

# See Jane Soar

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A Study of Undergraduate Women's Academic Achievement, University of New Brunswick, Fredericton Campus, 1980-90 documents undergraduate women students' enrollments and academic performance, and it presents an analysis of the data with two primary goals:

(1) to provide academic guidance counselors and advisers throughout the provincial school system with local, up-to-date information to share with young New Brunswick women as they make

mance across the curriculum, such as that done by Dr. Anne Marie Decore at the University of Alberta (1984), have shown that women tend to earn higher grades than men overall. The data from UNB also show clearly that women students' Grade Point Averages are, on average, consistently higher than men's, over all years and in all Faculties.

Enrollments of full-time undergraduates on UNB's Fredericton campus rose over 27% in the ten years under review - from 5,046 in 1980-81 to 6,422 in 1989-90. This increase was due in large part to a steady rise in the numbers of women.

In 1980-81, women constituted 41.2% of all full-time undergraduates; by 1989-90, this figure had risen to 46.5%. At the present rate of increase, there will be gender parity by the year 1997. Distribution of women across the Faculties, and even within Departments and courses of instruction, however, is far from uniform.

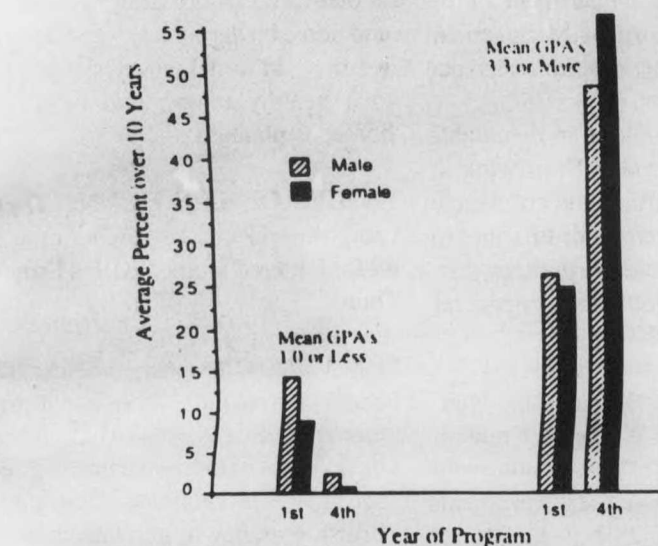


FIGURE 7. Gender comparison of those at the bottom and top of the class in the 1st & 4th years of BSc program.

both academic and career choices; and (2) to encourage women students to take pride in their collective academic achievement and to empower women with knowledge of their demonstrated excellence at the University of New Brunswick in all Faculties.

Studies made during the past decade have shown that the old myth that boys do better than girls at science and math is incorrect. For example, it has been shown that, in contrast to boys' slightly better performance on the mathematical and spatial components of standardized tests, girls' math grades in the classroom tend to be higher than boys' (Kimball 1989). In light of earlier studies, the trends observable in the data collected at UNB in these disciplines were not unexpected.

Surveys of women's academic perfor-

The current study, which analyses data on academic achievement over a ten-year period, 1980-90, at the University of New Brunswick, Fredericton campus, adds to the mounting evidence of women's intellectual capabilities, which have been downplayed over the centuries. (The president of Acadia University in 1882, for example, insisted that "women were incapable of vigorous intellectual work and therefore their presence in college would tend to lower the standard.")

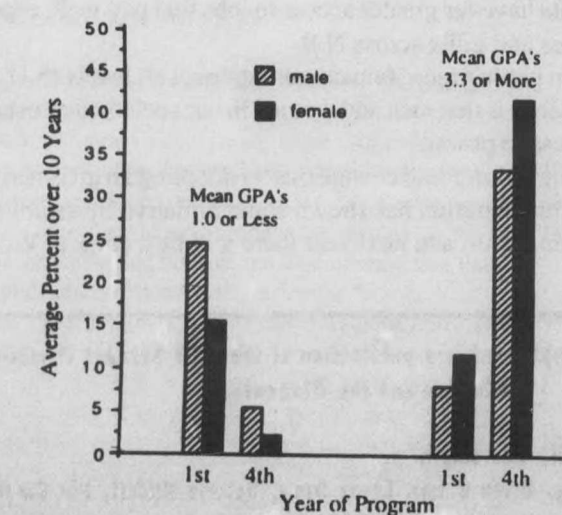


FIGURE 3. Gender comparison of those at the bottom and top of the class in the 1st & 4th years of the BA program.

ARTS IS THE LARGEST FACULTY AT UNB, ENROLLING NEARLY ONE IN FOUR UNDERGRADUATE STUDENTS. Women outperformed men in all years of the program over the whole ten-year period, 1980-90. Women's failure rate at the end of first year, on average, is 15.4% (compared with 27.4% for men); and by fourth year, 42.1% of the women (compared with 33.8% of the men) had a grade point average of B+ or better. Women's greater attrition rate is worrisome,

however.

BUSINESS ADMINISTRATION IS THE SECOND LARGEST FACULTY, WITH 17% OF UNDERGRADUATE ENROLLMENTS. Women's enrollments increased significantly during the decade, rising from 35.2% in 1980 to 43.0% in 1989. As in Arts, proportionately fewer women fail and proportionately more do very well. Here, the drop-out rate is slightly less for women than for men.

ENGINEERING, THE THIRD LARGEST FACULTY, PROVIDES DATA THAT ARE NOT STATISTICALLY RELIABLE BECAUSE OF THE DEARTH OF WOMEN STUDENTS. Still, figures show that women tend to outperform men. It is hoped that the recent appointment of a Chair of Women in Engineering will significantly increase enrollments in the years to come.

EDUCATION, THE FOURTH LARGEST FACULTY, SHOWS LESS OF A GAP IN MALE/FEMALE ACHIEVEMENT LEVELS THAN DO ARTS AND BUSINESS ADMINISTRATION. Men make up only 25% of students in the four-year BED program.

SCIENCE ENROLLMENTS SHOW STEADY INCREASES FOR WOMEN - FROM 40% IN 1982-83 TO 50% IN

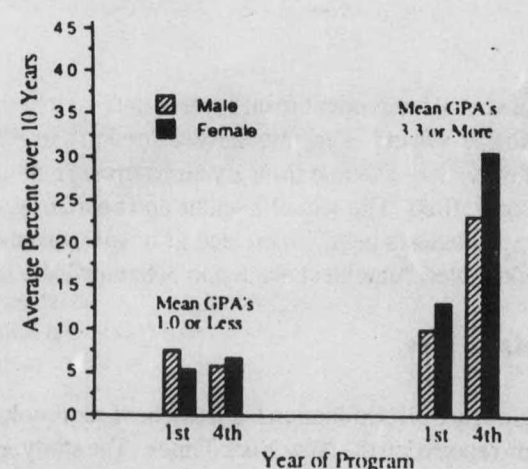


FIGURE 6. Gender comparison of those at the bottom and top of the class in the 1st & 4th years of BEd program.

1989-90. The unusually high GPA's, particularly in fourth year, attest to the high caliber of students of both genders, with 56.5% of women and 48.2% of men attaining GPA's of 3.3 or better. Distribution of women students in various fields and courses within the Science Faculty is uneven, with Biology courses having the highest (60.4%) and Physics course the lowest (28.2%) percentages of women.

Analysis of three mathematically rigorous courses (Chemistry 2600, Physics 2011, and Math 2003) demonstrates, however, that women's strong academic performance is not limited to the less mathematically oriented sciences. Women's av-

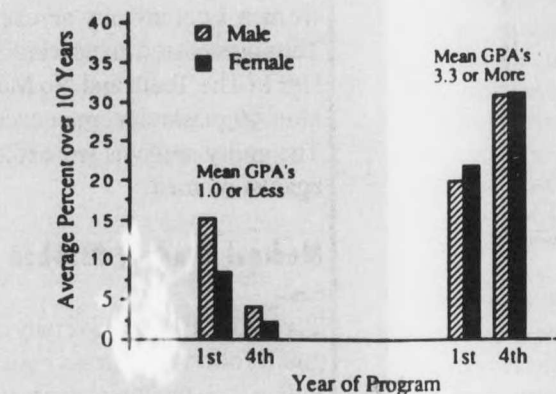


FIGURE 5. Gender comparison of those at the bottom and top of the class in the 1st & 4th years of BSc in Engineering.

erage GPA's in all three courses which cover such topics as thermodynamics, scalar and vector quantities, and differential calculus - are consistently higher than men's.

COMPUTER SCIENCE HAS EXPERIENCED A DECLINE IN WOMEN'S ENROLLMENTS OVER THE PAST DECADE. Small numbers make the statistics unreliable; however, the familiar pattern seems to hold, with proportionately fewer women failing and proportionately more women doing very well. In fourth year, an average of 49.7% of all women students enrolled in Computer Science attain a GPA of B+ or better (compared with 38.2% for men).

PHYSICAL EDUCATION CONTINUES TO ATTRACT MORE MEN THAN WOMEN INTO FIRST YEAR; HOWEVER, the attrition rate for men is more than three times that for women. As a result, graduating classes are nearly gender balanced. The performance of women and men is about equal in the final year, although, again, there are fewer failures

amongst women and proportionately more women with high GPA's.

FORESTRY ATTRACTS FEW WOMEN, AND SMALL NUMBERS YIELD WIDE FLUCTUATIONS IN GRADES. Women do better than just hold their own, however.

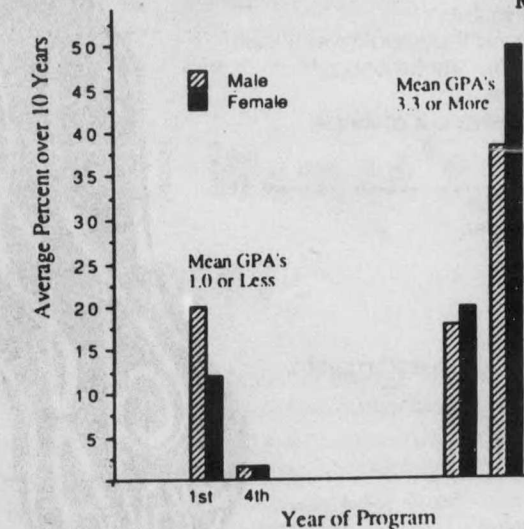


FIGURE 8. Gender comparison of those at the bottom and top of the class in the 1st & 4th years of BScS program.

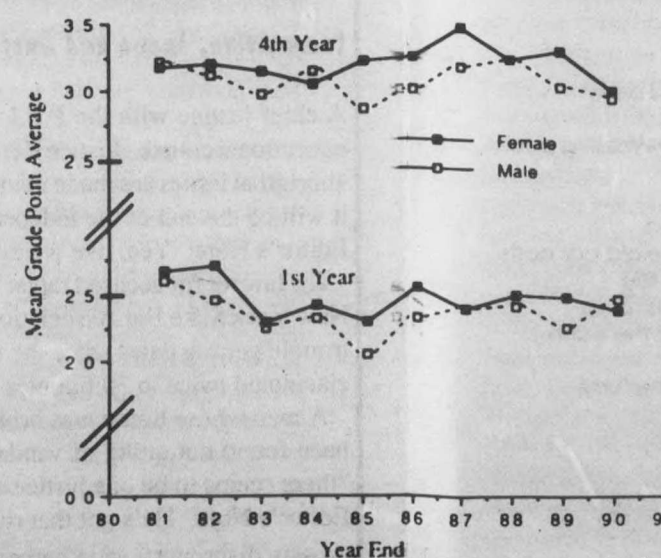
FOREST ENGINEERING ENROLLS TOO FEW WOMEN TO BE OF STATISTICAL INTEREST: an average of less than one woman student was enrolled in any one year of the program over the past decade.

NURSING, ON THE OTHER HAND, attracts too few men to make gender comparisons valid.

LAW FACULTY DATA WERE NOT ANALYZED SINCE THE LL.B. IS MORE LIKE A GRADUATE THAN AN UNDERGRADUATE DEGREE PROGRAM IN THAT IT REQUIRES FOR

ENTRANCE the completion of at least three years of a Bachelor's degree in some other discipline. It is noteworthy, however, that 37.8% of Law Students in the past decade were women, and slightly more than half of the current first year class (1991-92).

NO PROGRAM STUDENTS TAKE



GRAPH 6. GPA's by gender in the 1st & 4th years of the BSc program, 1980-81 to 1989-90.

COURSES ACROSS THE UNIVERSITY, SO INFORMATION FOR THIS CATEGORY IS DIFFICULT TO INTERPRET MEANINGFULLY. It is to be noted that 43.2% of full-time No Program students are women, and again their mean GPA's are significantly higher than men's. In fourth year, the mean GPA of women is 3.03 compared to 2.30 for men.

In conclusion, academic guidance counselor should be encouraged to inform potential students of the success of undergraduate women students at the University of New Brunswick in all Faculties. The evidence in this study, and other like it, may help to give women students the confidence to enroll in programs that lead to the realization of their highest career aspirations, whether these lie in "traditional" or "non-traditional" fields for women. Further research is now needed to ascertain whether or not women students at the University are being selected for academic awards and scholarships in appropriate numbers, whether they are being encouraged to enter graduate school in numbers commensurate with their undergraduate record, and whether their superior academic excellence is sustained at the graduate level.

## BACHELOR OF SCIENCE

ANALYSIS OF STUDENT PERFORMANCE IN THE FORMERLY MALE DOMINATED FACULTY OF SCIENCE SHOWS

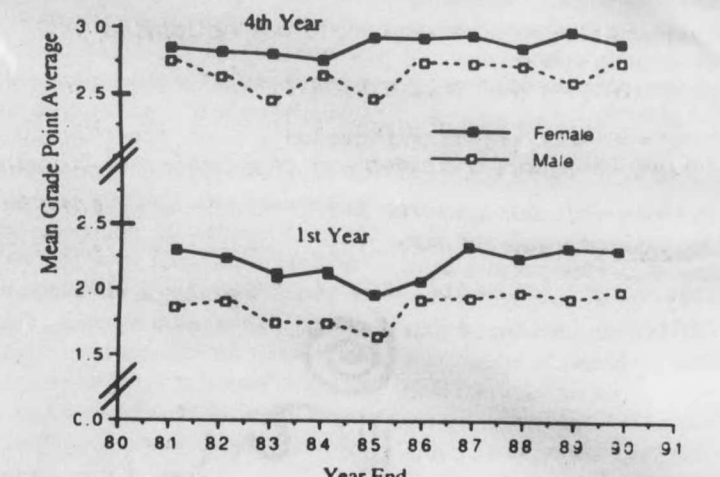
THAT, with two small exceptions, women do as well as or better than men in at least their first and fourth years over the ten-year period reviewed - this in spite of the fact that, as Graph 1 shows, the proportion of females rose from less than 40% in 1982-83 and 1983-84 to a little over 50% in 1989-90. The unusually high GPA's, particularly in the fourth year of the program, attest to the high caliber of students of both genders.

In figure 7, we again see evidence of excellent performances, with 48.2% of males and no less than 56.5% of females attaining GPA's of 3.3 or better. The high attrition rates given in Table 6 - 56.3% of First year enrollment for males and 62.7% for females - need to be investigated but may be due partly to the exodus of third year students to medical, dental, and pharmacy schools.

As was mentioned earlier under "Enrollments," in the Faculty of Science there were significant differences between the number of women in the various fields. In the 1989-90 academic year, for instance, the enrollment was 60.4% women in Biology courses.

## BACHELOR OF BUSINESS ADMINISTRATION

WITH OVER 17% OF UNDERGRADUATE ENROLLMENT IN 1989, the Faculty of Business Administration is now the second largest on the Fredericton campus. Women's successes in business, increasingly chronicled in the media, can



GRAPH 3. GPA's by gender in the 1st & 4th years of the BBA degree

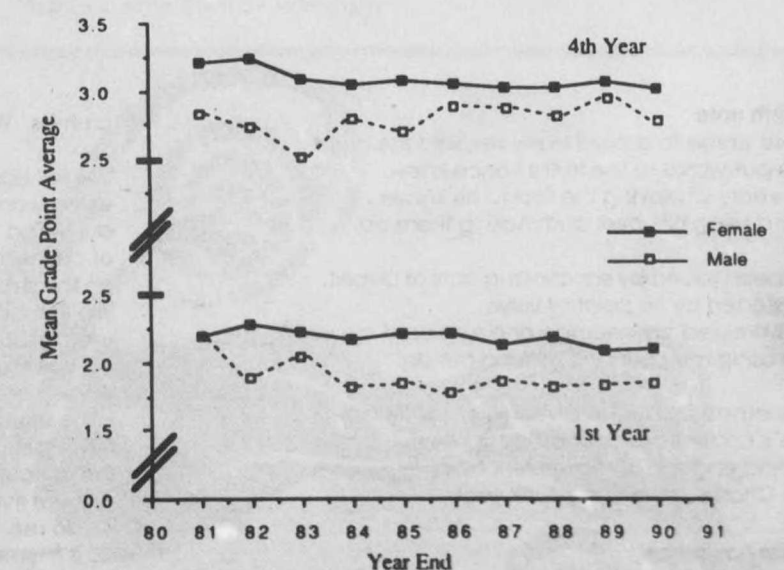
be seen to parallel their remarkable performance as students, plotted on Graph 3.

If it is argued that these results are not surprising, since probably only the most able women enroll, then one would expect poorer performances as the percentage of women enrolled in the Faculty increased. The steady increase - from 35.2% women in 1980-81 to 43.0% in 1989-90 (See Graph 1) - brings about no such deterioration in women's overall performance. Table 3 and Figure 4 round out the analysis. In Figure 4, as in Figure 3 for Arts, we see that, averaged over the ten-year period, there are proportionately fewer women who fail and larger percentages who do well in both the years under review.

## BACHELOR OF ARTS

ON UNB'S FREDERICTON CAMPUS NEARLY ONE IN FOUR UNDERGRADUATES WAS ENROLLED IN THE ARTS FACULTY (see Figure 2 and the actual figures given in Table 2). Analysis of the data in Table 1 and Graph 2 shows clearly that women outperformed men in all years of the program over the whole time period. The results are not entirely unexpected since women's academic strengths are traditionally considered to be in the humanities and social sciences. Note the significant improvement in the mean GPA's for both gender from the first to the fourth year.

Honors students were not treated separately in the analysis and, to determine if the reason for the better average female scores was because more women obtained B+'s (GPA = 3.3) or better, or because fewer failed (GPA = 1.0 or less), Figure 3 was constructed. It shows that both scenarios were at work. Indeed, 24.7% of males in first year failed compared to 15.4% of females; in fourth year, of those doing poorly, males again outnumbered females. Looking at the students with GPA's of 3.3 or more, we find the opposite pattern holding, with women outnumbering men in both years. In fourth year, 42.1% of the women had a grade of B+ or more compared to 33.8% of men.



GRAPH 2. GPA's by gender in the 1st & 4th years of the BA degree program, 1980-81 to 1989-90