

RESEARCH PAPER

What happens after graduation? Outcomes, employment, and recommendations of recent junior/community college graduates with and without disabilities

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Purpose: The objective was to compare employment status of junior/community college graduates with and without disabilities. **Methods:** We compared post-graduation outcomes of 182 graduates with and 1304 without disabilities from career/technical and pre-university programs from three junior/community colleges. Findings for graduates who had registered for disability related services from their school and those who had not were examined separately. Reported academic obstacles and facilitators were also compared. **Results:** Few employment differences between graduates with and without disabilities were found. Two-thirds of career/technical graduates from both groups were employed, approximately 30% were studying, and less than 3% were either looking for work or "unavailable for work." Over 80% of pre-university graduates in both groups were continuing their studies; here, too, numbers of employed graduates (14% with and 13% without disabilities) were similar and very few in both groups (<2%) were either looking for work or "unavailable for work." Full versus part-time employment of these two groups was very similar and the same proportion of graduates with and without disabilities were working in jobs related to their studies. Only in "closely related" work did graduates without disabilities have the advantage. **Conclusions:** Employment prospects for junior/community college graduates with disabilities seem to be quite positive.

Keywords: Academic success, employment, graduates, registration for campus access services

Introduction

During the past decade, enrollment and graduation rates of students with disabilities in postsecondary education have

Implications for Rehabilitation

- Postsecondary education results in a favorable employment picture for college graduates with disabilities.
- College graduates who had registered for campus disability related access services reported that this was a key facilitator of their academic success.

been steadily increasing and we estimate that in 2010, approximately 10% of North American postsecondary students have a disability [1-4]. In particular, junior/community colleges have enrolled substantial numbers of learners [5,6]. Yet, skeptics have been known to ask, "Why should we support students with disabilities in postsecondary education? Does the extra cost produce desirable results?" Students, too, ask, "Will a college education actually increase my chances of having a fulfilling career?" Stakeholders, as well, need concrete information on what happens to students after graduation. Yet, studies of recent postsecondary graduates with disabilities are rare. Are graduates employed? How closely related is their job to their program of study?

Census data show that the percentage of Canadian adults with disabilities employed in 2006 was 51%, compared to 75% for those without disabilities [7]. Rates in the United States in 2005 were 46% and 84%, respectively [8]. These statistics, of course, do not reflect individuals who are looking for work or those who are unavailable for work (i.e. "not in the labor force"). Moreover, these figures refer to the entire population of individuals with disabilities, including those who lacked educational opportunities or acquired a disability later in life. Little is known about contemporary college-educated

youth who have been typically mainstreamed into “regular” schools and who have completed junior/community college or university.

Postsecondary education and employment

Data show that once they enter postsecondary education, students with disabilities who are registered to receive disability related services from their school generally graduate at the same rate as their nondisabled peers, the main difference being that students with disabilities take additional semesters to do so [9–11]. Of course, postsecondary graduates both with and without disabilities have better employment outcomes than counterparts without this [12,13].

But what about employment of recent university and junior/community college graduates with disabilities? With the exception of individuals with learning disabilities and visual impairments [14–16], we have been unable to find comparative studies of recent graduates with and without disabilities. For example, a recent unpublished report by the Nova Scotia Department of Education [17] showed that 82% of junior/community college graduates and 80% of university graduates with disabilities were employed approximately 1 year after graduation. However, all graduates in this study had received disability related services from their school, even though approximately half to two-third of college and university students with disabilities typically do not register for such services [1,2,18]. This is noteworthy for several reasons. First, students who register for such services may differ in substantial ways from those who do not. Second, such services often provide employment related information.

Obstacles and facilitators of academic success

Before they can look forward to employment, students must graduate. Therefore, we also explored a related issue: what did successful students (i.e. graduates) think were academic obstacles, and what were the facilitators which made their academic experience easier.

Present investigation

We asked all graduates from three large urban junior/community colleges what they were doing 5 to 10 months after receiving their diplomas. We also asked them what helped and what hindered their school success. We broke down the sample of graduates with disabilities into those who had registered for disability related services from their school, and those who had not done so. This required that we use only self-report about students’ disabilities.

For admission into diploma programs the junior/community colleges where we carried out this study require, as a minimum, graduation from high school. These colleges are publicly funded and offer two types of diploma (Associate Degree) programs: pre-university studies (2 year program after which students typically enroll in 3 year university Bachelor’s programs) and 3 year career/technical programs which provide a qualification in fields such

as nursing, radiation oncology and electronics engineering technology.

Methods

Measures

Demographic Questions were items that asked about sex, age, college program, and a checklist to indicate the nature of the respondent’s disabilities/impairments.

Open-Ended Easier-Harder Questions asked respondents to identify the three most important factors that made their college studies easier, and the 3 that made their studies harder. Responses were categorized [19] and scored by three coders trained to a minimum of 80% inter-rater reliability.

Post-graduation questionnaire

This measure asked respondents whether they were studying (full or part-time), working (working full-time at 30 hours or more per week, working part-time, looking for work or unavailable for work) and, if so, how closely related their current job was to the training they received in college (closely, partly or unrelated).

Participants and procedure

The study, which was approved by Dawson College’s Human Research Ethics Committee, was carried out in 2005. Five to 10 months after graduation, all diploma program graduates (N=5251) from three large urban junior/community colleges in Canada were mailed an information and consent form, a two-page questionnaire, and a stamped self-addressed envelope. Graduates could request an alternate format. Graduates’ student numbers appeared on their questionnaire. Three weeks after the first mailing questionnaires were resent to non-responders.

The final sample consisted of 1486 graduates (1032 females, 451 males, 3 did not indicate), for an overall 28% return rate. Twelve percent self-identified as having a disability (n=182). Student numbers of these graduates were checked against their colleges’ records to determine whether or not they had registered to receive college based disability related services. This allowed us to compile three groups: Nondisabled Graduates (n=1304), and two groups of graduates with disabilities; those who had registered for college disability related services: Registered Graduates (n=24) and those who had not: Non-Registered Graduates (n=158). There were similar return rates in each of the three groups from the three colleges.

Graduates with disabilities (M=23.0, SD=4.3) were slightly, but significantly older than graduates without disabilities (M=22.4, SD=3.4), $t(1476)=2.13$, $p=0.033$. The sex breakdown was 69.5% female and 30.4% male graduates, percentages that are similar to those of the entire population of career technical graduates for the two urban centers concerned (i.e. 66% vs 34%, respectively [20]). A Chi-Square test, $\chi^2(1, N=1483)=0.76$, $p=0.384$, showed no significant difference between the proportions of male and female graduates with (Females=72.4%, Males=27.6%)

and without disabilities in our sample (Females = 69.2%, Males = 30.8%).

Results

Sample characteristics

One hundred and eighty-two of the graduates reported a total of 212 disabilities (i.e. several had two or more disabilities). The distribution of disability types for graduates who had Registered for disability related services from their school and those who had Not-Registered was grouped into seven categories. The significant Chi-Square test, $\chi^2(6, n = 182) = 37.81, p < 0.001$, and Table I show that Registered Graduates were

more likely to have a learning disability, multiple disabilities, and a hearing impairment, than Non-Registered graduates who, in turn, were more likely to have a visual, psychological or medical disability. Twenty-one percent of Registered and 12% of Non-Registered graduates had two or more disabilities.

Slightly more than half of the participants graduated from pre-university programs: 51% (i.e. 93 of the 182) of the sample with disabilities and 58% (i.e. 756 of 1304) of those without disabilities. There was no significant difference between the proportion of graduates in pre-university and career/technical programs, $\chi^2(1, n = 1473) = 2.85, p = 0.091$. It can be seen in Figure 1 that similar proportions of graduates in the three groups were enrolled in pre-university and in career/technical programs.

What happens after graduation?

Employment

Employment rates, study and work status were calculated according to the Ministère de l'Éducation, du Loisir et du Sport [21]. Table II shows that the profiles for graduates with and without disabilities were very similar; there was no significant difference for either pre-university, $\chi^2(4, n = 842) = 0.92, p = 0.921$, or career/technical programs, $\chi^2(4, n = 626) = 1.33, p = 0.856$. The sample sizes of 712 and 932 are sufficient to detect small to moderate differences in employment rates, $1 < w < 0.3$, using a Chi-Square contingency test, $df = 4$, with an alpha of 0.05 and beta of 0.2 [22].

Of pre-university graduates with disabilities, 83.3% were studying compared to 84.2% of graduates without disabilities. Approximately 30% of career/technical program graduates, both with and without disabilities, were continuing their studies. Significance testing for Registered and Non-Registered graduates was not carried out because of small sample sizes, although the data are provided in Table II for comparison purposes.

Field of study

To calculate the percentage of graduates employed in the field of study of the program from which they graduated only those in full-time employment were included (cf. Ministère de l'Éducation, du Loisir et du Sport [21]). The percentages of graduates employed in the field of study of the program from which they graduated are shown in Table III. As expected, the percentage of graduates with and without disabilities combined who were employed in the field of study of their

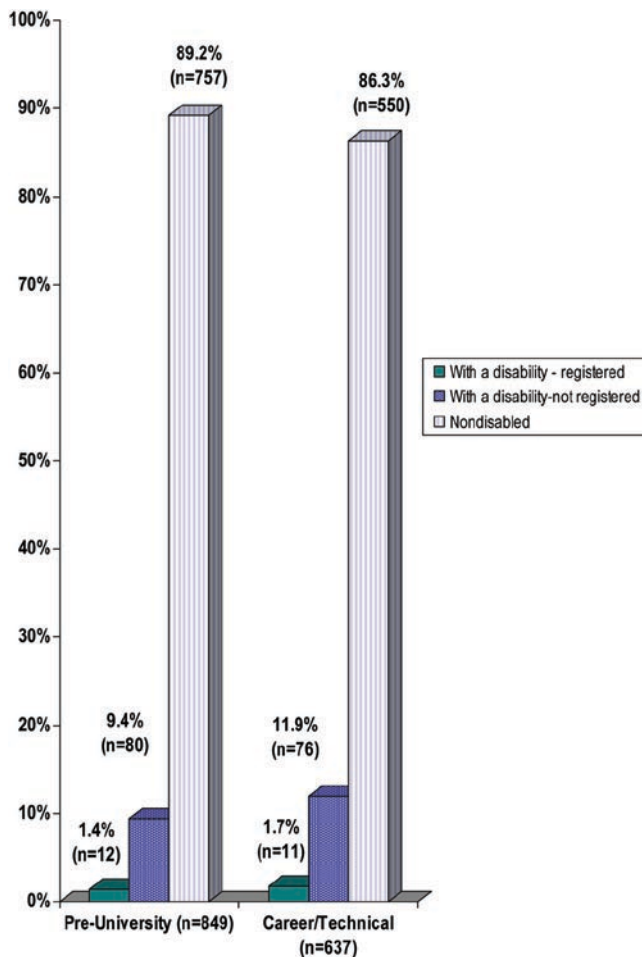


Figure 1. Enrollments in pre-university and career/technical programs.

Table I. Grouping graduates with disabilities into disability categories.

Combined disability categories	Registered n, (%)	Unregistered n, (%)	Total n, (%)
Learning disability/ADD	8 (33.3)	10 (6.3)	18 (9.9)
Medical impairment	2 (8.3)	31 (19.6)	33 (18.1)
Psychological impairment	2 (8.3)	39 (24.7)	41 (22.5)
Visual impairment and blindness	0 (0.0)	47 (29.7)	47 (25.8)
Hearing impairment and Deafness	4 (16.7)	5 (3.2)	9 (4.9)
Multiple disabilities	5 (20.8)	19 (12.0)	24 (13.2)
Other ^a	3 (12.5)	7 (4.4)	10 (5.5)
Total with disabilities	24 (100)	158 (100)	182 (100)

^aIncludes pervasive developmental disabilities, mobility impairment, limitation in use of hands or arms, neurological impairment, speech/communication impairment.

programs was lower for pre-university than for career/technical programs.

For pre-university graduates there was no significant difference between those with and without disabilities employed in a field of study that was related to their program (33.3% vs. 29.8%), $\chi^2(1, n=66)=0.05, p=0.83$. This was also true when the proportion of graduates in a field “closely” related to the program was compared, $\chi^2(1, n=66)=0.19, p=0.67$.

Although, there was no significant difference between the proportion of career/technical program graduates with (81.4%) and without disabilities (90.6%) who were employed in a field of study related to their program, $\chi^2(1, n=310)=3.33, p=0.07$, the difference was significant when proportions in a field “closely” related were compared (graduates with (60.5%) and without disabilities (76.4%), $\chi^2(1, n=310)=4.91, p<0.05$. It was not possible to conduct a meaningful comparison of Registered and

Table II. Activities of graduates 5–10 months after graduation.

Status	n	Working full time (%)	Working part time (%)	Looking for work (%)	Studying (%)	Unavailable for work (%)	Total (%)
Pre-university ^a							
With a disability							
Registered	12	0.0	0.0	0.0	91.7	8.3	100
Not registered	78	11.5	5.1	1.3	82.1	0.0	100
Total disability	90	10.0	4.4	1.1	83.3	1.1	100
No disability	752	7.6	5.1	1.7	84.2	1.5	100
Career/Technical ^b							
With a disability							
Registered	11	36.4	9.1	0.0	54.5	0.0	100
Not registered	75	53.3	16.0	1.3	26.7	2.7	100
Total disability	86	51.2	15.1	1.2	30.2	2.3	100
No disability	540	49.4	13.7	3.3	30.9	2.6	100

^aThere were 844 pre-university program graduates. However, 2 did not reply to the work or study question.

^bThere were 629 career/technical program graduates. However, 3 did not reply to the work or study question.

Table III. Employment in field of study among those who were working full-time.

Disability status	n	Closely related (%)	Partially related (%)	Not related (%)	Related (closely + partially) (%)
Pre-university programs					
With a disability					
Registered ^a					
Unregistered	9	11.1	22.2	66.7	33.3
Total disability	9	11.1	22.2	66.7	33.3
No disability	57	7.0	22.8	70.2	29.8
Career/Technical programs					
With a disability					
Registered	4	50.0	25.0	25.0	75.0
Unregistered	39	61.5	20.5	17.9%	82.1
Total disability	43	60.5	20.9	18.6	81.4
No disability	267	76.4	14.2	9.4	90.6

^aNone of the registered graduates met the inclusion criteria.

Table IV. Employment in field of study among those who were working.

Disability status	n	Closely related (%)	Partially related (%)	Not related (%)	Related (fully + partially) (%)
Pre-university programs					
With a disability					
Registered ^a					
Unregistered	9	11.1	22.2	66.7	33.3
Total	9	11.1	22.2	66.7	33.3
No disability	57	7.0	22.8	70.2	29.8
Career/Technical programs					
With a disability					
Registered	4	50.0	25.0	25.0	75.0
Unregistered	39	61.5	20.5	17.9%	82.1
Total	43	60.5	20.9	18.6	81.4
No disability	267	76.4	14.2	9.4	90.6

^aNone of the registered graduates met the inclusion criteria.

Non-Registered graduates with disabilities or of graduates with different impairments due to small sample sizes.

Facilitators and obstacles

Four sets of Chi-Square tests, with Bonferroni corrections to the alpha level, were carried out to compare the number of responses by participants. Important facilitators and obstacles are those indicated by at least 5% of participants in each group. It should be noted that we combined responses

of graduates with different impairments. Thus, other items may have emerged for graduates with different disabilities (e.g. extended time for exams, a sign language interpreter). The percentage of responses that deal with accommodations should be interpreted in this light.

Graduates with and without disabilities

Graduates with and without disabilities noted virtually all of the same important facilitators. Understandably, there was

%	With Disabilities (n=179)	Facilitator Item	Without Disabilities (n=1238)	%	n	X ² (1)	p =
55%		Professors		55%	684	0.02	0.900
20%		College Environment		23%	287	1.17	0.279
18%		Motivation		17%	212	0.06	0.803
14%		Friends		15%	182	0.07	0.795
14%		Finances		12%	145	0.70	0.404
13%		Transportation		15%	181	0.40	0.528
12%		Courses		13%	160	0.06	0.813
9%		Personal Situation		13%	159	1.51	0.205
9%		Schedule		7%	86	0.93	0.335
8%		Courses: Easy		8%	78	0.50	0.440
7%		Classmates		8%	95	0.21	0.646
7%		Support/Help		3%	39	5.69	0.017
6%		Family		5%	66	0.20	0.653
6%		Computers		9%	106	1.84	0.175
6%		Library		7%	92	0.90	0.372
6%		Accommodations: Disability Services		7%	82	0.28	0.599
5%		Study Skills		0%	1	61.55	0.000
3%		Academic Preparation/Background		8%	99	1.96	0.162
				5%	59	1.41	0.235

Note: Percentages refer to percent of participants who said this. Only items with => 5% endorsement are listed.

Figure 2. Facilitators: Graduates With and Without Disabilities. Note. Percentages refer to percent of participants who said this. Only items with ≥5% endorsement are listed. After a Bonferroni correction to the alpha levels, only the Accommodations item remained significant.

%	With Disabilities (n=179)	Obstacle Item	Without Disabilities (n=1238)	%	X ² (1)	p
23%		Courses: Difficult		21%	0.53	0.468
20%		Courses		15%	2.53	0.111
15%		Professors		24%	6.81	0.009
14%		College Environment		14%	0.00	0.975
13%		Schedule		14%	0.24	0.623
13%		Personal Situation		11%	0.60	0.440
12%		Job		15%	1.15	0.284
10%		Finances		15%	3.13	0.077
10%		Courses: Many		8%	1.30	0.254
8%		Program		7%	0.20	0.654
8%		Transportation		14%	5.86	0.016
6%		Study Skills		6%	0.05	0.826
6%		Transition		5%	0.91	0.339
6%		Motivation		3%	3.57	0.059
6%		Family		2%	6.15	0.013
5%		Disability/Impairment		1%	12.59	0.000
4%		Computers		6%	0.99	0.319

Note. Percentages refer to percent of participants who said this. Only items with => 5% endorsement are listed.

Figure 3. Obstacles: Graduates With and Without Disabilities. Note. Percentages refer to percent of participants who said this. Only items with ≥5% endorsement are listed. After a Bonferroni correction to the alpha level, only the Accommodations item remained significant.

%	Registered to Receive Services (n=23)	Facilitator Item	Not Registered to Receive Services (n=156)	%	X ² (1)	p
52%		Professors		55%	0.07	0.790
4%		College Environment		22%	3.88	0.049
17%		Motivation		18%	0.00	0.948
4%		Friends		15%	2.03	0.154
9%		Program		15%	0.61	0.435
0%		Finances		15%	3.89	0.049
0%		Transportation		14%	3.70	0.054
0%		Personal Situation		10%	2.59	0.108
9%		Courses		10%	0.02	0.888
9%		Schedule		8%	0.03	0.867
0%		Classmates		8%	1.90	0.168
9%		Courses: Easy		6%	0.17	0.682
0%		Family		6%	1.56	0.211
4%		Library		6%	0.08	0.782
13%		Support/Help		5%	2.18	0.140
9%		Computers		5%	0.48	0.487
4%		Study Skills		5%	0.03	0.873
43%		Accommodations: Disability		0%	71.84	0.000
13%		Accommodations: Note Taker		0%	20.69	0.000
9%		Sensitization/Information		0%	13.72	0.000

Note. Percentages refer to percent of participants who said this. Only items with => 5% endorsement are listed. After a Bonferroni correction to the alpha level, only the Sensitization/Information and the two Accommodations items remained significant.

Figure 4. Facilitators: Graduates With Disabilities. Percentages refer to percent of participants who said this. Only items with ≥5% endorsement are listed. After a Bonferroni correction to the alpha level, only the Sensitization/Information and the two Accommodations items remained significant.

one exception: graduates with disabilities were significantly more likely to indicate that the accommodations provided by the campus office for students with disabilities was an important facilitator. A complete listing of facilitators endorsed by at least 5% of each group is provided in Figure 2.

Similarly, the most important obstacles were also shared. Exceptions were that graduates with disabilities noted that the impact of their disability/impairment posed an obstacle. More nondisabled graduates, on the other hand, noted that professors posed an important obstacle.

Graduates registered and not registered for disability related college services

It can be seen in Figures 4 and 5 (Facilitators) and (Obstacles), respectively, that there were important dissimilarities between these two groups.

For example, Figure 4 shows that 43% of graduates registered to receive disability related services noted that this service was a facilitator, making it the second most popular response of this group. Non-registered graduates with disabilities did not indicate this. Registered graduates, as opposed to Non-Registered graduates, also noted that disability related accommodations such as a note taker were an important facilitator for them, as was sensitization of the campus community regarding disabilities.

When it came to obstacles, Figure 5 shows that only one comparison was significant: registered graduates were more likely to indicate that their disability and health were obstacles than non-registered graduates.

Discussion

Overview

Overall, our findings show little difference in the percentage of graduates with and without disabilities who continued their studies after graduating from junior/community college, or in the percentages of those who were working full or part-time, although graduates with disabilities were less likely to work in

employment closely related to their field of study. When it came to obstacles and facilitators, there were many similarities between graduates with and without disabilities. In particular, graduates who had registered for disability related services felt that these services were an important facilitator, along with note takers and sensitization of the campus community. It was not surprising that students with disabilities felt that their impairment/disability posed an important obstacle to academic success.

It is also noteworthy that (1) students with and without disabilities graduated from pre-university and career/technical program in similar proportions, (2) only 13% of graduates in our sample had registered for disability related services from their college and (3) that the disabilities / impairments of graduates with disabilities who had registered for campus disability related services differed from those of graduates who had not done so.

Sample characteristics

Twelve percent of graduates in our sample reported a disability, a percentage similar to reports in the literature [1-4]. The samples did not differ from what would be expected as regards age, gender and proportion enrolled in pre-university or career/technical programmes.

Of graduates with disabilities, only 13% had registered with their college to receive disability related services. A low rate of registration is typical of reports in the literature [1,2,18]. It should be noted, however, that the disabilities of graduates in the two groups differs somewhat. Because of the way in which samples of most studies are obtained in the literature, there is minimal data available on postsecondary students and graduates with disabilities who do not register for services. As is evident from our study, estimating the rate of disability in colleges using only the numbers of those who register significantly under-reports the actual rate and fails to address concerns and issue of the many individuals with disabilities enrolled in our schools. Why students do not register for dis-

%	Registered to Receive Services (n=23)	Obstacle Item	Not Registered to Receive Services (n=156)	%	X ² (1)	p
22%		Personal Situation		12%	1.86	0.172
22%		Disability/Impairment		3%	15.43	0.000
17%		Courses		20%	0.08	0.779
17%		Professors		15%	0.11	0.740
13%		Job		12%	0.01	0.906
9%		Courses: Difficult		26%	3.21	0.073
9%		College Environment		15%	0.61	0.435
9%		Schedule		13%	0.41	0.524
9%		Finances		10%	0.05	0.816
9%		Study Skills		6%	0.30	0.585
9%		Computers		4%	1.10	0.293
9%		Health		4%	1.10	0.293
4%		Courses: Many		11%	0.95	0.330
4%		Program		9%	0.56	0.455
4%		Transition		6%	0.15	0.701
4%		Family		6%	0.08	0.782
4%		Motivation		6%	0.08	0.782
0%		Transportation		9%	2.24	0.135

Figure 5. Obstacles: Graduates With Disabilities. Note. Percentages refer to percent of participants who said this. Only items with => 5% endorsement are listed.

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ability related services is an important empirical question that needs further study.

What happens after graduation?

Studying

Although the overall rates of graduates with and without disabilities who continued their studies were very similar, a disproportionately large number of graduates with disabilities from career/technical programs who had registered for disability related services had elected to continue their studies. There was a similar trend among pre-university students. Because sample sizes in the registered groups are very small, these results should be interpreted with caution. Nevertheless, such findings reflect qualitative results in other investigations which suggest that students with disabilities feel they must continue their education to become employable [23].

Employment

Both our data and those reported overall for Canada for 2006 show little difference in the employment rates of adults with and without disabilities [6]. What is different between the Statistics Canada findings and ours concerns their report that 44% of individuals with disabilities were not in the labor force, compared to 20% of nondisabled individuals. In our sample, most of those “not in the labor force” were, in fact, simply continuing their studies. Moreover, this group constitutes only one-third of the graduates and, perhaps more important, this figure is virtually identical for graduates with and without disabilities.

Career/technical program graduates are generally expected to obtain employment after graduation. Therefore, it is perhaps more meaningful – and important – that there was no significant difference in the proportion of employed participants among career/technical program graduates. This was true whether graduates with disabilities were or were not registered to receive disability related services from their college.

The employment rate of graduates in career/technical programs was very high. Students enrolled in career/technical programs often have a work based component such as an internship or a practicum. Research has shown that this is seen as especially valuable for students with disabilities [24,25].

Overall, these positive findings on employment are very similar to the results of a survey of 44 309 Ontario junior/community college graduates during the same period, most of whom did not have a disability [26].

What about full time and part-time status?

The results again show no significant differences between graduates with and without disabilities, whether they had registered to receive disability related services from their colleges or not.

Are graduates working in the fields in which they studied?

Yes, but ... Similar to reports from the Nova Scotia Department of Education study [17] and from McGill University [27], we found no difference between graduates with and without disabilities on the overall question concerning whether their

employment was related to their field of studies. We did find, however, that graduates with disabilities in career/technical programs were less likely than nondisabled graduates to obtain employment in a field “closely” related to their field of study. This, too, is similar to findings reported elsewhere [17]. It would be interesting to know why such a difference occurs.

Obstacles and facilitators

Facilitators

Graduates with and without disabilities noted virtually all of the same important facilitators: good professors, the college environment, their motivation, interesting program of studies and having friends. There was only one significant exception: graduates with disabilities who had registered to receive disability related services were more likely to indicate that these services were an important facilitator. Of course, consistent with reports by others [28,29], graduates with disabilities who had, and those who had not registered to receive disability related services from their college differed on this dimension. In addition, registered graduates noted that sensitization of the campus community about disability issues was an important facilitator, along with note takers in class.

Obstacles

As was the case for facilitators, most important obstacles were also shared by graduates with and without disabilities. These include: difficult and boring courses, poor professors, the nature of the college environment, and bad schedules. Not surprisingly, graduates with disabilities who had registered for disability related services from their college, in particular, also stated that the impact of their disability/impairment posed an important obstacle.

Registration for campus disability rebated services

As noted earlier, whether students with disabilities register for campus disability related services or not seems, in part, to be related to the nature of their disabilities. We also found somewhat different obstacles and facilitators for graduates who had and those who had not registered for services. But registration for campus disability services also relates to how difficult students find their studies. For example, in a previous series of investigations we showed that junior/community college graduates and students with disabilities who did not register for disability related services perceived their studies as more difficult than either peers with disabilities who registered for these services, or those who had no disability [2,30]. Similarly, in a recent investigation of university students with learning disabilities[18], showed that only 43% of their sample had registered to receive disability related services from their school, and that these registered students were more satisfied with the overall services received from the university than those who did not register. They suggested that “service providers should do more to encourage their students to at least touch base with them, even if in the end they choose not to utilize services” (p. 123).

Limitations of the study

Although this is typical of graduate survey return rates [30], it is important to mention that the 1486 participants represent only a 28% return rate. Also, we did not have adequate sample size to examine similarities and differences between graduates with different disabilities. In particular, it would have been important to examine the impact of visible disabilities on employment. Another concern, although unavoidable given the study design, is that the data are based on self-reports of disability, and not on documented conditions. Moreover, the current labor market is by no means as optimistic as that in 2005, when we conducted our study. Whether employment rates for individuals with and without disabilities differ depending on the overall unemployment rate deserves further study.

In addition, a large number of graduates who had not registered for disability related services indicated that they had a visual impairment, while none of the registered graduates reported this. A troubling explanation is that some graduates who indicated this impairment may have done so because we did not add the caveat that a visual impairment excluded individuals whose vision could be adequately corrected by wearing corrective lenses. In an attempt to eliminate any possible confounding we re-ran all analyses after excluding all who indicated a visual impairment. We are pleased to note that this did not change either the direction or the nature of the findings, nevertheless, this is a concern.

Areas of concern and future research

The findings of this investigation show more positives than negatives: graduates with and without disabilities continued their studies and successfully joined the labor force in equal proportions.

There are, however, two major reasons for concern. The findings show that in our sample the vast majority of college graduates who had a disability did not register for campus disability related services. Furthermore, the literature suggests that such unregistered students with disabilities experience more academic obstacles than either nondisabled graduates or graduates with disabilities who had registered for services [2,18,30]. A second reason for concern relates to a suggestion in our data that graduates with disabilities may feel the need to continue their studies to obtain employment. Whether this is simply a perception on the part of students with disabilities, or whether this reflects poor job opportunities for graduates with disabilities, is an empirical question in need of further investigation.

Future research also needs to continue evaluating outcomes of postsecondary graduates with disabilities, including graduates with different disabilities. In such research, questions related to salary should be included along with items related to job satisfaction. It would also be important to ask recent graduates what helped them obtain employment, what were the barriers, and what their school could have done to help overcome these.

Declaration of Interest: This Research was funded by a grant from Fonds de recherche sur la société et la culture (FQRSC). We are grateful for the support.

References

1. Fichten CS, Asuncion JV, Barile M, Robillard C, Fossey M-E, Lamb D. Canadian postsecondary students with disabilities: where are they? *Can J Higher Education* 2003;33:71–114.
2. Fichten CS, Jorgensen S, Havel A, Barile M with the collaboration of Landry ME et al. College students with disabilities: their future and success. Final report presented to FQRSC. Montréal: Adaptech Research Network, Dawson College; 2006. ERIC (Education Resources Information Center No. ED 491 585).
3. National Science Foundation. Women, minorities, and persons with disabilities in science and engineering, Figure B-1. 2010. Series web site. Available at: <http://www.nsf.gov/statistics/wmpd/disability.cfm>. Accessed October 22, 2010.
4. United States Government Accountability Office. Higher education and disability: education needs a coordinated approach to improve its assistance to schools in supporting students. Report to the Chairman, Committee on Education and Labor, House of Representatives. Washington: U.S. Government Accountability Office; 2009. Available at: <http://www.gao.gov/new.items/d1033.pdf>. Accessed March 6, 2010.
5. Number of students with disabilities at Ontario universities and colleges. Annual reports provided by university and college offices for students with disabilities. 2010. Emailed October 6, 2010 by Susan Alcorn MacKay SAMACKAY@cambridgenc.on.ca
6. Snyder TD, Dillow SA. Digest of educational statistics 2009. NCES 2010-013. Washington, DC: National Center for Education Statistics, U.S. Department of Education; 2010. Available at: <http://nces.ed.gov/pubs2010/2010013.pdf> Accessed October 22, 2010.
7. Statistics Canada. Participation and activity limitation survey 2006: labour force experience of people with disabilities in Canada. 2008. Catalogue no. 89-628-X no. 007. Available at: <http://www.statcan.gc.ca/pub/89-628-x/89-628-x2008007-eng.pdf> Accessed March 12, 2010.
8. U.S. Census Bureau. Americans with disabilities: 2005 – Household economic studies. Washington, DC: U.S. Census Bureau; 2008. Available at: <http://www.census.gov/prod/2008pubs/p70-117.pdf> Accessed on October 23, 2010.
9. Jorgensen S, Fichten CS, Havel A, Lamb D, James C, Barile M.23 Academic performance of college students with and without disabilities: an archival study. *Can J Counsel* 2005;39:101–117.
10. Outcomes Group. 1998 outcomes of former students with disabilities: BC college and Institute Student Outcomes Report. 1998. Available at: <http://outcomes.bcstats.gov.bc.ca/Publications/disabilities/Disabled.pdf> Accessed March 23, 2006.
11. Wessel RO, Jones JA, Markle L, Westfall K. Retention and graduation of students with disabilities: facilitating student success. *J Postsec Educ Disabil* 2009;21:116–125.
12. Krause JS, Reed KS. Obtaining employment after spinal cord injury: relationship with pre- and postinjury education. *Rehabil Counsel Bull* 2009;53:27–33.
13. Stodden RA, Dowrick PW. Postsecondary education and employment of adults with disabilities. *Am Rehabil* 2000;22:19–23.
14. Madaus JW, Zhao J, Ruban L. Employment satisfaction of university graduates with learning disabilities. *Remed Spec Educ* 2008;29:323–332.
15. McDonnell MC. Factors predicting post-high school employment for young adults with visual impairments. *Rehabil Counsel Bull* 2010;54:36–45.
16. Shaw A, Gold D, Wolfe K. Employment-related experiences of youths who are visually impaired: how are these youths faring? *Journal of Visual Impairment & Blindness* 2007;101L:7–21.
17. Nova Scotia Department of Education. Nova Scotia longitudinal follow-up: Post-secondary leavers with disabilities. Halifax, NS: Author, 2008. Available at: psds.ednet.ns.ca/slash-documents/slash-PSDS_Report_Web.pdf. Accessed December 16, 2008.
18. Cawthon SW, Cole EV. Student perspectives on accommodations access and obstacles. *J Postsec Educ Disabil* 2010;23:112–128.
19. Ferraro V, Fichten CS, Barile M. Obstacles and facilitators of college studies coding manual. Montreal: Adaptech Research Network; 2006.
20. Ministère de l'Éducation, du Loisir et du Sport. La relance au collégial en formation technique – La situation d'emploi au 31 mars 2006 de personnes diplômées de 2004–2005 (Tableau 2.1). 2007. Available at: <http://www.mels.gouv.qc.ca/sections/publications/publications/SICA/DRSI/RelanceCollegial2006-1.pdf> Accessed April 19, 2011.
21. Ministère de l'Éducation, du Loisir et du Sport La relance au collégial en formation technique– Le placement au 31 mars 2004 des personnes diplômées de 2002–2003. 2004. Québec: Author.

- Available at: <http://www.mels.gouv.qc.ca/Relance/Collegial/RelCol04/RelanceCollegial2004.pdf> Accessed March 6, 2006.
22. Cohen J. A power primer. *Psychol Bull* 1992;112:155–159.
 23. Williams BC. (2008). Transition from college to work: Lived employment experiences and perceptions of college seniors and recent college graduates with physical disabilities seeking employment opportunities. Unpublished Doctoral thesis, The George Washington University. ERIC (Education Resources Information Center) No. (ED505402).
 24. Burgstahler S. A collaborative model to promote career success for students with disabilities. *J Voc Rehabil* 2001;16:209–215.
 25. Burgstahler S, Bellman S. Perceived benefits of work-based learning: differences between high school and postsecondary students with disabilities. *Asia-Pacific J Inklus Educ* 2005;2:1–19.
 26. Ministry of Training, Colleges and Universities. Employment profile: a summary of the employment experience of 2004–2005 college graduates six months after graduation. 2006. Available at: <http://www.tcu.gov.on.ca/eng/document/serials/eprofile04-05/pdfs/profile20042005.pdf>. Accessed on 20 October 2011.
 27. Wolforth J. Follow-up questionnaire results of 2002–2003 McGill University graduates. Montréal: Office for Students with Disabilities, McGill University, 2006.
 28. Skinner ME. College students with learning disabilities speak out: what it takes to be successful in postsecondary education. *J Postsec Educ Disabil* 2004;17:91–104.
 29. Stewart DW, Morris-Wales J. Do accommodations improve the academic performance of students with learning disabilities? A complex answer to a simple question. *Communiqué* 2004; 42:8–11.
 30. Jorgensen S, Fichten CS, Havel A. Cegep graduates with disabilities— College exit (CRC) scores of graduates registered for disability related services compared to non-registered graduates and graduates without disabilities. Final report presented to PAREA. (2007). ERIC (Education Resources Information Center No. ED498251).