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Organization and Administration of Graduate Studies in Canadian Universities

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Abstract

Considerable concern exists in Canada, the United States, and some other western countries about the rates of non-completion of graduate programs and the increasing amount of time needed for completion. A 1990-91 study obtained information and opinions about graduate program practices from samples of department heads and experienced supervisors of graduate students in five Canadian universities. Aspects associated most with successful completion within the universities' time limits were high student motivation, appropriate supervision, careful selection of students, clear definition of research field, and a substantial period of full-time study. The most commonly mentioned reasons provided for non-completion were acceptance of employment prior to completion, inadequate supervision, financial constraints, ill-conceived projects, lack of motivation, and lack of ability.

Résumé

Au Canada, aux États-Unis, et dans certains pays occidentaux, on s'inquiète des taux de diplômation observés dans les programmes de deuxième et troisième cycles, et de l'augmentation de la durée des études. Une enquête portant sur ces questions a recueilli les opinions d'un échantillon de directeurs de département et de professeurs ayant des tâches de direction d'étudiants dans cinq universités canadiennes. Selon cette étude, les facteurs favorisant la diplômation dans les

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délais prévus par les universités sont une forte motivation de la part de l'étudiant, un encadrement approprié, une attention à la sélection des étudiants, une définition claire du champ de recherche et une période prolongée d'études à plein temps. Parmi les facteurs négatifs cités, notons la décision d'accepter un emploi avant la fin du programme, une encadrement inadéquat, des contraintes financières, des projets mal conçus, un manque de motivation, et des carences au niveau des habiletés.

This paper has two main purposes. First, it presents an overview of some issues and alternative approaches in the organization and administration of graduate studies in universities in Canada and other selected countries. Second, it presents the results of a survey of department heads/chairs/graduate coordinators and experienced graduate supervisors about practices and opinions related to organizational, administrative, and other relevant matters which have been identified in the literature or in discussions on campuses.

Issues and Alternative Approaches

Our current knowledge about the organization and administration of graduate programs is found in two main sources: (a) reports and periodicals (e.g., Canadian Association of Graduate Schools, *Statistical Report 1991*; and various publications of the Council of Graduate Schools); and (b) manuals of faculties of graduate studies. The information in these publications tends to be of three types: (a) statistical (e.g., enrolment data); (b) expressions of individual opinion; and (c) statements of policies and procedures. No publication exists which synthesizes policies, procedures, opinions, issues, completion rates, and completion times for graduate studies in Canadian universities collectively. Yeates (1992) has, however, recently provided a very useful document which includes Ontario data on these matters.

The last comprehensive examination of Canadian graduate studies was the Canada Council survey conducted by Healy, Dion, and Neatby (1978a & 1978b). That report included these conclusions: (a) "Our experience as a Commission has also alerted us to the importance of research in the area of graduate studies," and (b) we are "woefully ignorant" of "the influence of socio-economic factors on applications for admission to graduate studies" and "the factors affecting the time required to complete a degree" (1978a, p. 95). Several aspects of the organization and administration of graduate studies have received recent attention, as discussed below. Publications by the Royal Society of Canada (1989, 1991), OECD (1987), and the U.K. Economic and Social

Research Council (1989a, 1989b, and 1991) attest to the seriousness with which concerns related to graduate studies are being addressed in several countries.

Following analyses of briefs, letters, discussions, and hearings, the University Research Committee of the Royal Society of Canada (1991) prepared 23 recommendations for consideration by governments, the granting councils, the universities, and the Association of Universities and Colleges of Canada. Those directly relevant to this paper are listed below:

12. the Canadian Association of Graduate Schools should propose guidelines to encourage high standards of supervision and speedier completion of programs of graduate study, particularly those leading to doctoral degrees. (p. 29)

13. the granting councils significantly increase the number and value of their doctoral and post-doctoral awards, over the next five years increasing expenditures by SSHRC from the present level of $25 million to $57 million; by NSERC from the present level of $65 million to $100 million; and by MRC from the present level of $20 million to $36 million. (p. 30)

14. the Association of Universities and Colleges of Canada undertake the development of a national assessment guide to graduate programs in Canadian universities. (p. 31)

15. more concerted action be taken by universities to achieve greater collaboration in graduate programs and research, and that both levels of government provide initiatives to speed the process. (p. 32)

Malaney (1988), in his review of "graduate education as an area of research," drew these conclusions: (a) "There has been very little research related to the administration of graduate education" (p. 444); (b) most research related to graduate education is relatively recent and relates mostly to students; (c) the research methods usually involve questionnaires and analysis of students' records; (d) little systematic research has been conducted on graduate student retention; (e) little effort has been made to assess the value and potential of graduate assistantships; and (f) more research has been on doctoral programs than master's programs. He recommended these activities: (a) greater use of personal interviews in research, (b) more aggregation of data and information across institutions, (c) study of the organizational placement of graduate schools and the effectiveness of various structures, and (d) more research on master's students.

With respect to the importance of doctoral programs, Bowen and Rudenstine (1992) claimed that

> doctoral education occupies a particularly critical place in the overall structure of higher education because it is the training ground for almost all those who become faculty members, as well as for many who pursue other vocations of broad import. (p. xv)

They also observed that graduate education "enjoys enormous prestige and yet it is relatively unexamined and not carefully monitored" and reported that they are aware "how hard it has been to obtain answers to even the most elementary questions concerning graduate education" (p. xv). In attempting to explain why "so little systematic study has been devoted to doctoral education in general," Bowen and Rudenstine (1992) proposed that "particularly daunting conceptual and empirical problems . . . bedevil study of graduate education." Their comments appear to be equally applicable to Canada.

Current Knowledge

Our current knowledge about the organization and administration of graduate studies can be categorized under headings (i)-(viii) below.

(i) *Enrolment trends.* Information about some trends is readily available from the Canadian Association of Graduate Schools (1991) and the Department of the Secretary of State (1990). In 1991, total doctoral enrolment in Canadian universities was 21,709 and total master's enrolment was 59,024, with full-time percentages being markedly different – 81.9% doctoral and 57.5% master's. Graduate enrolment has approximately doubled in 20 years.

(ii) *Importance and purpose of graduate studies.* Graduate education is acknowledged by experts in different countries to be extremely important for national and provincial development, production of highly qualified manpower, and scientific advancement (e.g., OECD, 1987, and Royal Society of Canada, 1991). Also, more employers are requiring graduate degrees. Gordon *et al.* (1990) therefore recommended that we need to be able to accommodate more part-time students, more working adults, more minorities, and more women in graduate programs (p. 1).

(iii) *Place in university structure.* Malaney (1988) concluded that schools/faculties of graduate studies are incorporated into university organizational structures in a variety of ways and that little is known about these structures and "their relative organizational effectiveness" (p. 444). This situation also applies to Canada. Although the role of graduate schools/faculties has been

usefully described by Gordon *et al.* (1990, pp. 3-6), no comprehensive statement exists for Canadian universities collectively.

(iv) *Completion rates and times of program completion.* Data on these aspects are available for some jurisdictions and some disciplines (e.g., Yeates, 1991), but no overall Canadian data had been prepared. Expressions of concern are common in various countries about increasing length of time to complete a degree and the high percentages of non-completion (e.g., OECD, 1987; Dahllöf, 1989). Spurr (1970, p. 127) usefully termed these aspects "attrition" and "attenuation." The Canadian Association of Graduate Schools in 1987 expressed concerns over (a) the "excessive and increasing time" needed to finish the PhD in Canada and (b) the "alarming drop-out rate" (Graduate deans unhappy..., 1988). Similarly, Traugott *et al.* (1990) in a Council of Graduate Schools publication stated that "in recent years the total time required to complete the [PhD] degree has tended to expand. The reasons for this tendency need to be studied carefully and controlled where this is feasible" (p. 14). Cude (1991) has recently advocated that better statistics be made available about completion rates and completion times for doctoral students in Canadian universities.

Cude (1987) also stated that the PhD has become "a trap for the candidate and a sinkhole for intellectual resources," and that "inflexible, cumbersome, restrictive and deplorably wasteful" practices are used. In Australia, Moses (1985) observed that "full-time students take longer to complete their PhD than they ought to (in light of university guidelines and funding practices)" (p. 3), that science students complete more quickly than do humanities and social sciences students, and that attrition rates vary between 29% and 48%.

For the United Kingdom, Winfield (1987b) observed that "the doctorate, though important, is also in urgent need of reform" (p. 15), and, after criticizing the length of time taken to complete the PhD, stated that most PhDs in the social sciences could be completed in four years. (This view was supported earlier by Spurr (1970, p. 132) for PhD degrees in the United States.) Winfield reported that a time-limited PhD is being discussed in many countries, notably the United States, France, Sweden, and the Netherlands.

Successful completion of the PhD within a reasonable time has been associated with the following variables: adequate motivation (OECD, 1987; Spurr, 1970); effective supervision (Winfield, 1987a; OECD, 1987; Powles, 1989); full-time study (OECD, 1987); selection and examinations (Task Force..., 1975); financial support (Canadian Association of Graduate Schools, 1987; OECD, 1987); department of study, ethnicity, citizenship, and gender (Zwick, 1991); and careful selection of topic and project (Hamilton *et al.*, 1991, p. 20).

For the University of Toronto, Sheinin (in Filteau, 1989) reported that (a) on average, 60% of male students who commence PhD programs attain the degree compared with 50% of female students, and (b) both men and women had the highest PhD graduation rate in the life sciences and the lowest in the humanities and social sciences. Yeates (1991) provided data which showed that 57.34% of the 1,172 doctoral students who commenced their studies in 10 Ontario universities in the fall of 1980 had obtained the degree in 10 or fewer years; 13% of the 1,172 commencing students withdrew in the first year. No information was provided by Yeates about whether any of these first-year withdrawals were later readmitted.

(v) *Characteristics of graduate students.* Little is known about the characteristics and opinions of Canadian graduate students. We do not have sufficient data about how Canadian graduate students finance their studies, how financial difficulties affect attrition and attenuation, and the effect of perceived financial problems upon enrolment of potential graduate students (Dagg, 1990). Several studies have identified the special problems of female students. For example, Wise (in Filteau, 1989) noted that many women are studying part-time, and that part-time students are not eligible for financial support. Powles (1986) found similar concerns in Australia. Another important aspect involves the characteristics and experiences of international students: they constituted 15.7% of all graduate students in Canadian universities in 1990, with the highest percentage being about 34% of all graduate students in science/engineering (Canadian Association of Graduate Schools, 1991).

(vi) *Review practices.* Reviews of graduate programs, which add to our knowledge (Wilson, 1987), are conducted by many Canadian universities (e.g., Alberta, Calgary, and McGill), but distribution of the reports of such reviews is usually restricted. The Ontario Council on Graduate Studies conducts a unique system of reviews of graduate programs in 15 autonomous universities (Yeates, n.d.; Stewart, 1988).

(vii) *Theses.* Boyer (1990) advocated that "the dissertation, or a comparable project, should continue to be the centerpiece–the intellectual culmination of the graduate experience" (pp. 73-74). The content of theses appears to be left largely to students and their advisory committees. Synthesized information about thesis practices in various programs in Canadian universities is not available. Matters such as length, extent of original contribution, sponsorship, classified research, ethics, joint authorship, and format need to be addressed (Traugott *et al.,* 1990). Several U.S. graduate schools now accept groups of published research papers as an alternative. The nature of the PhD thesis was commonly

addressed in the responses to the U.K. Economic and Social Research Council Survey (Smith, 1990). The Council of Graduate Schools (Norris, 1989), being concerned that the average time to complete a PhD is now 7 years compared with 5.5 years in the 1960s, established a task force in 1989 to examine alternatives to the thesis and to assess whether the thesis is "still serving its original purpose of demonstrating the student's ability to carry out independent scholarship" (p. 1). After surveying staff in 46 United States and four Canadian universities, the Council of Graduate Schools (1991) produced a policy statement entitled *The Role and Nature of the Doctoral Dissertation* which contained these major conclusions: (a) "the doctoral dissertation...defines the essence of the PhD degree"; (b) graduate students in the sciences and engineering often work in research groups and may already have published some results before producing a thesis; (c) students and graduate deans are less satisfied with faculty as advisers than are the faculty themselves; (d) "disciplinary diversity affects all aspects of the role and nature of the doctoral dissertation"; and (e) "new sensitivity is called for in today's complex and changing research environment" (pp. 31-32).

(viii) *Supervisory practices.* Various reports (e.g., Christopherson, 1983; Connell, 1985; Kirkwood, 1985; Powles, 1988; Busch, 1985; and Council of Graduate Schools, 1990) have shown that supervisory practices vary by professor and discipline and that constant, thoughtful supervision is one of the keys to successful graduate program completion. These authors and others (e.g., OECD, 1987; Gordon *et al.,* 1990) have identified desirable aspects of supervision. But we do not have any overview of supervisory approaches used in Canadian universities.

Many other relevant matters are raised in the literature, including (a) concern that graduate students usually do little teaching and that those who do teach are often ill-prepared (e.g., Boyer, 1990), (b) whether only certain appropriately qualified staff members – who may constitute the "graduate faculty" – should be allowed to supervise graduate students (e.g., Gordon *et al.,* 1990), (c) consideration of the quality of graduate teaching and supervision in career decisions (e.g., Gordon *et al.*, 1990), (d) whether dissertations should be publishable (e.g., Hamilton *et al.,* 1991), (e) whether alternative doctorates should be offered (e.g., OECD, 1987; Ontario Council on Graduate Studies, 1990; Yeates, 1991); (f) whether appropriate physical facilities are available for graduate students (Traugott *et al.,* 1990), (g) recognition that graduate program procedures vary among disciplines (Hamilton *et al.,* 1991; Yeates, 1991), (h) publication of papers based on student's research (Council of Graduate Schools, 1990),

(i) use of committees rather than a single supervisor (Bowen & Rudenstine, 1991, p. 284), (j) how students' research topics are selected (Hamilton *et al.*, 1991), and (k) consideration of the different characteristics of practice-oriented master's programs (usually non-thesis) and research-oriented master's programs (Palm *et al.*, 1990).

Conceptual Framework

The basic systems model involving inputs, process, outputs, and feedback is probably the most useful and comprehensive approach for study of the organization and administration of graduate studies. Examples of relevant variables, which are mentioned in the literature and university calendars, are listed below:

Inputs – goals of graduate studies, admission requirements, characteristics of students, characteristics of supervisors, numbers of students, resources, research ethos, and financial support.

Process – administration/organization of graduate studies, program requirements (courses, research, examinations), supervisory practices, and formal and informal interactions.

Outputs – completion rates, numbers completing, quality of graduates, research performance, staff and student satisfaction, and university/department reputation.

Feedback – opinions about effectiveness, efficiency, issues, and trends; conclusions from formal graduate program review.

Because not all of these variables could be examined in any one study, emphasis was placed upon selected university inputs, processes, student outputs, and feedback.

Methodology

During 1991, a pilot study was conducted in order to obtain preliminary information about practices in and opinions about the organization and administration of graduate studies in Canadian universities. This study involved the sending of questionnaires to 109 department heads and 149 supervisors across a range of disciplines in five universities – Alberta, Dalhousie, McGill, Saskatchewan, and Toronto. Each graduate dean was asked to provide the names of 20 department heads and 30 experienced supervisors; McGill provided the names of 30 department heads and all of these were approached. The respective overall completion rates by the cut-off date were 86% and 75%, with 94 and 112 respondents respectively; these rates were very high for a study of

this type, indicating substantial interest in the topic. Table 1 shows the rates of return for each university, while Table 2 displays information about the department heads' units.

The questionnaires, which were constructed specially for this study, had two main sections: (a) practices involved in administration and organization of graduate programs; and (b) aspects which may increase successful completion of graduate programs. They were pilot-tested with former department heads and graduate students. With respect to practices, department heads were asked to provide information about current practices and emphasis on selected aspects, and the supervisors to provide opinions on both areas. Questionnaire items related to the following matters which have been identified as relevant either in the literature or in discussions at universities – purpose of graduate studies, course work requirements, involvement of faculty members, information provided to graduate students, facilities for graduate students, program quotas, admissions, nature of PhD thesis, master's non-thesis programs, supervisory committees, financial support, and examinations. A multiple-choice format was used for all questions. For most of the questions dealing with the existence of selected practices, department heads were provided with a "true-undecided-false" scale. However, for similar items, supervisors were asked to select from "agree-undecided-disagree" as such labels were deemed to be more appropriate for assessing attitudes.

Table 1
Response percentages for supervisors and department heads

University	Supervisors			Department Heads		
	Sample n	Returned f	Returned %f	Sample n	Returned f	Returned %f
Alberta	29	26	90	18	18	100
Dalhousie	30	21	70	21	19	90
McGill	30	22	73	30	24	80
Toronto	30	18	60	20	15	75
Saskatchewan	30	25	83	20	18	90
TOTAL	149	112	75	109	94	86

Note: The responses from one supervisor and two department heads are not included in the analyses presented in Tables 2-6.

Table 2
Selected characteristics of department heads' departments (n=94)

Discipline area	Number of department heads responding[a]	Range of number of FTE staff	Range of numbers of students[b] Doctoral FT	Doctoral PT	Master's FT	Master's PT
Humanities	19	7-50	2-87	1-20	5-43	1-20
Life Sciences	29	5-42	3-55	1-3	3-63	2-22
Science & Engineering	26	9-55	6-101	1-10	2-73	1-10
Social Sciences	20	3-36	1-50	1-28	4-114	5-164

[a] The corresponding numbers of responding supervisors were 20, 25, 39, and 26.

[b] Some departments had no students in some of these categories.

For questions dealing with aspects related to successful completion, both department heads and supervisors chose a response from this scale: 1=not at all; 2=a little; 3=some extent; 4=considerable extent; and 5=a great deal. Department heads were asked to identify the extent to which they emphasized ten aspects which have been identified in the literature. Supervisors were asked to rate the extent to which they considered 15 aspects – the same ten as in the department heads' questionnaire as well as five others mainly related directly to students – contributed to successful completion.

Both groups were also asked for their opinions about why master's and doctoral students do not complete their programs within their university's time limits. About 90% provided these opinions. Additional comments relevant to the research questions were made by 66 respondents, and 67 gave suggestions about how the questionnaires could be improved.

The multiple-choice questions were analyzed using percentage frequency distributions for the groups overall and for sub-groups categorized by discipline orientation – humanities, life sciences, science and engineering, and social sciences. The free responses were content-analyzed.

Results

Selected Practices

Information about (a) the percentage frequency with which department heads identified the existence of selected practices and (b) the percentage frequency with which supervisors supported selected practices is presented below.

Current situation. As shown in Table 3, the following 10 practices received at least 85% "true" responses and therefore could be considered as "normal practice": taking applicant's academic record into account in the admission decision (100%); taking applicant's references into account in the admission decision (99%); requiring course work of all master's students (99%); making of the admission decision by Faculty of Graduate Studies on recommendation of department (99%); holding final oral examinations for all doctoral students (99%); trying to ensure that all full-time doctoral students receive some financial support (90%); using a departmental admissions committee (90%); requiring a "traditional" type of doctoral thesis (89%); requiring course work of all doctoral students (87%); and providing all full-time doctoral students with office and/or laboratory space (85%). What could be called "common practice," i.e., those aspects which obtained "true" responses between 65% and 76%, pertained to seven other aspects: enrolling doctoral students in a program jointly sponsored by another department (76%); providing all full-time master's students with office and/or laboratory space (74%); trying to ensure that all full-time master's students receive some financial support (74%); varying the number of courses required depending on the student's background (71%); holding candidacy examinations before doctoral students can progress to main part of thesis phase (66%); encouraging doctoral students to take courses outside own department (65%); and providing graduate students with a list of their responsibilities and duties (65%). (The term "candidacy examinations" – related to examinations and pertaining to change of status from "probationary candidate" to "candidate" – was not always understood by respondents.)

Some practices were uncommon in the universities sampled. High percentages of "false" responses were obtained for offering of practitioner doctoral degrees (98%), establishment of a separate "graduate faculty" for especially meritorious faculty members (81%), selection by master's students of optional non-thesis programs (80%), establishment of quotas for high-demand graduate programs (79%), holding final oral examinations for non-thesis master's students (73%), and meeting the doctoral thesis requirement by submitting acceptable sets of (a) interrelated research reports (76%), (b) interrelated articles published in refereed journals (61%), and (c) unrelated articles published in refereed journals (84%).

Opinions. As shown in Table 4, at least 85% of the supervisors agreed with the following propositions: the admission decision should take into account the applicant's academic record; the admission decision should take into account the applicant's references; course work should be required of all master's

Table 3

Practices involved in administration of graduate programs as identified by department heads (n=94)

Practices	True %	Undecided %	False %	n
Your department offers practitioner doctoral degrees (e.g., Doctor of Education) in addition to the PhD	2	0	98	93
Course work is required of all master's students in your department	99	0	1	94
Course work is required of all doctoral students in your department	87	3	10	78
The number of required courses is varied depending upon the background of each graduate student.	71	2	27	92
Your graduate students are encouraged to take courses outside your department:				
a.) master's students	60	16	24	93
b.) doctoral students	65	9	26	86
The number of independent study/research courses in the program of a graduate student in your department is limited to no more than about 15% of the total number of courses:				
a.) master's students	39	15	46	80
b.) doctoral students	31	18	51	72
All faculty members in your department are normally involved in teaching at least one graduate course in each academic year.	35	3	62	94
All faculty members in your department are normally involved in supervising at least one graduate student in each academic year.	55	3	42	94
A separate "graduate faculty" is established in your department consisting of faculty members whose research and publication records are especially meritorious.	17	2	81	91

Table 3 (continued)

Practices	True %	Undecided %	False %	n
Your department provides your graduate students with a list of their responsibilities and duties.	65	11	25	93
All full-time graduate students in your department are provided with appropriate office and/or laboratory space.				
a.) master's students	74	3	23	93
b.) doctoral students	85	2	13	85
Your university has established quotas for your graduate programs where the admission demand regularly exceeds the department's capacity.	16	6	79	90
The decision to admit an applicant to a graduate program is the responsibility of the Faculty of Graduate Studies upon the recommendation of your department.	99	0	1	94
Your department has established an Admissions Committee to deal with applications from potential graduate students.	90	1	9	86
The decision of your department to admit an applicant to graduate studies takes into account:				
a.) applicant's academic record	100	0	0	94
b.) applicant's references	99	1	0	94
c.) applicant's work record	60	13	27	90
d.) Miller's Analogies Test or Graduate Record Exam or equivalent	37	7	56	84

Table 3 (continued)

Practices	True %	Undecided %	False %	n
a.) The "traditional" type of doctoral thesis remains a requirement in your discipline.	89	1	9	85
b.) The doctoral thesis requirement can be met in your discipline by submission of an acceptable set of interrelated research reports.	21	4	76	82
c.) The doctoral thesis requirement can be met in your discipline by submission of an acceptable set of:				
i.) interrelated articles published in refereed journals	29	10	61	82
ii.) unrelated articles published in refereed journals	7	9	84	77
When appropriate, your PhD students can be enrolled in a program jointly sponsored by another department, with one department having primary administrative responsibility.	76	5	20	86
In your department, master's students are allowed to choose between a thesis program and a non-thesis program.	30	3	67	93
In your department, most master's students select a non-thesis program	15	5	80	80
In your discipline, the master's thesis has been eliminated and students' research activity is concentrated mainly in the PhD thesis.	3	3	93	91
In your department, any non-thesis program must include a signficant research project.	54	10	36	50
Supervisory committees in your department normally include a faculty member from another department:				
a.) for master's students	33	9	59	92
b.) for doctoral students	54	8	38	85
A list of responsibilities and duties of supervisory committees for graduate students is provided by your department.	63	4	32	93

Table 3 (continued)

Practices	True %	Undecided %	False %	n
Your department tries to ensure that all of its full-time graduate students receive some financial support.				
a.) master's	74	8	18	93
b.) doctoral	90	0	10	87
Examinations are normally conducted at the end of every graduate course in your department.				
a.) master's courses	60	5	35	61
b.) doctoral courses	56	7	37	87
Comprehensive examinations are normally conducted in your department before graduate students can progress from the coursework phase to the thesis-work phase of their programs.				
a.) master's program	14	0	86	87
b.) doctoral program	60	0	40	87
Candidacy examinations are normally conducted before doctoral students can progress towards the main part of the thesis phase of their programs in your department.	66	4	30	80
Final oral examinations are conducted by a faculty committee at the end of a graduate student's program in your department.				
a.) non-thesis master's student	19	8	73	52
b.) thesis master's student	63	0	38	88
c.) doctoral student	99	0	1	87

Table 4

Attitudes of graduate supervisors towards selected practices related to graduate programs (n=112)

Practices	Agree %	Undecided %	Disagree %	n
Where resources permit, universities should offer practioner doctoral degrees (e.g., Doctor of Engineering, Doctor of Education) in addition to the PhD.	36	38	25	107
Course work should be required of all master's students.	97	2	1	111
Course work should be required of all doctoral students	71	7	22	110
The number of required courses should be varied depending upon the background of each graduate student.	85	5	11	110
Graduate students should be encouraged to take courses outside their own department:				
a.) master's	62	15	23	108
b.) doctoral	75	9	17	106
The number of independent study/research courses in a graduate student's program should be limited to no more than about 15% of the total number of courses:				
a.) master's students	44	20	36	103
b.) doctoral students	30	19	51	102
In departments with graduate programs, all faculty members should normally be involved in teaching at least one graduate course in each academic year.	29	7	64	108
In departments with graduate programs, all faculty members should normally be involved in supervising at least one graduate student in each academic year.	34	5	61	110
A separate "graduate faculty" should be established consisting of faculty members whose research and publication records are especially meritorious.	36	17	47	110

Table 4 (continued)

Practices	Agree %	Undecided %	Disagree %	n
Universities should provide their graduate students with a list of their responsibilities and duties.	79	10	11	108
All full-time graduate students should be provided with appropriate office and/or laboratory space.				
a.) master's students	81	5	14	111
b.) doctoral students	94	3	4	111
Universities should establish quotas for those graduate programs where the admission demand regularly exceeds the department's capacity.	64	14	22	107
The decision to admit an applicant to a graduate program should be the responsibility of the Faculty of Graduate Studies upon the recommendation of the department.	91	1	8	110
Each department should establish an Admissions Committee to deal with applications from potential graduate students.	87	6	6	110
The admission decision to graduate studies should take into account:				
a.) applicant's academic record	100	0	0	112
b.) applicant's references	99	0	1	110
c.) applicant's work record	73	18	9	104
d.) Miller's Analogies Test or Graduate Record Exam or equivalent	32	41	27	105

Table 4 (continued)

Practices	Agree %	Undecided %	Disagree %	n
a.) The "traditional" type of doctoral thesis should remain a requirement in your discipline.	76	9	15	108
b.) The doctoral thesis requirement could be met in your discipline by submission of an acceptable set of interrelated research reports.	31	14	55	106
c.) The doctoral thesis requirement could be met in your discipline by submission of an acceptable set of:				
i.) interrelated articles published in refereed journals	51	12	37	107
ii.) unrelated articles published in refereed journals	12	18	70	108
When appropriate, PhD students could be enrolled in a program jointly sponsored by two departments, with one department having primary administrative responsibility.	93	4	4	110
In your discipline, master's students should be allowed to choose between a thesis program and a non-thesis program.	42	9	49	111
In your discipline, the objective of the master's degree would best be met by a non-thesis program	19	12	79	107
In your discipline, the master's thesis should be eliminated and students' research activity should be concentrated mainly in the PhD thesis.	15	8	77	111
In your discipline, any non-thesis program should include a signficant research project.	69	16	15	100
Supervisory committees should normally be required to include a faculty member from another department:				
a.) for master's students	21	13	66	110
b.) for doctoral students	54	9	37	111

Table 4 (continued)

Practices	Agree %	Undecided %	Disagree %	n
A list of the responsibilities and duties of supervisory committees for graduate students should be provided by your university.	84	6	10	108
Your department should try to ensure that all of its full-time graduate students receive some financial support.				
a.) master's	74	6	19	109
b.) doctoral	89	2	9	109
Examinations should normally be conducted at the end of every graduate course.				
a.) master's courses	56	13	31	108
b.) doctoral courses	50	15	36	109
Comprehensive examinations should normally be conducted before graduate students can progress from the course-work phase to the thesis-work phase of their programs.				
a.) master's program	20	11	69	107
b.) doctoral program	62	6	31	109
Candidacy examinations should normally be conducted before doctoral students can progress towards the main part of the thesis phase of their programs.	60	15	25	106
Final oral examinations should be conducted by a faculty committee at the end of a graduate student's program:				
a.) non-thesis master's student	29	19	52	96
b.) thesis master's student	69	6	26	108
c.) doctoral student	92	3	5	110

students; all full-time doctoral students should be provided with appropriate office and/or laboratory space; doctoral students could be enrolled in a program jointly sponsored by two departments; final oral examinations should be held for doctoral students; the Faculty of Graduate Studies should be responsible for admission of students on the recommendation of a department; and each department should have an admissions committee.

Comparison. Substantially more support was obtained for the following practices than was obtained for the extent to which they currently exist as assessed by "true" responses of department heads: (a) universities should offer practitioner doctoral degrees in addition to the PhD (36% agree vs. 2% currently exists), and (b) universities should establish quotas for high-demand graduate programs (64% vs. 16%). Somewhat more support was obtained for these two practices: (a) establishment of a separate graduate faculty for especially meritorious faculty members (36% agree vs. 17% currently exists), and (b) the doctoral thesis requirement could be met by an acceptable set of interrelated articles published in refereed journals (51% vs. 29%).

Emphasis on Selected Aspects

This section includes information about (a) the percentage frequency of responses of department heads concerning the extent to which they have emphasized selected aspects – related to admission, program reviews, students, supervision, funding, etc. – in an attempt to increase successful completion of graduate programs, and (b) the percentage frequency with which supervisors supported these selected aspects. The reported means were based on this response scale: 1=not at all; 2=a little; 3=some extent; 4=considerable extent; and 5=a great deal.

Current situation. Table 5 presents the means and standard deviations for the responses of department heads. Two major results were obtained. First, the means for actions taken with respect to doctoral students were all higher than were those for master's students, possibly indicating greater attention to the doctoral sector. Second, the means for careful selection of students (master's 4.15; doctoral 4.30), appropriate supervision (4.12; 4.19) and clear definition by students of research field (3.84; 4.13) were somewhat higher than the other means, which ranged from 3.06 to 3.76 (master's) and 3.13 to 4.01 (doctoral). A substantial period of full-time study was also emphasized (3.76 and 4.00), while adequate financial support obtained a doctoral mean of 4.01.

Opinions. The means and standard deviations of the responses of supervisors about the 15 practices are shown in Table 6. Again the means pertinent to doctoral students were higher than those for master's students. The highest

Table 5
Ratings by department heads of extent of emphasis placed upon selected aspects to increase successful completion of graduate programs (n=94)

Aspect	Mean		SD		n	
	Master's	Doctorate	Master's	Doctorate	M	D
Increased admission standards	3.29	3.45	1.16	1.20	89	82
Regular program reviews (e.g., every 3-5 years)	3.42	3.45	1.18	1.18	88	80
High student motivation	3.57	3.66	1.05	1.04	86	80
Appropriate supervision	4.12	4.19	0.77	0.70	87	84
Substantial period of full-time study	3.76	4.00	1.30	1.18	84	79
Careful selection of students	4.15	4.30	0.80	0.75	91	83
Careful testing throughout the program	3.10	3.30	1.19	1.11	87	81
Adequate financial support	3.61	4.01	1.13	1.01	90	83
High problem-orientation of students	3.06	3.13	1.15	1.23	67	63
Clear definition by students of research field	3.84	4.13	1.00	0.86	88	85

Note: Calculation of means was based on responses using this scale:
1=not at all; 2=a little; 3=some extent; 4=considerable extent; 5=a great deal

means were obtained for high student motivation (master's 4.59; doctoral 4.66), appropriate supervision (4.34; 4.35), and careful selection of students (4.21; 4.33). Other doctoral means higher than 4, which indicated a considerable extent, were recorded for clear definition by students of research field (4.28), mental resilience of students (4.14), confidence of students (4.12), and a substantial period of full-time study (4.03). In contrast, the lowest means were associated with regular program reviews (2.59 master's; 2.70 doctoral), careful testing throughout the program (2.86; 2.92), specification of a maximum period for program completion (2.99, 3.00), and encouragement from family members (3.16; 3.18).

Table 6
Ratings by supervisors of extent to which selected aspects contribute to successful completion of graduate programs (n=112)

Aspect	Mean		SD		n	
	Master's	Doctorate	Master's	Doctorate	M	D
Increased admission standards	3.56	3.72	1.17	1.16	105	105
Regular program reviews (e.g., every 3-5 years)	2.59	2.70	1.09	1.09	107	108
High student motivation	4.59	4.66	0.61	0.53	110	110
Appropriate supervision	4.34	4.35	0.76	0.70	110	110
Substantial period of full-time study	3.83	4.03	1.07	1.02	104	103
Careful selection of students	4.21	4.33	0.85	0.82	108	108
Careful testing throughout the program	2.86	2.92	1.05	1.11	106	105
Adequate financial support	3.66	3.91	1.04	1.01	110	110
High problem-orientation of students	3.71	3.99	0.98	0.97	88	88
Clear definition by students of research field	3.87	4.28	0.97	0.79	104	105
Encouragement of students from family members	3.16	3.18	1.06	1.12	103	103
Mental resilience of students	3.89	4.14	0.85	0.83	104	104
Confidence of students	3.91	4.12	0.85	0.83	107	107
Favorable opinion of students by supervisors	3.48	3.66	0.92	0.90	108	108
Specification of a maximum period for completion of program	2.99	3.00	1.08	1.08	109	109

Note: Calculation of means was based on responses using this scale:
1=not at all; 2=a little; 3=some extent; 4=considerable extent; 5=a great deal

Comparison. When the means for the ten common aspects in Tables 5 and 6 were compared, on only two aspects were the perceived means greater than the actual means. Supervisors' responses for high student motivation as a contributor obtained means of 4.59 (master's) and 4.66 (doctoral) as compared with 3.57 and 3.66 for department heads, while the corresponding figures for high problem-orientation of students were 3.71 and 3.99 compared with 3.06 and 3.13. (Several respondents stated that the term "high problem-orientation" was not clear.) Conversely, whereas regular program reviews had means of 3.42 (master's) and 3.45 (doctoral) with respect to emphasis placed by department heads to increase successful completion, supervisors rated this practice lowest with means of 2.59 and 2.70.

Reasons for Non-completion Within Time Limit

Both department heads and supervisors were asked to provide "the three most common reasons why your graduate students do not complete their programs within your university's time limit." Separate responses were requested for master's and doctoral students. Replies were received from 84 department heads and 110 supervisors: these were combined and the most frequent replies are displayed in Table 7. Some replied that non-completion either did not occur or was rare in their departments. Others supplied either one or two reasons for master's and/or doctoral students, rather than three.

As shown in Table 7, the six reasons which received at least 25 mentions for master's students were as follows: accept employment prior to program completion; financial constraints; inadequate supervision; lack of motivation, etc.; lack of ability; and an ill-conceived research project. All except lack of ability were also in the six most frequently mentioned reasons relevant to doctoral students. These reasons are consistent with those identified in the literature cited earlier (e.g., Canadian Association of Graduate Schools, 1987; OECD, 1987; Powles, 1989; Hamilton et al., 1991;). The frequencies for the reasons listed in Table 7 were very similar for the two degree levels, with the most striking differences between the replies for master's and doctoral students being substantially more frequency of mention for doctoral students of lack of incentive to complete on time (22 doctoral vs. 8 masters), discouragement during research activity (14 vs. 4), and difficulties with research project (12 vs. 2).

Discipline Differences

Space does not permit the inclusion of analyses of answers to all questions for respondents classified by discipline area. The following examples are included to demonstrate that discipline differences appear to exist among supervisors,

Table 7
Frequency distributions of reasons provided by department heads and supervisors why graduate students do not complete programs within the university's time limit

Reason	Master's Students f	Doctoral Students f
Accept employment prior to program completion	55	53
Financial constraints	37	45
Inadequate supervision	36	45
Ill-conceived research project	25	32
Lack of motivation/commitment/resolve/ work ethic/industry	36	26
Lack of incentive to complete on time	8	22
Lack of ability	31	20
Personal difficulties, including health	23	19
Family reasons including marriage, pregnancy and change of location	20	19
Overly ambitious research plans of student	15	18
Discouragement during research activity	4	14
Emergence of other interests	15	12
Changes of goals, e.g., transfer to Medicine	14	12
Demands of part-time work	11	12
Difficulties with research project	2	12
Inadequate preparation	17	6

even though the sub-samples were quite small. Life science respondents showed less agreement with the position that course work should be required of all doctoral students than did respondents in the three other discipline areas – 56% agreed compared with 66% (engineering and science), 89% (humanities), and 77% (social sciences). Also, the social science and life science supervisors agreed to a greater extent with the position that the number of required courses should be varied depending upon the student's background than did respondents for engineering/science and humanities – 100% and 96% vs. 74% and 68%.

Some substantial differences also were found among the responses of the department heads concerning actual practices. For example, when asked

whether the number of required courses varied depending upon the student's background, the following percentages answered "true" for the different disciplines – life science (83%), engineering and science (76%), social sciences (63%), and humanities (53%). With respect to the establishment of quotas for high demand programs, the social science department heads indicated that this action was more likely to occur in their discipline area than did the heads in the three other discipline areas – 42% versus 12% (engineering and science), 9% (life sciences), and 6% (humanities). These data support the propositions referred to earlier (e.g., Hamilton *et al.,* 1991; Yeates, 1991) that the graduate experiences vary considerably across disciplines.

Other Matters

Several matters other than those described above were explored in the questionnaires. Some of these are presented below, with the information provided by the department heads integrated with the opinions of supervisors.

Years allowed for program The most frequent maximum number of years allowed for a doctoral program was six; for master's programs, four and five years were about equally frequent. Responses of supervisors indicated that they would favor a shorter period: five years was the most frequent choice for a post-bachelor's PhD program (38%), four years for a post-master's PhD program (37%), two years for a post-4-years-bachelor's master's program and three years for a post-3-years-bachelor's master's program.

Size of supervisory committee The most common size of supervisory committee for both master's and doctoral students was reported by department heads to be three: 46% and 48% identified this number. Supervisors tended to agree that three was the desirable number with 53% and 37% choosing three for master's and for doctoral respectively, although 33% favored four for doctoral committees.

Decider of topic for thesis The current situation in which the topics for both master's and doctoral theses tended to be jointly decided by supervisor and student (75% master's and 86% doctoral) was supported by the supervisor respondents (84% master's and 89% doctoral). Whereas 19% of the department heads reported that topics were normally selected by supervisors, only 12% of supervisors selected this option.

Publication When asked what would be the common situation with respect to authorship of publications resulting from research in which the supervisors had "considerable involvement," 93% of the department heads identified joint publication by supervisor and student. This position was favored by 87% of the supervisors. When asked the same question but with "little direct

involvement," 60% of the department heads selected the student as the sole author and 33% selected joint authorship. For supervisors, the responses were 71% student only and 21% joint.

Candidacy examination Basing the candidacy examination on both the thesis proposal and course work was reported by 43% of department heads as the normal situation: such an approach received the support of 40% of the supervisors. Basing it mainly on the thesis proposal was the second most common practice with 23% of the department heads selecting this approach: it was supported by 31% of the supervisors. Only 10% or fewer favored basing the candidacy examination either solely on the thesis proposal or solely on course work.

General Comments

The respondents also provided many general comments about the organization and administration of graduate programs. Some of these comments reflected differing opinions, showing that the obtaining of consensus about different issues and practices is unlikely. For example, in one of the universities a respondent recommended that supervisory committees are unnecessary when the supervisor is experienced and successful; others considered that supervisory committees should meet more regularly. Also, while one stated that all graduate theses should be subject to external review, another proposed that graduate programs are restricted by too many rules and regulations. Two professors in that university were especially concerned over the lack of recognition of supervision of graduate students as a part of workload, but most respondents did not address this matter.

Discussion

Detailed discussion of all of the results of this pilot study cannot be included in this brief article. However, some matters warrant special mention. First, the establishment of quotas in high-demand graduate programs was well favored. Second, meeting the doctoral thesis requirement through a set of interrelated articles in refereed journals was supported by half of the supervisors. Third, respondents placed considerable emphasis upon the importance of the following variables for successful completion of graduate programs student motivation, financial support, supervision, project planning, careful student selection, and a period of full-time study. Fourth, differences in some practices and in the perceived effectiveness of these practices seemed to exist among discipline areas. Some of these findings were consistent with those found in the literature cited in

the first section of this paper (e.g., variables associated with success) while other findings (e.g., about quotas) are about matters discussed on some campuses but neglected in the literature.

Several other important relevant questions need to be addressed in future research. What major trends in enrolment in master's and doctoral programs in different disciplines are occurring in Canada and in selected other western countries? What are the average completion rates and completion times for graduate programs in different discipline areas? What are the most common ways of incorporating graduate studies into the organizational structure of universities? What linkages exist between the universities' research offices and their faculties/schools of graduate studies? What differences occur in expected and actual supervisory practices among universities, disciplines, and countries? What are the perceived advantages and disadvantages of graduate assistantships? In view of the economic and cultural importance to the nation of graduate studies, and the substantial impact upon individuals' lives of experiences during graduate programs, more detailed examination of this aspect of university operations is certainly warranted.

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