. of course registrants	6,910
(iii) Total No. of courses using media 152 as a percentage of (i)	48.6%
(iv) Total No. of course registrants in courses using media	4,984
... as a percentage of (ii)	72.1%
(v) Total No. of hours (for courses using media)	9,049
(vi) Total No. of hours (for all courses)	17,384

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	5,920	585	2,028	39	–	8,572	757
2. Slides (silent)	6,966	–	78	–	624	7,668	263
3. Slides (sound)	–	–	–	–	–	–	–
4. Filmstrips	–	–	–	–	–	–	–
5. Film cassettes	–	–	–	78	94	172	95
6. Films 8mm (on projector)	24	–	–	–	–	24	12
7. Films 16mm (on projector)	–	–	–	152	203	355	245
8. Films (on CCTV)	–	–	–	–	–	–	–
9. Video tapes	–	–	359	–	–	359	125
10. Video cassettes	–	–	–	–	–	–	–
11. Records (discs)	–	–	–	–	–	–	–
12. Tapes (audio)	31	–	–	–	–	31	16
13. Audio cassettes	125	–	–	–	–	125	86
Totals	13,066	585	2,465	269	921	17,306	1,599

TABLE 1H. Media Utilization by Type and Source of Production, for Health Professions and Occupations

(i) Total No. of courses	457
(ii) Total No. of course registrants	19,236
(iii) Total No. of courses using media 310 as a percentage of (i)	67.8%
(iv) Total No. of course registrants in courses using media	15,219
... as a percentage of (ii)	79.1%
(v) Total No. of hours (for courses using media)	17,143
(vi) Total No. of hours (for all courses)	21,787

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	2,454	3,023	1,280	955	64	7,776	798
2. Slides (silent)	420	7,366	–	893	255	8,934	337
3. Slides (sound)	–	–	–	–	–	–	–
4. Filmstrips	–	28	–	112	–	140	70
5. Film cassettes	–	–	–	–	–	–	–
6. Films 8mm (on projector)	–	–	–	56	–	56	42
7. Films 16mm (on projector)	–	28	–	428	52	508	317
8. Films (on CCTV)	14	54	–	–	–	68	16
9. Video tapes	28	145	–	–	–	173	58
10. Video cassettes	–	–	–	28	–	28	14
11. Records (discs)	–	–	–	112	–	112	42
12. Tapes (audio)	–	–	–	13	–	13	13
13. Audio cassettes	–	28	–	–	–	28	2
Totals	2,916	10,672	1,280	2,597	371	17,836	1,709

TABLE 1I. Media Utilization by Type and Source of Production, for Mathematics and the Physical Sciences

(i) Total No. of courses	907
(ii) Total No. of course registrants	29,344
(iii) Total No. of courses using media 331 as a percentage of (i)	36.5%
(iv) Total No. of course registrants in courses using media	10,464
... as a percentage of (ii)	35.7%
(v) Total No. of hours (for courses using media)	26,643
(vi) Total No. of hours (for all courses)	68,682

Types of media materials used (software)	Number of units						No. of hrs. used this semester
	Produced by teacher	Produced with or by university media services	Produced by students	Produced by other teaching institution	Other	Total units	
	1	2	3	4	5	6	7
1. Transparencies	14,579	261	1,000	700	2,822	19,362	1,514
2. Slides (silent)	3,238	175	–	2,325	400	6,138	264
3. Slides (sound)	–	–	–	500	–	500	8
4. Filmstrips	–	–	–	–	15	15	5
5. Film cassettes	–	–	–	234	100	334	326
6. Films 8mm (on projector)	–	167	–	–	–	167	234
7. Films 16mm (on projector)	–	15	–	374	182	571	496
8. Films (on CCTV)	–	–	–	–	–	–	–
9. Video tapes	–	–	–	–	–	–	–
10. Video cassettes	–	–	–	–	–	–	–
11. Records (discs)	–	–	–	–	–	–	–
12. Tapes (audio)	–	16	–	–	–	16	16
13. Audio cassettes	–	–	–	–	–	–	–
Totals	17,817	634	1,000	4,133	3,519	27,103	2,863

TABLE 2. Utilization of Each Type of Media, by Discipline

	Trans-parencies		Slides (silent)		Slides (sound)		Filmstrips		Film cassettes		Films 8mm (on projector)		Films 16mm (on projector)	
	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%
1. Education	679	8.9	71	3.8	5	16.1	306	45.9	85	10.7	208	25.1	756	19.9
2. Fine and applied arts	289	3.8	–	–	–	–	30	4.5	–	–	159	19.2	97	2.5
3. Humanities and related	281	3.6	485	25.7	18	58.1	93	13.9	–	–	17	2.1	306	8.1
4. Social sciences and related	2,687	35.0	233	12.4	–	–	43	6.5	–	–	152	18.3	1,257	33.0
5. Agricultural and biological sciences	667	8.7	235	12.4	–	–	120	18.0	291	36.5	5	0.6	333	8.8
6. Engineering and applied sciences	757	9.9	263	13.9	–	–	–	–	95	11.9	12	1.4	245	6.4
7. Health professions and occupations	798	10.4	337	17.8	–	–	70	10.5	–	–	42	5.1	317	8.3
8. Mathematics and the physical sciences	1,514	19.7	264	14.0	8	25.8	5	0.7	326	40.9	234	28.2	496	13.0
Totals	7,672	100.0	1,888	100.0	31	100.0	667	100.0	797	100.0	829	100.0	3,807	100.0

	Films (on CCTV)		Video tapes		Video cassettes		Records (discs)		Tapes (audio)		Audio cassettes	
1. Education	–	–	843	52.7	28	66.7	347	16.6	448	7.5	20	4.1
2. Fine and applied arts	–	–	–	–	–	–	795	38.1	568	9.4	99	20.4
3. Humanities and related	15	48.4	4	0.2	–	–	714	34.2	3,877	64.6	216	44.4
4. Social sciences and related	–	–	572	35.7	–	–	176	8.4	1,067	17.7	63	13.0
5. Agricultural and biological sciences	–	–	–	–	–	–	15	0.7	–	–	–	–
6. Engineering and applied sciences	–	–	125	7.8	–	–	–	–	16	0.3	86	17.7
7. Health professions and occupations	16	51.6	58	3.6	14	33.3	42	2.0	13	0.2	2	0.4
8. Mathematics and the physical sciences	–	–	–	–	–	–	–	–	16	0.3	–	–
Totals	31	100.0	1,602	100.0	42	100.0	2,089	100.0	6,005	100.0	486	100.0

TABLE 3A. Media Utilization Within Each Discipline, by Type of Media Used

Discipline	Education		Fine and applied arts		Humanities and related		Social sciences and related		Agricultural and biological sciences		Engineering and applied sciences		Health professions and occupations		Mathematics and physical sciences	
	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%
1. Transparencies	679	17.9	289	14.2	281	4.7	2,687	43.0	667	40.0	757	47.3	798	46.7	1,514	52.8
2. Slides (silent)	71	1.9	–	–	485	8.0	233	3.7	235	14.1	263	16.5	337	19.7	264	9.2
3. Slides (sound)	5	.1	–	–	18	.3	–	–	–	–	–	–	–	–	8	.3
4. Filmstrips	306	8.1	30	1.5	93	1.5	43	.7	120	7.2	–	–	70	4.1	5	.2
5. Film cassettes	85	2.2	–	–	–	–	–	–	291	17.5	95	5.9	–	–	326	11.4
6. Films 8mm (on projector) ..	208	5.5	159	7.8	17	.3	152	2.4	5	.3	12	.8	42	2.5	234	8.2
7. Films 16mm (on projector) ..	756	19.9	97	4.8	306	5.1	1,257	20.1	333	20.0	245	15.3	317	18.5	496	17.3
8. Films (on CCTV)	–	–	–	–	15	.2	–	–	–	–	–	–	16	.9	–	–
9. Video tapes ...	843	22.2	–	–	4	.1	572	9.2	–	–	125	7.8	58	3.4	–	–
10. Video cassettes	28	.7	–	–	–	–	–	–	–	–	–	–	14	.8	–	–
11. Records (discs)	347	9.2	795	39.0	714	11.9	176	2.8	15	.9	–	–	42	2.5	–	–
12. Tapes (audio)	448	11.8	568	27.9	3,877	64.3	1,067	17.1	–	–	16	1.0	13	.8	16	.6
13. Audio cassettes	20	.5	99	4.8	216	3.6	63	1.0	–	–	86	5.4	2	.1	–	–
Totals	3,796	100.0	2,037	100.0	6,026	100.0	6,250	100.0	1,666	100.0	1,599	100.0	1,709	100.0	2,863	100.0

TABLE 3B. Media Utilization Within Selected Departments, by Type of Media Used

Discipline	Education		Humanities and Related								Social Sciences and Related							
Selected Departments	Physical Education		History		Classics		Modern Languages		Philosophy		Commerce		Economics		Psychology		Sociology	
	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%
1. Transparencies	213	23.1	146	27.5	—	—	135	2.7	—	—	1,348	65.8	370	64.6	190	13.5	—	—
2. Slides (silent) ...	3	.3	115	21.7	200	80.0	170	3.4	—	—	—	—	45	7.8	113	8.1	75	8.3
3. Slides (sound)	—	—	—	—	—	—	—	—	18	8.6	—	—	—	—	—	—	—	—
4. Filmstrips	50	5.4	80	15.1	10	4.0	3	.1	—	—	43	2.1	—	—	—	—	—	—
5. Film Cassettes	25	2.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6. Films 8mm (on Projector)	98	10.6	—	—	—	—	17	.3	—	—	5	.2	35	6.1	112	8.0	—	—
7. Films 16mm (on Projector)	66	7.1	105	19.8	20	8.0	72	1.4	90	42.8	93	4.5	—	—	502	35.8	589	64.9
8. Films (on CCTV) ...	—	—	—	—	—	—	15	.3	—	—	—	—	—	—	—	—	—	—
9. Video Tapes	198	21.5	—	—	—	—	4	.1	—	—	240	11.7	—	—	263	18.7	—	—
10. Video Cassettes ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11. Records (discs) ...	260	28.2	—	—	20	8.0	684	13.7	10	4.8	60	2.9	—	—	10	.7	71	7.8
12. Tapes (audio)	10	1.1	56	10.6	—	—	3,765	75.1	56	26.7	263	12.8	88	15.4	195	13.9	162	17.9
13. Audio Cassettes ...	—	—	28	5.3	—	—	147	2.9	36	17.1	—	—	35	6.1	18	1.3	10	1.1
Totals	923	100.0	530	100.0	250	100.0	5,012	100.0	210	100.0	2,052	100.0	573	100.0	1,403	100.0	907	100.0

	Agricultural and Biological Sciences				Engineering and Applied Sciences		Health Professions and Occupations				Mathematics and the Physical Sciences			
	Biology		Household Sciences		Engineering		Basic Sciences		Nursing		Chemistry		Geology	
	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%
1. Transparencies	499	40.3	68	53.1	683	67.7	66	17.1	218	36.1	334	35.1	1,086	82.4
2. Slides (silent) ...	170	13.7	—	—	47	4.7	107	27.7	39	6.5	119	12.5	144	10.9
3. Slides (sound)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4. Filmstrips	35	2.8	60	46.9	—	—	28	7.2	42	7.0	—	—	—	—
5. Film Cassettes	230	18.6	—	—	95	9.4	—	—	—	—	—	—	—	—
6. Films 8mm (on Projector)	5	.4	—	—	12	1.2	—	—	42	7.0	234	24.6	—	—
7. Films 16mm (on Projector)	285	23.0	—	—	70	6.9	110	28.4	207	34.2	264	27.8	72	5.5
8. Films (on CCTV) ...	—	—	—	—	—	—	16	4.1	—	—	—	—	—	—
9. Video Tapes	—	—	—	—	—	—	58	15.0	—	—	—	—	—	—
10. Video Cassettes ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11. Records (discs) ...	15	1.2	—	—	—	—	—	—	42	7.0	—	—	—	—
12. Tapes (audio)	—	—	—	—	16	1.6	—	—	13	2.2	—	—	16	1.2
13. Audio Cassettes ...	—	—	—	—	86	8.5	2	.5	—	—	—	—	—	—
Totals	1,239	100.0	128	100.0	1,009	100.0	387	100.0	603	100.0	951	100.0	1,318	100.0

TABLE 4. Number of Hours Media were Used and Number of Course Registrants by Discipline and Selected Departments

	Total number of(1) teaching hours	Total number of course registrants	Number of hours media were used	Number of course registrants exposed to media
1. Education	20,104	19,190	3,796	14,715
Physical education	5,705	3,330	923	2,525
2. Fine and applied arts	11,398	2,782	2,037	1,884
3. Humanities and related	71,822	46,329	7,026	24,309
History	10,237	8,767	566	4,469
Classics	3,030	1,215	250	1,075
Modern languages	42,437	26,659	5,013	16,023
Philosophy	5,530	6,508	210	2,368
4. Social science and related	62,770	69,584	6,250	38,268
Commerce	12,906	12,575	2,052	7,587
Economics	13,048	12,242	573	2,564
Psychology	13,878	21,895	1,404	16,395
Sociology	11,098	12,418	922	7,930
5. Agricultural and biological sciences	20,847	11,655	1,666	10,583
Biology	11,299	8,904	1,239	8,593
Household science	7,329	1,421	128	680
6. Engineering and applied sciences	17,384	6,910	1,599	4,984
Engineering	12,149	4,889	1,009	2,980
7. Health Professions and occupations	21,787	19,236	1,709	15,219
Basic sciences	6,122	8,004	387	6,728
Nursing	9,759	3,645	603	2,333
8. Mathematics and the physical sciences	68,682	29,344	2,863	10,464
Chemistry	34,428	10,686	951	5,000
Geology	6,721	3,923	1,318	3,683
All disciplines	294,794	205,030	25,946	120,426

(1) Includes teaching hours for courses reported.

Course registrants exposed to media as a percentage of total number of course registrants for each discipline, Atlantic provinces, 1972

Nombre d'étudiants bénéficiant d'aides à l'enseignement, en pourcentage de l'ensemble des effectifs scolaires dans chaque discipline, provinces de l'Atlantique, 1972

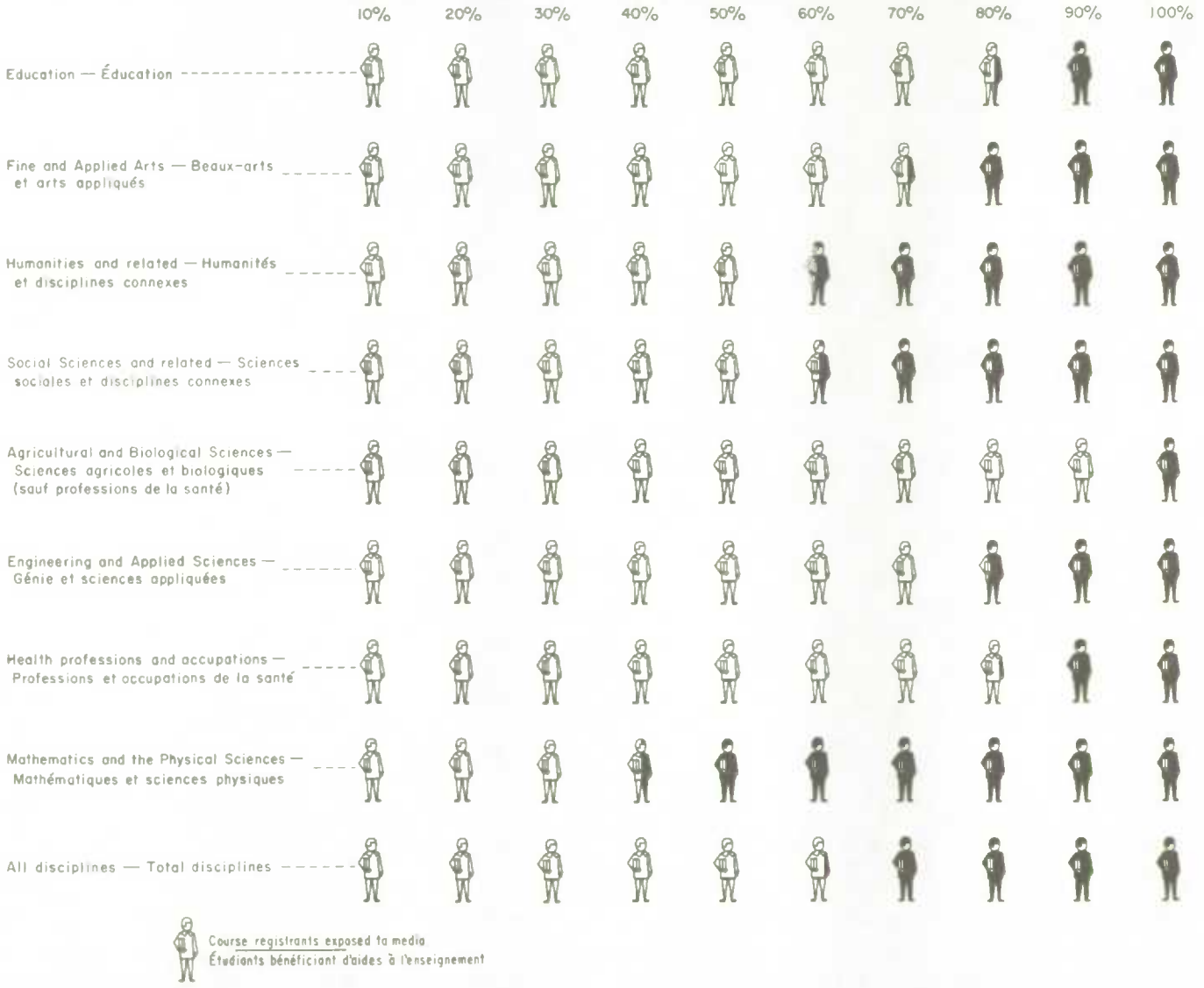


TABLE 5. Average Number of Course Registrants in Courses Using Media in Comparison with Courses not Using Media, by Discipline

Discipline	Courses not using media			Courses using media				Total Courses		
	Number of courses	Number of course registrants	Course registrants per course	Number of courses	Number of course registrants	Course registrants per course	Course registrants media use ratio(1)	Number of courses	Number of course registrants	Course registrants per course
	1	2	3	4	5	6	7	8	9	10
1. Education	150	4,475	30	340	14,715	43	1.43	490	19,190	39
2. Fine and applied arts	55	898	16	110	1,884	17	1.06	165	2,782	17
3. Humanities and related	772	22,020	28	752	24,309	32	1.14	1,524	46,329	30
4. Social sciences and related	725	31,316	43	690	38,268	55	1.28	1,415	69,584	49
5. Agricultural and biological sciences	103	1,072	10	177	10,583	60	6.00	280	11,655	42
6. Engineering and applied sciences	161	1,926	12	152	4,984	33	2.75	313	6,910	22
7. Health professions and occupations	147	4,017	27	310	15,219	49	1.81	457	19,236	42
8. Mathematics and the physical sciences	576	18,880	33	331	10,464	32	.97	907	29,344	32
All disciplines	2,689	84,604	31	2,862	120,426	42	1.35	5,551	205,030	37

(1) "Course registrants media use ratio" is column 6 divided by column 3.

TABLE 6. Number and Type of Media Units Produced "With or By University Media Services", by Discipline

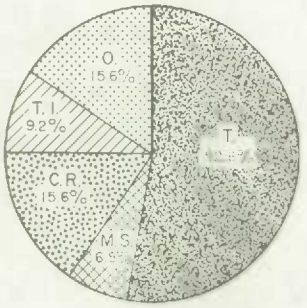
	Transparencies	Slides (silent)	Slides (sound)	Filmstrips	Film cassettes	Films 8mm (on projector)
1. Education	925	–	–	–	–	–
2. Fine and applied arts	991	–	–	–	–	60
3. Humanities and related	1,800	1,342	–	10	–	5
4. Social sciences and related	3,348	178	–	–	–	–
5. Agricultural and biological sciences	708	3,250	–	–	–	–
6. Engineering and applied sciences	585	–	–	–	–	–
7. Health professions and occupations	3,023	7,366	–	28	–	–
8. Mathematics and the physical sciences	261	175	–	–	–	167
All disciplines	11,641	12,311	–	38	–	232

	Films 16mm (on projector)	Films (on CCTV)	Video tapes	Video cassettes	Records (discs)	Tapes audio	Audio cassettes
1. Education	75	–	260	35	–	75	–
2. Fine and applied arts	40	–	–	–	43	–	57
3. Humanities and related	10	–	–	–	100	570	50
4. Social sciences and related	5	–	188	–	–	298	–
5. Agricultural and biological sciences	75	–	–	–	–	–	–
6. Engineering and applied sciences	–	–	–	–	–	–	–
7. Health professions and occupations	28	54	145	–	–	–	28
8. Mathematics and the physical sciences	15	–	–	–	–	16	–
All disciplines	248	54	593	35	143	959	135

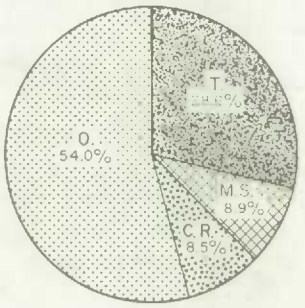
Percentage distribution of media units by type of production, for each discipline, Atlantic provinces, 1972

Répartition en pourcentage des unités d'aides à l'enseignement, selon le genre de production, dans chaque discipline, provinces de l'Atlantique, 1972

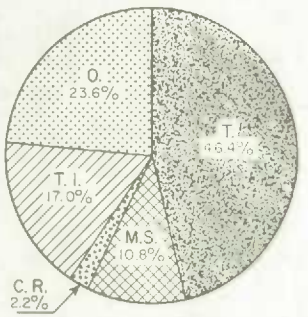
Education — Éducation



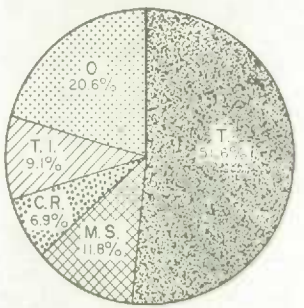
Fine and Applied Arts — Beaux-arts et arts appliqués



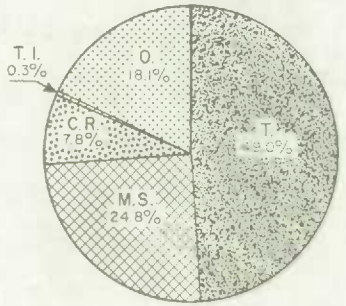
Humanities and related — Humanités et disciplines connexes



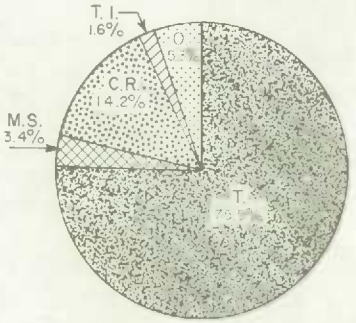
Social Sciences and related — Sciences sociales et disciplines connexes



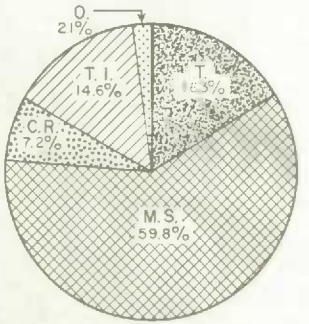
Agricultural and Biological Sciences — Sciences agricoles et biologiques (sauf professions de la santé)



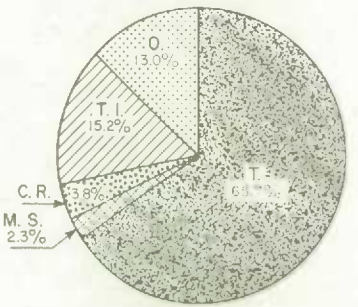
Engineering and Applied Sciences — Génie et sciences appliquées



Health professions and occupations — Professions et occupations de la santé



Mathematics and the Physical Sciences — Mathématiques et sciences physiques



LEGEND — LÉGENDE

Produced by teacher	T.	Produites par le professeur
Produced with / or by university media services	M.S.	Produites par ou avec les services de l'université
Produced by course registrants	C.R.	Produites par des étudiants
Produced by other teaching institutions	T. I.	Produites par d'autres établissements d'enseignement
Other	O.	Autre

APPENDIX A

ESTIMATION PROCEDURE

A. Introduction

The total sample size for the nine institutions surveyed was 501 with the overall sample non-response being approximately 45%. In order to obtain estimates of characteristics of the entire sample, including the non-respondent portion, the following assumptions were adopted(1):

1. That the respondents from each institution could be divided into two types:

   (a) Type M respondents – those staff members that responded without having to be followed-up and

   (b) Type F respondents – those staff members that responded after receiving a reminder card.

   To accomplish this classification of respondents a divisional response date was assigned to each institution. This divisional response date for each institution was determined by:

   (i) estimating the total time required for the reminder cards to reach the non-respondents and for the questionnaires to be returned and

   (ii) examining the daily response figures for the institution.

   All respondents from a particular institution whose completed questionnaires were received prior to that institution's divisional response date were classified as Type M respondents, while those respondents from this institution whose completed questionnaires were received on or after this divisional response date were classified as Type F respondents.

2. That the Type F respondents were more typical or characteristic of the non-respondent portion of the sample than were the Type M respondents.

As a result of these assumptions, the Type F respondents were weighted to represent all Type F respondents and non-respondents in the sample.

After obtaining estimates of characteristics of the entire sample, the data could then be weighted to obtain estimates of the corresponding population characteristics.

As the faculty and department structure varies from institution to institution, each staff member selected in the sample was assigned to one of the following eight disciplines:

(i) Education

(ii) Fine and applied arts

(iii) Humanities and related

---

(1) In a certain special case these assumptions were not employed – (see the Weighting Formulae section).

(iv) Social sciences and related

(v) Agricultural and biological sciences

(vi) Engineering and applied sciences

(vii) Health professions and occupations

(viii) Mathematics and the physical sciences.

Within each discipline further classification into faculty or department, and subject-matter area was possible.

Each selected staff member was asked to complete and return one questionnaire for each course taught during the January to April 1972 semester. The respondent type (M or F), the replicate number (1 or 2), and the subject-matter category were coded on each questionnaire received. This subject-matter category (i.e. a discipline, a faculty, or a department) was generally determined by the course name provided on the questionnaire. In some cases, however, the course name was not adequately provided and reference to the discipline, to which the staff member teaching the course was assigned, was necessary to determine the correct category code.

B. Notation

The following symbols and subscripts are employed in subsequent formulae:

Subscripts — e refers to the subject-matter category

k refers to the discipline $k = 1, 2, \ldots, 8$

r refers to the replicate $r = 1, 2$

ℓ refers to the respondent type $\ell = M, F$

q refers to the particular course

N_k — total number of full-time academic staff members in the kth discipline in the population.

n_{kr} — sample size in the rth replicate, kth discipline.

$n'_{kr\ell}$ — number of respondents belonging to the ℓth respondent type in the rth replicate, kth discipline.

$W_{kr\ell}$ — weight determined for all questionnaires coded with the ℓth respondent type, rth replicate, kth discipline.

C — sampling interval for each replicate selected in each institution (i.e. C=10).

$x_{er\ell q}$ – a measurement of characteristic X obtained from the qth course taught by a respondent belonging to the ℓth respondent type in the rth replicate, eth category

where: (i) $x_{er\ell q}$ = 0 if course q does not possess characteristic X

= 1 if course q does possess characteristic X

or (ii) $x_{er\ell q}$ = some variable quantity (e.g. number of hours that transparencies were used in classroom teaching this semester).

$\hat{X}_{er}$ – estimate from the rth replicate of:

(i) the total number of courses with characteristic X in the eth category

or (ii) the total of variable quantity X in the eth category.

C. Weighting Formulae

(1) $W_{krM} = C = 10$ for r = 1, 2 and k = 1, 2, ..., 8.

However, if n_{kr} was very small (less than 10) for some r and some k then we used

(2) $W_{krM} = \frac{N_k}{n_{kr}}$.

(3) $W_{krF} = C \frac{(n_{kr} - n'_{krM})}{n'_{krF}} = 10 \frac{(n_{kr} - n'_{krM})}{n'_{krF}}$

for r = 1, 2 and k = 1, 2, ..., 8.

However, if n_{kr} was less than 10 for some r and some k we employed the formula

(4) $W_{krF} = \frac{N_k}{n_{kr}} \cdot \frac{(n_{kr} - n'_{krM})}{n'_{krF}}$.

Also, if n'_{krF} for some r and some k, was deemed not to be of sufficient magnitude to adequately typify the non-respondent portion of the sample belonging to this rth replicate and kth discipline, then the respondent type ℓ was disregarded and all respondents (i.e. $n'_{krM} + n'_{krF}$) were considered to be typical of all staff members belonging to this rth replicate and kth discipline. Hence, in this situation only one weight was determined for this rth replicate and kth discipline, this weight being given by

$$(5)\quad W_{kr} = C\,\frac{n_{kr}}{(n'_{krM} + n'_{krF})}\ .$$

Once again, if n_{kr} was less than 10 the above formula was replaced by

$$(6)\quad W_{kr} = \frac{N_k}{(n'_{krM} + n'_{krF})}\ .$$

D. Estimates and Variances

(i) At the category level

$$(7)\quad \hat{X}_e = \sum_r \hat{X}_{er}/2$$

where

$$(8)\quad \hat{X}_{er} = W_{erM} \sum_{q\epsilon M} x_{erMq} + W_{erF} \sum_{q\epsilon F} x_{erFq}.$$

Note: As a category is either equivalent to or smaller than a discipline, for some k

$$(9)\quad W_{erM} = W_{krM}$$

and

$$(10)\quad W_{erF} = W_{krF}.$$

Now

$$(11)\quad V(\hat{X}_e) = \frac{1}{4} \sum_r V(\hat{X}_{er})$$

however, $V(\hat{X}_{er})$ is a complex expression, so an estimate $v(\hat{X}_e)$ of $V(\hat{X}_e)$ is provided by

$$(12)\quad v(\hat{X}_e) = \frac{1}{4}\left[1 - \frac{2}{C}\right]\left[\hat{X}_{e1} - \hat{X}_{e2}\right]^2 = \frac{1}{5}\left[\hat{X}_{e1} - \hat{X}_{e2}\right]^2 .$$

(ii) At the regional level (i.e. Atlantic provinces)

A necessary assumption to adopt here is that we only consider the eight categories ($e = 1, 2, \ldots, 8$) that are equivalent to the eight distinct disciplines.

Then

$$(13)\quad \hat{X} = \sum_e \hat{X}_e$$

and

$$(14)\quad V(\hat{X}) = \sum_e V(\hat{X}_e)$$

with

$$(15)\quad v(\hat{X}) = \sum_e v(\hat{X}_e).$$

APPENDIX B

Statistics Canada Statistique Canada

Education Division

THE USE OF INSTRUCTIONAL MEDIA IN CANADIAN UNIVERSITIES AND COLLEGES

SIDE ONE

(a) Indicate number of courses you are teaching this semester (Jan. to April) - count each half course, full course, etc. as one unit. ☐

(b) Title and number of course _____
(complete one form for each course)

(c) No. of registered students in this course this semester... ☐☐☐☐

(d) Course Level:
Graduate..... 1 ☐
Undergraduate..... 2 ☐
Extension
-academic credit..... 3 ☐
-non-credit..... 4 ☐

(e) No. of course hours per week..... ☐☐ hrs.

(f) No. of weeks..... ☐☐ wks.

(g) Time distribution of course in hours per semester
(a) for classroom teaching..... ☐☐ hrs.
(b) for laboratory teaching..... ☐☐ hrs.

(h) Do you use instructional media? Yes 1 ☐ No 2 ☐
If No. check reason(s)
Not readily available..... 1 ☐ Budget restrictions 4 ☐
Not applicable to course.. 2 ☐ Don't believe in it.. 5 ☐
Too time consuming..... 3 ☐ Other _____ 6 ☐
(specify)

(i) Percent of course presentation done by use of media..... ☐☐ %

7006-93.1: 5-4-72

COMMENTS:
(Please complete side two before using this space)

For office use only

SEE OVER

SIDE TWO

Types of Media Materials Used (Software)	(a) CLASSROOM TEACHING — Number of Units: produced by you	produced with or/by university media services	produced by students	produced by other teaching institution	other	No. of hrs. used (a) this semester (estimate for each type)	(b) LABORATORY ACTIVITIES — Number of Units: produced by you	produced with or/by university media services	produced by students	produced by other teaching institution	other	No. of hrs. used (b) this semester (estimate for each type)
Column No. →	1	2	3	4	5	6	7	8	9	10	11	12
1. Transparencies												
2. Slides (silent)												
3. Slides (sound)												
4. Filmstrips												
5. Film Cassettes												
6. Film 8mm (on projector)												
7. Film 16mm (" ")												
8. Films (on CCTV)												
9. Video Tapes												
10. Video Cassettes												
11. Records (discs)												
12. Tapes (audio)												
13. Audio Cassettes												
14. Computer Assisted Instr												
15. Other* (specify)												
16.												
17.												
18.												

* Do not include established aids such as books, printed matter, blackboards, etc.