## THE EFFECT OF UNIVERSITY 101 ON

## FIRST YEAR STUDENTS' ACADEMIC PERFORMANCE

by

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## Abstract

University 101 is a course designed to assist first year students to adjust to the University and to gain the skills necessary to become successful students. This project compared the academic performance of a sample of first year students who took this course with a sample of similar students who did not take the course. A significant correlation was found between admission percentage<sup>1</sup> and subsequent term grade point averages (GPAs)<sup>2</sup> at the University of Northern British Columbia (UNBC); no significant correlation was found between admission percentage and the increase in GPA between terms. Analyses of covariance (ANCOVA) with admission percentage as the covariate, completion of University 101 as the independent variable, and term 1 and term 2 GPAs as the dependent variables found a significant positive effect on both term 1 and term 2 GPAs. An analysis of variance (ANOVA) with the independent variable completion of University 101 and the dependent variable the difference between term 1 and term 2 GPAs found a significant negative effect of University 101 on increase in GPA.

<sup>&</sup>lt;sup>1</sup> See appendix B for details of admission percentage calculation

<sup>&</sup>lt;sup>2</sup> See appendix D for details of term GPA calculation

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#### Introduction

Anyone involved in post-secondary education today is aware of the growing interest in "student success." There are valid reasons for this interest. Governments spend a significant amount of taxpayers' money funding universities<sup>3</sup>. Individually, students invest time and money to attend university. For both reasons, people want to know they are getting a good return for this money. Unfortunately, it is becoming apparent that the success rate is not impressive. In Canada, fewer than half of the students who begin a degree complete within five years (Smith, 1991). In British Columbia the situation is similar (Dennison, 1982). It would seem that there is a lot of room for improvement.

## Factors that Influence Student Success

The literature has identified a number of factors that influence student success. Institutional characteristics such as the number of faculty - student interactions, availability of faculty, teaching versus research orientation of faculty, opportunities for social integration (such as joining clubs), and opportunities for academic integration (activities that allow students to actively participate in the learning process) increase students' sense of belonging to the institution and engagement in the learning process, which, in turn, leads to increased success rates. Personal characteristics such as age, life experience, support of family and friends, ability to adapt to new situations, academic preparedness,

<sup>&</sup>lt;sup>3</sup> For the purposes of this project, a university is defined as a degree-granting institution with both teaching and research mandates.

commitment to an academic goal, relevance of studies to career goals, study skills, and time management skills also affect an individual's chance of success. *Introduction to the Research Problem* 

There are two primary reasons for studying student success at this time. In the past, students who dropped out or were required to withdraw due to poor grades were written off as "not having what it takes" to succeed; it was considered a standard and acceptable weeding-out process<sup>4</sup>. It is becoming increasingly apparent, however, that this assessment was inaccurate. For example, Johnson and Buck (1995) found that half of the students who were required to withdraw from one institution continued their studies successfully at other institutions. Rather than ability, it is a combination of factors that determines whether these students persist to credential completion and if they do, the level of academic achievement they attain.

The second impetus is the reality of supply and demand. Institutions are under pressure to produce more graduates to meet the demands of our everadvancing society. At the same time, they are experiencing a demographicallyinduced shortage of applicants considered qualified by traditional standards. Therefore universities are under pressure to admit applicants who, relative to the applicants of the recent past, are less academically qualified. At the same time, universities are being pressured by governments to demonstrate higher graduation rates. This has led to the search for strategies to assist students to succeed and budget decisions to fund these strategies. One popular strategy is

<sup>4</sup> Based on the researcher's 10 years of experience working in the post-secondary environment

to offer a course for first-year students providing formalized instruction in skills such as note-taking techniques, exam writing techniques, and effective study strategies. Previously, these skills were left to students to develop on their own, or were addressed through non-credit workshops. These courses may also address other factors related to success such as providing small, seminar formats to increase personal interactions between students and faculty, clarification of academic goals, problem solving, and information about services and clubs on campus.

Such a course was instituted at the University of Northern British Columbia in 1998. Aptly titled University 101, Introduction to Higher Education, it was initiated with the expectation that it would lead to an increase in student success. It has since been offered each term. Hundreds of students have taken the course in the expectation that they will learn skills necessary to succeed in university faster than if left to learn through trial-and-error, and that they will obtain better grades earlier in their university career. The University invests instructional resources to offer the course; students invest money and time to take the course. Clearly both parties expect a return on their investment.

If University 101 is having the desired outcome, students who take the course should show a greater improvement in their academic performance following course completion than if they had not taken the course. The goal of this study is to examine whether the course is having the desired effect. Do students who take University 101 demonstrate  $\epsilon$  higher rate of student success, as measured by term grade point average (TGPA), than do similar students who do not take the course? The research design to answer this question, a matched

sample with pre and post treatment measures, is presented as Figure 1. The results were evaluated using analysis of covariance (ANCOVA).

N O X O N O O

Figure 1. Pre-test Post-test Non-randomized Experimental Design.

Literature Review

Review of Research on Student Success Courses

In 1999/00, Canadian governments spent \$12,089,000,000 on university funding (Statistics Canada, n.d.-b). This represents approximately 80% of the operating costs of universities; another 17% comes from tuition fees (Smith, 1991; Statistics Canada, n.d.b). It would certainly appear that Canadians are convinced that universities are a worthwhile investment. In 1998/99, 826,361 students were enrolled in Canadian universities (Statistics Canada, n.d.-d) – students willing to make a personal investment in education. Books and tuition for a typical undergraduate degree carry an estimated price tag of \$16,000.<sup>5</sup> The opportunity cost of lost wages, at least \$51,000, must also be considered. <sup>6</sup> In addition to the dollar cost, obtaining a degree takes a great deal of hard work.

<sup>6</sup> If we assume a student could find a full time job at minimum wage the calculation would be as follows:

35 hours per week X \$7 per hour X 52 weeks per year X 4 years = \$50,960

<sup>&</sup>lt;sup>5</sup> Calculated at \$3000 per year tuition. This is an average cost for publicly funded institutions in British Columbia in 2000/2001; tuition is slightly higher in the rest of Canada, and varies by province, institution, and program. An additional \$1000 per year has been added for books and materials for a total of \$4000 per year. Since degrees take a minimum of four years to complete, the total is \$16,000.

Clearly, these students were convinced that there would be a payoff for their investment of money, time, and energy.

If both society and individuals are willing to put such significant resources into university education, the expected payoff must be high. Universities are expected to provide experts in a wide range of fields that can be called upon when needed; to produce research to improve our knowledge of the world, our comfort, and our chance of survival; and to produce graduates with necessary skills. Students expect better employment opportunities, higher salaries, and an opportunity to increase their knowledge in fields of interest. In short, the expectation is that universities will produce graduates with skills and knowledge. What contributes to (or detracts from) achieving this goal? To adequately examine this question, we must consider two inextricable measures – persistence and academic performance. Persistence refers to a student's continuation of studies to completion. Academic performance refers to taking advantage of learning opportunities to make the most of a student's potential and, at a minimum, maintaining satisfactory academic standing<sup>7</sup>.

The Canadian system of higher education is very similar to the American system, with credentials considered equivalent by universities and employers alike. In fact, the American system is more like the Canadian system than any other in the world.<sup>8</sup> Because of the similarities in the education system and

<sup>&</sup>lt;sup>7</sup> Generally satisfactory academic standing is defined as a 2.0 or "C" grade point average in Canada. See appendices C and D for details of grading and GPA calculations.

<sup>&</sup>lt;sup>8</sup> The researcher has worked for more than 5 years as an admissions officer, which has required the comparison of many educational systems around the world. Resources consistently recommend that Canadian and American university degrees be considered equivalent.

culture, American research is often considered applicable to Canadian students. There is one notable exception, however. American studies consistently find that minority students, usually defined as Mexican American and African American, achieve lower grades and have higher dropout rates than majority students. Canadian studies do not find that minority students have the same challenges in achieving success at university (Grayson, 1998, 1995a). It is theorized that this may be due to historically different immigration patterns in the two countries. Therefore, with the exception of racial considerations, this study has referred to American and Canadian findings.

To begin the exploration of the factors that contribute to the goal of producing skilled graduates, one must first define the development under consideration. The traditional student enters university directly from secondary school, is approximately 18 years of age upon entrance, and graduates from university around age 22. These are critical developmental years for humans, regardless of the activities in which they engage and the environment in which they find themselves. It is therefore necessary to carefully consider which developments can be attributed solely to participation in a university education. To do so, we must control for maturation, initial abilities, socioeconomic background, and other relevant factors. Pascarella and Terenzini (1991) found that, even when these factors were controlled, university graduates had higher cognitive skill levels than did non-graduates in the measures listed in Table 1.

## Table 1

#### **Cognitive Skill Measures**

Written and oral communication skills

General intelligence

Analytical skill development

Critical thinking

Ability to weigh evidence and determine validity of arguments using facts rather than beliefs and to distinguish between strong and weak arguments

Level of reasoning ability

Intellectual flexibility (defined as the ability to comprehend and effectively argue both sides of a complex issue)

Subject matter knowledge

Factual knowledge

Tendency to engage in activities that continue to add to knowledge

If a university education leads to cognitive development, what factors can enhance this development? Perhaps the best summary of factors leading to cognitive development, which is also consistent with Pascarella and Terenzini (1991), comes from Astin (1993). His definition of overall academic development is a combination of self-reported general knowledge, knowledge of a particular field, ability to think critically, analytical and problem solving skills, and writing skills. Astin also found that overall academic development was positively affected by numerous factors (see Table 2).

## Table 2

## Factors Found to Positively Affect Academic Development

Faculty who were more student and teaching oriented than research oriented

Peer socioeconomic status (higher status led to more development)

Grade point average

Hours per week spent studying

Class papers critiqued by instructor

Number of science oriented courses taken

Number of writing skills courses taken

Working on group projects

Discussion of racial or ethnic issues

Number of history courses taken

Number of math or numerical analysis courses taken

Number of presentations given in class

Number of hours spent tutoring other students

Level of alcohol consumption<sup>a</sup>

<sup>a</sup>The author had no explanation for this finding; it specifically affects general knowledge. His discussion on the result is "A somewhat far-fetched interpretation of this finding is that the students might enhance their fund of general knowledge and information by means of the lengthy conversations that frequently accompany social drinking. While the size of the correlation is quite small (partial Beta=.04), it is highly significant statistically (p<.0005) and certainly warrants further investigation" (Astin, 1993, p. 225).

Grayson (1993) found that the perceived relevance of classes to career success

and satisfaction with instruction increased the acquisition of knowledge. Lizzio,

Wilson, and Simons (2002) found that positive perceptions of the teaching

environment lead to academic achievement and qualitative learning outcomes.

Pascarella and Terenzini (1991) sum up their findings with "simply put, the

greater the student's involvement or engagement in academic work or in the

academic experience of college, the greater his or her level of knowledge acquisition and general cognitive development" (p. 616).

It is clear, then, that a university education increases cognitive skills and knowledge. It is also an established fact that university graduates have higher incomes than do non-graduates. The 2001 Canada census shows that the average annual income for a university graduate is \$48,648, while the average income for those without a degree (but with high school graduation and perhaps some additional post-secondary education) is \$25,477 (Statistics Canada, n.d.a). These factors alone should be a strong incentive to complete a degree. It is striking, then, that "more students leave their college or university prior to degree completion than stay" (Tinto, 1993, p. 1). In the United States, 55% of those who enroll in first year do not complete a degree (Tinto, 1987). In Canada, 42% of those entering university in 1985 had not completed a degree in 5 years; of those who withdrew, approximately half were in good academic standing and did not transfer to another institution (Smith, 1991). In British Columbia, the withdrawal rate between first and second year ranges from 21 to 46% (Dennison, 1982); the completion rate ranges from 38 to 51%. Clearly, a significant number of students who begin university change their minds. What contributes to the decision to leave university, or conversely, what makes students persist?

Tinto (1993) and Spann (1990) describe a student integration model in which the decision to persist or drop out is made based on the interplay of intention, commitment, interaction, congruence, and student characteristics. Intention refers to the student's academic goal – what do they plan to achieve? Commitment is the willingness of students to perform the necessary work

required to achieve the goal. Interaction refers to the amount of interaction the student has with members of the institution. Congruence is the academic and social fit between the student and the institution. Student characteristics include academic ability, preparedness, and ability to accomplish the transition on intellectual, social, academic, and personal levels as they adjust from their previous life to that of a university student. This model has been readily accepted in higher education circles and has formed the framework for most recent retention literature. It has been so highly accepted that Mckeown, Macdonnel, and Bowman (1993) point out that findings have since been gathered to support the theory rather than the usual practice of having the theory synthesized by a deductive process. There may be grounds for this concern because the majority of recent literature limits investigation to factors proposed by Tinto's model. While there is a wide body of evidence in support of the influence of these factors on retention, there could be other contributing factors that are being overlooked, or there may be interactions between factors that are not being considered because they are not in the currently accepted model.

The caution of Mckeown et al. (1993) aside, Tinto's (1993) theory does effectively explain why students make different decisions in apparently similar circumstances. An academically gifted student may drop out if s/he does not have a high academic goal, is unwilling to put the necessary work into academics, finds the curriculum uninteresting, does not "fit in" with the student body, or experiences an accumulation of these factors that tip the balance. Conversely, a student with lower academic ability might persist to degree completion if s/he is committed to a career or academic goal, finds the academic

climate stimulating, becomes involved in student activities, or experiences a combination of these factors that makes the hard work seem worthwhile. Essentially, it is an on-going cost/benefit analysis equation.

While some students decide to drop out voluntarily after doing this analysis, each semester universities determine that some students are ineligible to continue due to poor academic performance. These students are required to withdraw. There are no Canadian figures available to provide a clear picture of the number of students in this category annually. However, in American literature 20 to 33% of those who withdraw do so involuntarily (Johnson, 1994, 1996; Tinto, 1987). There has been relatively little work done with these students, perhaps because they are dismissed as being inherently incapable of succeeding at university studies – lacking the talent or ability. However, Corman, Barr, and Caputo (1992) point out "the assumption underlying some Canadian admission policies is that the students accepted are capable of and prepared for obtaining a university degree" (p. 22). This is worth consideration. The entire point of the admissions process in universities is to ensure that those admitted have adequate academic preparation to succeed at university (and, if there are more applicants than spaces available, that the most qualified candidates are selected). It is, therefore, reasonable to assume that all students admitted based on academic qualifications have demonstrated the necessary academic background and ability to succeed - or at the very least that most students admitted with the same preparation and grades do succeed. Johnson and Buck (1995) found additional evidence for this – half of the students who were required to withdraw from one institution continued their education successfully at other

institutions. Their success at other institutions is hardly indicative of a lack of academic ability.

What this does suggest is that this group of students should not be written off as unworthy of retention efforts - most have the ability to succeed. When considering what else affects students who withdraw involuntarily, the literature finds that those required to withdraw are more likely to be younger, have gone directly from high school to university, have less work experience, and have lower admission percentages (Johnson 1994, 1996). These students are less likely to have children (Johnson 1996); they are also less likely to have family support for university studies (Johnson 1994). They reported excessive social lives (by their own assessment), unsatisfactory instruction and unavailable faculty, lack of enjoyment of classes, and that their program was not developing employment skills (Johnson, 1994). Not surprisingly, they were also more likely to miss classes, fail to turn in assignments, and fall behind in course readings (Johnson, 1994, Dietsche, 1990). Johnson (1994) found that students required to withdraw had less effective time management and study skills than did those who persisted or withdrew voluntarily. Johnson and Buck (1995) found that students who left involuntarily cited the following as contributors to poor grades: personal and financial causes (31%), lack of commitment, need for time off, a competitive environment (24%), the wrong program, poor teaching methods, and the unaveilability of professors (10%). Dietsche (1990) found that uncertainty about goals was also a significant factor in predicting involuntary withdrawal. Grayson (1998) found that the higher the perceived value of a degree, the lower the chance of involuntary withdrawal. Hours of off-campus work and living in

temporary accommodations (as opposed to university residence or the family home) increased the likelihood of involuntary withdrawal (Tinto, 1993). It is worthwhile to note that self-reported reasons for attrition may not give us an accurate picture of what actually occurs. Rather, students are reluctant to report negatively about themselves, and may report socially-acceptable reasons for their actions rather than less-flattering truths (Braxton, Brier, & Hossler, 1988; McKeown, Macdonell, & Bowman, 1993). The literature certainly suggests that students who are required to withdraw are affected by many factors - not simply a lack of academic ability. For the majority of these students, a combination of factors result in a failure to put in the effort required to maintain acceptable academic standing. In essence, they decide not to do the work required to succeed academically, which eventually results in a requirement to withdraw from the institution. It would seem that there are more similarities than differences between students who withdraw voluntarily and those who do so involuntarily.

This leads us back to an examination of the factors that contribute to persistence. As most university counselors and academic advisors would attest, the majority of university students have not yet finalized their educational and career goals. Tinto (1993) found that just over 33% of students have firm plans. Of those, "nearly three out of every four college students will experience some form of educational and/or occupational uncertainty during the course of their college careers..." (p. 40). While career indecision is not directly related to withdrawal, this indecision over an extended period is more common among those who withdraw than among those who persist (Tinto, 1993). Dietsche

(1990) found that uncertainty about career goals was significantly linked to withdrawal, while Stewart (1990) found that this was one of three main reasons students gave for withdrawal. For those who are certain of their career goals, perceived relevance of course work to future career success increased the likelihood of persistence (Grayson, 1993; Johnson, 1995, 1996). Career counselling is positively correlated with persistence (Astin, 1993). Braxton, Murrell, and Pascarella (1988) found that academic advising works by increasing academic integration and commitment to the goal of a degree.

Perhaps the effect of uncertainty about goals is better considered as contributing to what Tinto (1987) defines as commitment – the willingness to do the work required to earn a degree. The more a degree is seen as leading to a desired goal, the more commitment we can expect from a student. Commitment will also be affected by external factors such as the support of family and friends or conflicting demands for time and energy. It is also likely to vary over the course of degree completion. Commitment may be toward something as general as the concept of learning or as specific as a degree at a select institution (as when there is particular prestige associated with the institution, or a family tradition to uphold). In fact, educational commitment has been found to be the most significant predictor of persistence (Dietsche, 1990; Grayson, 1998; Johnson & Buck, 1995; Ungar, 1980). Cope and Hannah (1975) found that a combination of educational and occupational goals was the significant predictor. Regardless of the reason for commitment, students who put effort into academic activities are more likely to succeed than are those who do not.

Whether students persist or drop out, increased commitment is likely to result in more energy being expended on academic activities. Academic activities include class attendance, assignment completion, and time spent studying. Not surprisingly, the more time spent on these activities, the better the GPA tends to be (Larose & Roland, 1991). Quality of effort in these areas is a main predictor of persistence (Dietsche, 1990; Grayson, 1995a; Tinto, 1993. Richardson and Sullivan (1994) found the quality of effort demonstrated by students to be a main predictor of persistence. It is unlikely that quality of effort leads to retention as much as the decision to persist leads to these activities. However, this diminishes neither the fact that the two are correlated, nor the predictive and diagnostic usefulness of quality of effort.

While the quality of academic effort seems a rather self-evident part of the retention equation for most educators, the significance of integration may be surprising to some. Tinto (1987) explains that "experiences, academic and social, which serve to integrate the individual into the life of the college, also serve to heighten attachments and therefore strengthen individual commitments both to the goal of education and to the institution" (p. 5). It is important to note that there are two dimensions to these experiences – quantity and quality. Social integration occurs when students feel comfortable with the number and type of social interactions they experience. This includes finding a peer group of students to associate with, belonging to clubs, participating in athletics, and taking part in institution-sponsored activities. Thomas and Andes (1987) found that social affiliation, participation in extracurricular activities, and perception of affiliation were correlated with persistence. Stewart (1990) found that those who

persisted had more contact with clubs and sports. Husband (1976) found that those who persisted were much more likely to identify with someone on campus with whom they had a significant relationship. The exception to this rule is that older, non-traditional students do not seem to have the same need for social integration (Metzer & Bean, 1993). In general, however, students must find activities they enjoy doing, people they enjoy being around, and feel welcome in these circles. While sheer volume of participation alone will not ensure this sense of belonging, the more contact students make, the more likely it is that they will find people and activities they enjoy. Conversely, when social contact is insufficient or unsatisfying, it leads to a feeling of isolation from the institution. The more similarity students see between themselves and the dominant culture of the organization, the more likely they are to see themselves as congruent with the institution (Tinto, 1993). Interestingly, he also points out that while larger institutions have a greater challenge to create a sense of community, they have the advantage of having more sub-groups of students and faculty, which increases the likelihood that there will be a group with which a student can identify. Smaller institutions have an advantage in creating a sense of community, but have a greater challenge creating diversity.

Social integration is only one part of integration into the university environment. Academic integration refers to the level of academic performance required as well as informal academic activities; for example, contact with faculty or participation in academic activities outside a formal classroom setting. If the academic performance expectations are too high, students may withdraw or be required to withdraw; if they are too low, they are likely to be bored and transfer

to a more demanding program or institution. With regard to informal academic

activities, Tinto (Spann, 1990) states:

The research is very clear that the more students make contact with faculty, especially outside the classroom, and the more educationally satisfying those contacts are, the more likely those students are to stay. Furthermore, even among those who stay, those who report contacts and report them as satisfying are more likely to have higher learning gains while in college. Among people of similar ability, people who have higher and more satisfying contact will learn more than people who do not have this contact. Faculty contact is, therefore, the fabric of the college community and is an independent predictor or force in learning. (p.20)

Terenzini and Pascarella (1980) found that with faculty interaction, quantity

mattered, but quality of interaction, specifically intellectual or course-related

discussion, was the most important. Pascarella and Terenzini (1991) found that

the educational impact of a college's faculty is enhanced when their contacts with students extend beyond the formal classroom to informal non-classroom settings. Net of student background characteristics, extent of informal contact with faculty is positively linked with a wide range of outcomes. These include perceptions of intellectual growth during college, increases in intellectual orientation, liberalization of social and political values, growth in autonomy and independence, increases in interpersonal skills, gains in general maturity and personal development, educational aspirations and attainment, orientation toward scholarly careers, and women's interest in and choice of sex-atypical (maledominated) careers. (p. 620)

Dietsche (1990) found integration into academic environments was a significant predictor of persistence. Metzher and Bean (1993) found that academic congruence was particularly important for non-traditional students (perhaps because social integration is not nearly as likely or important to them; they are there to learn, and if they do not learn what they want to, there is no other reason to be there). Stewart (1990) found dissatisfaction with curriculum content higher among those who withdrew than among those who persisted. Rummel, Acton, Costello, and Pielo (1999) found that the majority of students who withdrew in good academic standing did so due to dissatisfaction with academics at their institution. Johnson (1996) found that perceived instructor unavailability was correlated with increased withdrawal rates. Quality of instruction and the perceived relevance to future career success were found to be linked to persistence (Grayson, 1993, 1995b; Johnson, 1996). Astin (1993) found that student - faculty interactions, being a guest in a faculty member's home, active learning through giving presentations in class, independent research projects, and the use of essay exams increase retention. Grayson (1993) found that academic involvement was far more important than social involvement, although these studies were done at a commuter university where campus involvement was generally less overall. Tinto (1993) concludes that the prevalence of student-student and student-faculty interactions is the single most important predictor of persistence even when controlling for background, personality, and academic performance.

So far we have considered a number of institutional factors that act on students once they enter an institution. Students, however, are not blank slates when they start university. They bring with them an individual set of experiences, skills, and natural abilities. It is not surprising that those who were academically successful in high school tend to be the best performers in university, and in fact Richardson and Sullivan (1994) found that the single best predictor of university GPA is a student's high school GPA. This does not mean that they are the most likely to persist, however; merely that when they do persist they show high achievement. However, students with high academic abilities and levels of

academic preparedness need expend only a limited degree of effort to succeed academically. While this does not ensure persistence, it does mean that they do not need as much commitment to succeed, and all else being equal, may persist when those not as apt or prepared might drop out. Age and life situation are also significant individual factors. Young and old students alike have challenges presented by their life circumstances. Younger students are busy with the business of growing up, making a transition from a high school student to university student, teenager to adult. This often involves moving away from home, making new friends, finalizing (or choosing) a career direction and developing a sense of personal identity. Fitting in with a peer group is a bigger factor for younger students than for older ones. Older students tend to take university in addition to other things rather than instead of, as is usually the case with younger students. This means family and work commitments tend to compete with the time available for academic activities, and that integration with the institution tends not to be as strong. Instead their affiliations tend to be off campus. They tend to have more commitment to their educational goals (Metzner & Bean, 1987). While they may be more committed to their goals, they may be academically rusty or under-prepared (some universities admit mature students with less documented academic preparation than students admitted directly from high school). Interestingly, family responsibility is linked to greater persistence in men, but less for women (Astin, 1993). External ties affect persistence in a more generalized way as well. Students who maintain their old friendships and live off campus are less likely to become integrated in their new university (Christie & Dinham, 1991). When people important to the student

support the goal of a university degree, persistence is more likely. Conversely, if they do not support the goal or the student's integration into the university environment, persistence is less likely (Tinto, 1993). Students are more likely to withdraw during their first year, with the chances of withdrawal decreasing the longer they have attended university (Johnson & Buck, 1995). Tinto (1993) agreed "...involvement matters most during the first year of college. Attrition is, for most institutions, most frequent during the first year of college. Nearly half of all leavers depart before the start of the second year" (p. 169).

#### Summary of the Research on Student Success Courses

While we do not yet have a model that will predict academic success or persistence with perfect accuracy, there is evidence to support a number of factors, both institutional and personal, which influence academic success and persistence. Institutionally, an environment that provides more faculty/student interactions and opportunities to integrate socially and academically is likely to have a positive impact on academic success and persistence. Students who have a strong commitment to degree completion, have study and time management skills, are academically prepared, have support of family and friends, are older, have life experience, and can develop relationships with students and faculty, have the best chance of academic success and persistence. This is unlikely to surprise those who work with students or even students themselves.

#### Statement of the Research Problem

While it appears universities have it in their power to create a learning environment that encourages student success, there is little that can be done to

affect the applicant pool from which students are selected. However, universities have a vested interest in the academic ability of their student body for reasons beyond the ability to boast of attracting the best and brightest. First, the higher the academic ability of admitted students, the greater the success and persistence rate (Levitz, Noel, & Richter, 1999). Second, Toby (2002) suggests that a sobering, but almost inevitable, consequence of increasing numbers of academically under-prepared students is a lowering of academic expectations. No university aspires to higher drop-out rates or lower academic standards. However, traditional students of any academic ability will be in shorter supply in the future due to decreasing population in that age group (Statistics Canada, n.d.-c). At the same time, there has been a push to improve access to post secondary education, resulting in the creation of more space in universities. Enrollment managers are therefore left with two choices. One is to focus their attention on non-traditional students to fill the gap, such as older students entering (or returning to) university to upgrade their skills to compete in the current labour market. These mature students may be motivated and capable, but may also lack academic foundations (especially in mathematics or writing skills) and likely have not called upon academic skills for many years. Another alternative is to admit traditional students with less academic preparation or lower grades. Either way, the end result is that institutions face a difficult choice: "Colleges must balance the trade-off between lenient admissions policies, which result in high attrition rates, and greater selectivity, which reduces the size of the incoming class but increases the likelihood of retention and stability of overall enrollment" (Billson & Terry, 1987, p. 293).

Certainly UNBC faces this dilemma. Universities typically admit students on a competitive basis. This means that when there are more applicants than available spaces, the most qualified applicants are offered admission. The University of British Columbia, University of Victoria, and Simon Fraser University have had more applicants than spaces available for over a decade. Consequently, they have limited their offers of admission to those with admission percentages greater than 75-85% (depending on the institution and faculty) (The President's University Council, n.d.). UNBC, as a newer institution without the local population base of the other universities, has not yet had to raise the admission percentage cutoff above 65%. In addition, UNBC admits a significant number of students under special entry and mature student categories – students who, by definition of their admission category, do not meet the standard academic criteria. This is good news for those concerned about accessibility of higher education. However, it also means that the student body at UNBC is less academically prepared than the student bodies at the other public universities in the province. Therefore, being less academically prepared, UNBC students are at higher risk for dropping out or being required to withdraw (Johnson, 1996).

It is clear that it is not possible for UNBC to limit admissions to applicants who already have all the personal characteristics necessary for high success rates. This suggests a need for UNBC (as well as other universities, as the upcoming demographic trends affect their applicant pool) to develop programs to assist these students. Academic under-preparedness does not mean a lack of ability; there are learning skills that can be taught and remedial foundational skills (such as math and writing competencies) that can produce competent students

from those with potential. Billson and Terry (1987) are correct. Universities, including UNBC, have a choice. They can maintain enrollment by admitting less-qualified students and provide remedial education for them, or admit only academically qualified (and therefore fewer) students. It is unlikely that the pressure on universities for increased enrollment numbers and access will permit the latter choice. In any case, there is a clear need to optimize preparation for all students.

How do we assist students who may not be prepared for university studies? Most students are unaware of effective learning strategies. Despite 12 years of education, most first-year students have never been exposed to theories of knowledge acquisition – that is, how to learn most effectively (Government of British Columbia, n.d.). Most first-year university students do not have basic university survival skills such as how to take good lecture notes, effective revision techniques, or test-taking strategies. There is definitely a case for teaching students how to learn more effectively. Otherwise, we can expect that many students with potential will continue to have difficulties adapting to university studies. This has potential for long term consequences for these students – they are at risk of attributing failure to a lack of ability rather than correctible factors such as lack of effort, knowledge, or study skills (Hunter, Perry, & Menec, 1996).

It would seem that these skills are particularly important to first generation students<sup>9</sup>, of which UNBC has a higher than average number. First generation students tend to be less involved in social and academic activities overall

<sup>&</sup>lt;sup>9</sup> First generation students are those who do not have parents or other close family members who attended university.

(Grayson, 1995b). They do not have family members who can pass on tips about how to succeed at university, encourage participation in extracurricular activities, or even understand the environment and expectations students face. Therefore, explicit instruction about successful strategies for integration into the university environment and study strategies is appropriate. Particularly useful could be parent/family orientation that assists in understanding the experience – a clarification of the relationship between class time, studying, readings, assignments, exams, and the importance of extracurricular activities.

Perhaps the most ambitious attempt to improve student success is the

growing number of first-year student success courses offered in North America.

The first such program, University 101, was offered at the University of South

Carolina in 1972. Since then, the number of institutions offering similar courses

has grown quickly:

Currently, on approximately two-thirds of the nation's colleges and university campuses, freshman seminar/student success courses are being implemented in an attempt to ease the transition of students into the college environment and to increase the likelihood that admitted students will achieve 'success,' as it is defined by each institution and each student. (Barefoot, 1993, p. 7).

It makes sense to target student success efforts at students in their first year.

Not only are these students the most vulnerable, on a pragmatic level this is

when retention efforts have the greatest potential for results.

It is particularly important to address potential difficulties in first year, since

attrition rates are halved each subsequent year after the first year. For example, if an institution has a first-to-second year attrition rate of 30 percent for an entering freshman class, attrition after the second year is commonly half that (15 percent); it is half that again (8 percent) after the third year, 4 percent after the fourth, and 2 percent during the fifth year. The graduation rate can then be calculated by adding up these rates, and subtracting the sum from 100 percent. For this example, the five year graduation rate would be calculated as follows: 100 percent – (30+15+8+4+2) = 41 percent. Given this finding, it is clear that the most efficient way to boost graduation rates is to reduce the first-to-second year attrition rate. (Levitz et al, 1999, p. 37).

In Canada, the first institution to offer such a course was the University of Windsor in 1983. By 1993 seventeen universities were offering such courses, three for credit. These courses vary in length from a few hours at the beginning of the term to three hours of classes per week for the academic year. Typically these courses include the following topics: exploration of career plans, practical academic skills such as note taking or exam writing strategies, time management, expectations of university, awareness of university services (such as counselling and advising), awareness of personal learning styles, self awareness, academic policies, skill assessment (such as mathematics and writing), research skills, stress management, oral communication skills, computer skills, and values clarification (Barefoot, 1993). The evaluations that have been done of such programs supports the prediction that courses such as this would increase retention and academic performance.

Freshman seminars (and their participating students) have been studied, measured, and evaluated more often than has been the practice for any other course in the higher education curriculum. And on many campuses, freshman seminars have garnered strong support not only because they meet the needs of entering students, but also because they bring clear yields in terms of dollars and "sense" – that is, freshman seminars predictably increase rates of freshman-to-sophomore retention and grade point averages of participating students. (Barefoot, 1993, p 7).

Such a course was introduced at UNBC in January, 1998, as a credit elective toward any undergraduate degree program. It was designed to assist students by providing instruction on the topics that are listed in Table 3.

#### Table 3

#### **University 101: Topics of Instruction**

University expectations

Time management

Student support services (academic, personal, health)

Computer skills (University computer services, word processing alternatives, internet-based research)

Efficient reading skills

Note taking from lectures and note making from reading

Test taking (preparation and test-taking skills

Study skills (human learning, memory, motivation)

Critical thinking and problem solving

Effective writing (process, editing, writing styles)

Interpersonal skills (communication, listening and speaking, public speaking)

Educational planning and academic advice (academic advisors, information sources, the planning process)

Career and personal planning (career information sources, personal planning, job search strategies)

It is evident that the course content addresses many of the common problems identified in the literature. In addition, the small seminar format provides an opportunity for small group discussions, student participation, a high level of student/faculty interaction, as well as peer interaction and support. Given what we know about factors that affect student persistence and success, this course should have a positive impact on both. The purpose of this study is to evaluate whether this course does, in fact, have the expected impact on student success (persistence information is not available to the researcher). Do first-year

students who take University 101 demonstrate a higher success rate (measured by TGPA) than do equivalent first-year students who do not take the course?

### Method

#### Subjects

#### Criteria for inclusion.

All subjects have graduated from a British Columbia secondary school, met UNBC admission requirements, had an admission percentage recorded on the student information system, were 18-19 years of age at beginning of Fall term, registered in courses at UNBC in the Fall and Winter terms immediately after admission, have a TGPA greater than 0.999 for both terms, and did not participate in the Northern Advancement Program<sup>10</sup>. Treatment subjects registered in and achieved a passing grade (D or higher) in University 101 in their first term at UNBC. Control group subjects did not register in University 101 in their first or second term at UNBC.

### Recruitment procedure.

Subjects were not recruited. An extract was made of existing data in the student information system (a relational database that records student academic information) by the UNBC Institutional Research Office. The use of this information was consistent with institutional research and planning purposes, and permission for inclusion in this study was obtained from students upon registration at UNBC (see ethics section for details).

<sup>&</sup>lt;sup>10</sup> A program designed to support First Nations students which included some of the content of University 101 as well as intensive student support and coaching.

#### Characteristics of Subjects.

The following inclusion criteria were chosen to ensure that all the students selected for this comparison meet a commonly-accepted definition of a first-year student. All students were admitted to UNBC within one year of high school completion, were 18-19 years of age at the time they entered UNBC, and had no previous experience in a post-secondary educational environment. According to the research literature, this group is the most likely to have difficulties with academic success and persistence. University 101 was created to meet the needs of this target group; therefore, this is the most appropriate and relevant subject pool to consider when evaluating results.

Random assignment was not possible. Treatment subjects elected to take University 101. Subjects who did not take University 101 elected to take other courses instead, were prevented from taking it because the course was already full, or the course presented a schedule conflict for students.

#### Procedures

#### Explanation of procedures.

1. Data extracts were obtained from the UNBC Institutional Research Office in Microsoft Excel 2000 table format. These extracts included information about students' admission status, biographic details, registration status, TGPA, and University 101 participation.

2. Microsoft Access 2000 and Excel were used to facilitate identification of firstyear students who did not register in University 101 in their first or second term at University and the matching of these students with the students in the treatment group.

4. The admission percentage and TGPAs for the matched pairs were analyzed

using analysis of covariance.

Phase 1 procedures.

1. The data in Table 4 were extracted May 22, 2003, from the UNBC student

information system.

Table 4

Field	Explanation
PIDM	Personal Identification Master - a computer generated unique ID for each person record that can be used to match information for the same student while maintaining the students' anonymity.
Admit Term	Term the student was admitted to the University
Gender	
Birth Date	
Marital Status <sup>a</sup>	Marital status on admission
Admit Code	Indicated the applicant's previous academic background.
Admit Level	Undergraduate or graduate (all undergraduate in this study)
No of Terms Registered	Total number of terms for which the student had registered at UNBC at the time the data were extracted
199801 <sup>b</sup> Registered	This field was flagged "UNIV" if the student registered in the course in that term and did not withdraw
199805 Registered	See definition for 199801 Registered.
199901 Registered	See definition for 199801 Registered.
199905 Registered	See definition for 199801 Registered.
200001 Registered	See definition for 199801 Registered.
200005 Registered	See definition for 199801 Registered.
200101 Registered	See definition for 199801 Registered.
200105 Registered	See definition for 199801 Registered.
200201 Registered	See definition for 199801 Registered.
200205 Registered	See definition for 199801 Registered.
200301 Registered	See definition for 199801 Registered.
Admission %°	The GPA of the student based on grades from English 12, 3 other academic grade 12 level courses, and a fifth grade 12 course. See Appendix B.
199705 TGPA to 200301 TGPA	TGPAs by term; see Appendix C for details on TGPA calculation.
Registration Term	The term the student registered in University 101.
Subject	The subject code, which was "Univ"
Course No	The course number, which was "101"
Grade	The letter grade the student was awarded for the University 101 course.

#### First Year Student Data Extract

<sup>&</sup>lt;sup>a</sup> In all but one case students were single, never married. In one treatment subject this field was blank; this subject was matched with a control subject who also had a blank in this field.

<sup>&</sup>lt;sup>b</sup> Terms are identified in the student information system by the year (first four numbers) then the term number (01=January-April, 05=September-December).

<sup>&</sup>lt;sup>c</sup> Many duplications of admission percentage existed. When students have attended more than one school, duplicate admission percentage records are created in the data extract. In 3 cases both admission percentages were identical, in which case the first record was deleted leaving one admission percentage. In 41 cases only one of the records contained an admission percentage, in which case the record with the percentage was retained and the other record(s) deleted. In 8 cases there were 2 or 3 records for the same student with differing percentage values. In this case, the values were averaged and the average retained; the percentages differed by no more than 3% in these cases, so final percentage was not greatly altered.

2. The data were combined and filtered to create a data set with 2037 student

records that included the fields listed in Table 5.

## Table 5

## **Master Query Fields**

Field	Information					
Match ID	A created field to house the matched sample ID as indicated in Table 4 notes.					
PIDM	As in Table 4					
Admit Term	As in Table 4					
Admit GPA Gender Birth Date	As in Table 4					
Marital Status	As in Table 4					
Admit Code	As in Table 4					
No of terms Registered 199705-	As in Table 4					
200301 TGPA	As in Table 4					
Registration Term	As in Table 4					
Grade	As in Table 4					

3. The Treatment subjects were identified using filtering as follows to identify the

treatment subjects of interest (see Table 6). The criteria identified 47 subjects.

## Table 6

Treatment	Subject	Identification
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Filtering Operation	Fall 1998	Fall 1999	Fall 2000	Fall 2001	Fall 2002	
1. Total subject pool of first-year students admitted in Fall XXXX	293	384	334	353	375	
2. Subjects who also have an admission percentage recorded	270	366	323	352	371	
<ol> <li>Subjects who also meet birth date range criteria</li> </ol>	228	310	278	317	318	
4. Subjects who also have TGPA values of 1 or greater for admit term and following term and at least 2 terms of registration <sup>a</sup>	183	221	216	250	238	
5. Filter to include only students who also successfully attempted University 101 in their first term	7	16	14	1	9	

<sup>a</sup>this value was chosen as students with a TGPA less than 1 can be considered, for the purposes of this study, to have failed to expend enough effort on studies to determine whether participation in University 101 has any effect.

4. The eligible control subjects were similarly identified for matching (see Table

7).

## Table 7

## **Control Subject Identification**

Filtering Operation	Fall 1998	Fall 1999	Fall 2000	Fall 2001	Fall 2002
Filtering Operation 1-4. The first 4 filtering criteria in Table 6 above resulted in the following potential subject pool 5. Filter to exclude students who attempted University 101 in either of	183	221	216	250	238
5. Filter to exclude students who attempted University 101 in either of their first two terms at University	175	202	197	236	224

5. Treatment subjects were matched with comparable students who did not take

UNIV 101. Subjects were matched first by gender, then all potential matches

with an admission percentage within five percentage points were identified; the subject with the closest birth date was then selected.

6. The researcher then had two matched data sets for each admission intake – the treatment group and a matched control group.

Phase 2 procedures.

1. Data were checked for outliers and anomalies using frequency and histogram analysis.

2. Means and standard deviations were calculated.

3. Correlations between admission percentage, term 1 GPA, term 2 GPA, and the difference in GPA between terms 1 and 2 were calculated. This confirmed that admission percentage is a useful covariate for term 1 and term 2 GPA, but not for the difference in GPAs.

4. A 2 X 2 X 1 ANCOVA was calculated using completion of University 101 and gender as independent variables and admission percentage as the covariate. This confirmed that there is no gender effect, and this factor was therefore omitted from subsequent calculations.

5. A 2 X 1 ANCOVA was calculated using completion of University 101 as the independent variable, term 1 GPA as the dependent variable, and admission percentage as the covariate.

6. A 2 X 1 ANCOVA was calculated using completion of University 101 as the independent variable, term 2 GPA as the dependent variable, and admission percentage as the covariate.

7. A 2 X 1 ANOVA was calculated using completion of University 101 as the

independent variable and the difference between term 1 and term 2 GPAs as the

dependent variable.

#### Measures

See Appendices A through D for details of high school admission,

admission percentage, UNBC grading scale, and TGPA calculations.

#### Ethics Safeguards

Each time they register, students sign a form that discloses the following

#### information:

Students are advised that the use of information provided on this registration form, as well as other information contained in a student record, complies with the BC Freedom of Information and Protection of Privacy Act, and with the policies and procedures of the University of Northern British Columbia. In addition to internal administrative use related to student admission, registration and status, student information may also be used in strict confidence in University research and planning. Certain student information is provided on a confidential basis to Statistics Canada as governed by the Canada Statistics Act, and to the BC Government. The internal use of student records, and the obligatory reporting of student data to external bodies respect the absolute confidentiality of student information. (University of Northern British Columbia Registration Form)

The information used in this study was extracted from the student information

system for the purposes of institutional research in accordance with this

statement. The use of the personal identity master (PIDM) ensured that the

identity of the subjects was not known to the researcher or anyone associated

with this study at any time. Therefore confidentiality was strictly maintained.

#### Results

The data were checked for outliers and other anomalies using frequency

and histogram analysis. No outliers were identified. Raw data is presented in Table G in Appendix G. The means and standard deviations are summarized in Table 8.

## Table 8

		n	Minimum	Maximum	М	SD
Control Group	ADMGPA	47	67.40	93.20	79.05	7.13
	TRM1GPA	47	1.10	4.26	2.46	.75
	TRM2GPA	47	1.00	4.18	2.40	.80
	GPA Change	47	-1.42	1.33	-0.06	.56
Treatment Group	ADMGPA	47	66.60	94.40	78.59	7.71
	TRM1GPA	47	1.15	4.33	2.69	.76
	TRM2GPA	47	1.11	4.33	2.45	.77
	GPA Change	47	-1.67	1.43	-0.24	.65

## **GPA Means and Standard Deviations**

The mean admission percentage for the control group is 79.06%, for the treatment group 78.59%. The mean term 1 GPA for the control group is 2.46, for the treatment group 2.69. The mean term 2 GPA for the control group is 2.40, for the treatment group 2.45.

The correlations between admission percentage and other GPA data were determined. The results are presented in Table 9.

#### Table 9

#### **Correlations between Admission Percentage and**

	n	Pearson Correlation	Significance (2-tailed)
Treatment Group Term 1 GPA and Admission Percentage	47	.53	.000
Treatment Group Term 2 GPA and Admission Percentage	47	.55	.000
Treatment Group GPA difference and Admission Percentage	47	.030	.84
Control Group Term 1 GPA and Admission Percentage	47	.55	.000
Control Group Term 2 GPA and Admission Percentage	47	.68	.000
Control Group GPA Difference and Admission Percentage	47	.24	.099

#### UNBC Term 1 GPA, Term 2 GPA, and GPA Difference

The treatment group correlation between admission percentage and term 1 GPA is r = .53, p < .0005 (two-tailed). The treatment group correlation between admission percentage and term 2 GPA is r = .55, p < .0005 (two-tailed). The control group correlation between admission percentage and term 1 GPA is r= .55, p < .0005 (two-tailed). The control group correlation between admission percentage and term 2 GPA is r = .068, p < .0005 (two-tailed). These results are statistically significant, confirming that the admission percentage is an appropriate covariate for these comparisons. The treatment group correlation between admission percentage and GPA difference is r = .030, p < .84 (twotailed); the control group correlation is r = .24, p < .099. Neither is statistically significant, confirming that admission percentage is not useful as a covariate for this comparison.

A 2 X 2 x 1 analysis of covariance with the admission percentage as covariate, term 1 GPA as the dependent variable, and the independent variables (gender and participation in University 101) with two levels was completed. No significant gender effect F(1,89) = .37, p = .55 or gender x university 101 interaction effect F(1,89) = 1.29, p = .26 was found. This confirmed that the matching process worked, and gender was therefore omitted as a factor from subsequent operations.

A 2 x 1 analysis of covariance with the admission percentage as covariate, term 1 GPA as the dependent variable, and the independent variable completion of University 101 with two levels (yes or no) was also completed. The results of this analysis are presented in Table 10.

#### Table 10

Source	Df	MS	F	p
Corrected Model	2	8.20	20.07	.000
Intercept	1	2.42	5.93	.017
Admission Percentage	1	15.14	37.04	.000
University 101	1	1.55	3.80	.054
Error	91	.41		
Total	94			
Corrected Total	93			

#### Analysis of Covariance – Term 1 GPA as Dependent Variable

Students who took University 101 had greater term 1 GPAs than did students

who did not take the course with results approaching significance, F(1,91) =

3.80, p = .054, d = 0.3. The  $\alpha = .01$  for judging the lack of the equality assumption of homogeneity of variance was not violated in this ANCOVA.

A 2 x 1 analysis of covariance with the admission percentage as covariate, term 2 GPA as the dependent variable, and the independent variable completion of University 101 with two levels (yes or no) was completed. The results of this analysis are presented in Table 11.

Table	1	1
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Source	Df	MS	F	р
Corrected Model	2	10.70	27.46	.000
Intercept	1	5.83	14.97	.000
Admission Percentage	1	21.34	54.78	.000
University 101	1	.15	.37	.54
Error	91	.390		
Total	94			
Corrected Total	93			

#### Analysis of Covariance – Term 2 GPA as Dependent Variable

Students who took University 101 did not have significantly higher term 2 GPAs than did students who did not take the course, F(1,91) = .37, p = .54, d = .064. The  $\alpha = .01$  for judging the lack of the equality assumption of homogeneity of variance was also not violated in this ANCOVA.

Finally, an analysis of variance (ANOVA) with the dependent variable the difference between term 2 GPA and term 1 GPA and the independent variable completion of University 101 with two levels (yes or no) was completed. The results of this analysis are presented in Table 12.

#### Table 12

Source	df	MS	F	p
Corrected Model	1	.79	2.13	.15
Intercept	1	2.06	5.56	.02
University 101	1	.79	2.13	.15
Error	92	.370		
Total	94			
Corrected Total	93			

#### Analysis of Variance - GPA Difference as Dependent Variable

Students who took University 101 had a non-significant higher decrease in the term GPAs than did students who did not take the course, F(1,92) = 2.13, p = .15, d = -.03. Again the  $\alpha = .01$  for judging the lack of the equality assumption of homogeneity of variance was not violated in this ANOVA.

#### Discussion

As expected due to the matching process, there was very little difference in the admission percentage means and standard deviations, although the treatment group had a slightly lower admission percentage. It is interesting, then, that the mean term 1 and term 2 GPAs were slightly higher in the treatment group. The lower mean admission percentage for the treatment group would suggest the term GPAs would also be lower. It is also interesting that both groups showed a decrease in GPA from term 1 to term 2. The researcher expected an increase in GPA over time in the first few years at university as students become accustomed to the expectations and become more skilled students. The mean change in GPA over the two terms was therefore in a negative direction, and the treatment group showed a larger negative change. The significance of these differences is discussed further below.

The statistically significant correlation between admission percentage and UNBC GPA is consistent with the literature, which has repeatedly reported that one of the best predictors of academic success in university is the degree of academic success in high school. This would certainly support the current admission practice of admitting students to UNBC and awarding entrance scholarships on the basis of high school performance. The lack of a significant correlation between admission percentage and the increase in GPA over terms is also consistent with expectations. The literature indicates that admission percentage is an effective predictor of subsequent performance, but not that it leads to a steady increase in term GPAs. Therefore, a high admission percentage would not be expected to predict a large increase in GPA from one term to the next.

The initial 2 X 2 X 1 ANCOVA for term 1 GPA showed no gender or gender X University 101 effect. This was consistent with expectations, as the literature did not indicate a gender effect. In addition, subjects were matched on gender to adjust for any unexpected gender effect. Gender was therefore omitted from subsequent calculations to increase the power of the operations to detect differences due to completion of University 101. The second 2 X 1 ANCOVA with term 1 GPA as the dependent variable showed that successful completion of University 101 had an immediate positive effect on term GPA that approaches significance. Students who took the course had higher term 1 GPAs than did students who did not take the course, with a p < .054. This result is 0.004 above a level that would allow the researcher to claim a significant effect.

could waste resources offering University 101 and students could waste time and money taking University 101 when it has no effect. The risk of a type II error is larger. If the University were to stop offering the course, students would lose the opportunity to take a course that is likely to help them achieve academic success. The University might find lower levels of academic performance among students and a lower retention rate. It is therefore preferable to risk a type I error and suggest that this project provides evidence that participation in University 101 has an immediate positive effect on grades and is achieving one of the stated goals – that of improving academic performance among first-year students.

The literature supports this explanation. University 101 topics include career planning, note taking and exam writing strategies, time management, realistic expectations of university, awareness of university services (such as counselling and advising), awareness of personal learning styles, academic policies, research skills, stress management, and communication skills. The literature finds that knowledge of these areas positively affects academic performance. University 101 is offered in a small seminar format; the literature finds that frequent student/faculty interactions, such as those that are facilitated by a small seminar format, positively affect academic performance. In addition, the literature finds that student success courses with content similar to University 101 consistently lead to increased academic success.

The 2 X 1 ANCOVA with term 2 GPA as the dependent variable did not show an effect of successful completion of University 101 on term 2 GPA. There are a few possible explanations for this. It may be that the effect of University

101 is immediate but does not last beyond the end of the course. Another possibility is the tendency of regression toward the mean. Students who took University 101 performed significantly better than expected in the first term, but perhaps the tendency of regression toward the mean was stronger than the effect of the course, so in term 2 no significant difference is observed. Or, it may be that there is no effect of the course, and the results in term 1 occurred by chance.

Similarly, the 2 X 1 ANCOVA with the difference in GPAs between terms 1 and 2 showed no significant effect of completion of University 101. The researcher expected a trend of increasing GPAs in the first few years at university, and possibly that treatment subjects would show a greater increase in GPA than did control subjects. The fact that both samples showed a decrease in TGPA in term 2 is counter-intuitive for those who work in student services. A decline in performance of this nature merits attention because it is not mentioned in the literature. There are a few possible explanations for this finding, however. Grades may be influenced by comparison with other students in a cohort, and this cohort changes in second term. Many students leave university after the first term, especially those who struggled academically and received the lowest grades in the first term. Among the remaining students, a new group is then at the bottom of the class academically. These students could then receive the lower grades previously awarded to the students who withdrew. Another possible explanation is that students who do not take the course improve their skills over two terms as they gradually learn how to succeed at university. In contrast, students who take University 101 learn those skills earlier, apply them

in the first term, and therefore do not have a gradual improvement in skills to minimize the drop in GPA.

Overall, the results of this study do not provide clear evidence that University 101 improves academic performance. One explanation for this is that teaching learning skills, clarification of career goals, and familiarization with University resources does not affect subsequent academic performance. This would be at odds with the literature, however. Another explanation is that, while this type of course can prove effective, the design or delivery of this particular course is not effective. Another is that students who take the course may take longer than one term to incorporate the skills they learn into their practices, and thus the effects of the course may take longer to manifest than the scope of this study. Another explanation is that those who elect to take University 101 have deficiencies that are not readily remedied by University 101. It is also possible that the course has a greater effect on retention than it does on academic performance.

It is clear that there are many questions yet to be answered. Would a larger sample size (only available as more students take the course over time) show statistically significant results? Would information about the reasons students choose to take the course (or choose not to) provide some information about additional relevant factors that could be used to better match subjects? Do factors such as such as parental income, parental education level, or coming from a rural versus urban environment change the effect of University 101? Does this course have long-term effects on academic performance that would show up in subsequent terms? Do students who take this course show a higher

persistence rate? Is there anything about the students who elect to take the course that puts them at a higher risk for not succeeding (do they have reason to be nervous about the transition and therefore take the course)? Conversely, are students who elect to take the course more likely to succeed than those who do not by virtue of electing to take the course (for example, a willingness to take this course could indicate a strong commitment to success)? Would results change if the grade achieved in the course were taken into consideration? Does the course have different outcomes for mature students? What do students say about the course with regard to its perceived usefulness, how it affects their perception of the University, how it affects their perception of themselves "fitting" with the University, how it affects their commitment to degree completion, and how these perceptions affect academic performance and persistence? These are just some of the questions that should be answered with further research before final conclusions can be drawn about the full value of University 101 for UNBC students and for UNBC.

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## Appendix A

UNBC High School Applicant Admission Requirements

The following information is found in the University of Northern British Columbia Calendar (University of Northern British Columbia<sup>a)</sup>:

Successful completion of an approved provincially examinable grade 12 program leading to graduation with a minimum BC/Yukon high school C+ (65%) average calculated on the basis of the five best grade 12 courses from the list below:

- English 12
- Three grade 12 courses, selected from the following:

Applications of Mathematics	History
BC First Nations Studies	Japanese
Biology	Latin
Calculus	Law
Chemistry	Mandarin
Comparative Civilizations	Physics
English Literature	Principles of Mathematics
French	Punjabi
German	Spanish
Geography	Technical and Professional Communications
Geology	Writing

 A fifth grade 12 course. This course can be any grade 12 course taught in the secondary school, including: locally developed courses (e.g. First Nations languages), career preparation courses (Construction 12, etc.), or others (Art 12, Band 12, Information Technology 12, Communications 12, CAPP 12, etc.)

## Appendix B

## High School Admission Percentage Calculation

## Table B1

## Sample High School Transcript

Course	School Mark	Provincial Exam Mark	Final Grade	
Band 12	78	N/A	78	
Chorus 12	90	N/A	90	
English 12	82	70	76	
French 12	76	80	78	
Geography 12	84	80	82	
History 12	62	69	66	
Physical Education 12	87	N/A	87	
Writing 12	79	N/A	79	

The BC high school admission percentage is calculated by averaging the final percentages of the courses indicated in Appendix A. An example of how the admission percentage for the transcript in Table B1 would be calculated is illustrated in Table B2.

## Table B2

Admission Requirement	Course Used	Grade
English 12	English 12	76
1 grade 12 course from list (course from list with highest grade)	Geography 12	82
1 grade 12 course from list (course from list with next highest grade)	Writing 12	79
1 grade 12 course from list (course with next highest grade)	French 12	78
Fifth grade 12 course (the remaining grade12 course with the highest grade)	Chorus 12	90
	A. Laster St.	

## Sample Admission Percentage Calculation

The admission percentage for the example illustrated in Table B1 and Table B2

would be the average of the five courses used in Table B2. Therefore, the

admission percentage for this example would be 76 + 82 + 79 + 78 + 90 = 81%

<sup>5</sup> 

## Appendix C

## **UNBC** Grading Information

The UNBC Calendar (University of Northern British Columbia<sup>b</sup>) includes the

following explanation of the grading scale used:

## Grading

Each credit course for which you are registered is awarded a final grade at the end of the semester. The grade for each course will be entered on your transcript by a letter grade and a grade point.

## Grade Point Average

Grade Point Average (GPA) is a method of expressing a student's performance as a numerical value. Each letter grade is assigned a numerical equivalent, which is then multiplied by the credit hour value assigned to the course to produce the grade point.

UNBC Grade Point	Letter Grade	Percentage	Definition/Standing
4.33	A+	90-100%	
4.00	А	85-89.9%	Excellent
3.67	A-	80-84.9%	
3.33	B+	77-79.9%	
3.00	В	73-76.9%	Good
2.67	B-	70-72.9%	
2.33	C+	67-69.9%	Satisfactory
2.00	С	63-69.9%	Salislaciory
1.67	C-	60-62.9%	Marginal
1.00	D	50-59.9%	iviai giriai
0.00	F	0-49.9%	Failure

## Grading System

Р	Passing grade	credit awarded
AEG	Aegrotat standing	credit awarded
DEF	Deferred grade	no credit awarded
W	Withdrawn	no credit awarded
AUD	Audit of course	no credit awarded
WAU	Withdrawn from audit	no credit awarded
INP	Thesis or project course work in progress	
NGR	No grade reported	

The following are not included in academic average:

## Appendix D

## Term Grade Point Average Calculation

The UNBC Calendar (University of Northern British Columbia<sup>b</sup>) includes the

following explanation of the grading scale used.

## Semester Grade Point Average

Semester Grade Point Average (SGPA<sup>11</sup>) is computed by dividing the total number of grade points earned by the total number of credit hours taken in the semester. See Repeating Courses for the treatment of repeated courses in GPA calculations.

## Calculation of Grade Point Average

The following is an example of how a student's GPA is calculated at the end of a semester:

1.	ENGL 301-3	В	3.0	3 credit hours x 3.0	=	9.00
2.	ENGL 302-3	В-	2.67	3 credit hours x 2.67	=	8.01
3.	BIOL 301-4	C+	2.33	4 credit hours x 2.33	=	9.32
4.	HIST 302-3	A+	4.33	3 credit hours x 4.33	=	12.99
5.	PYSC 301-3	w	_			_
		Total	13 credit hours			39.32
		Semester GPA	39.32/13 = 3.02			

<sup>11</sup> Semester Grade Point Average is equivalent to Term Grade Point Average.

## Appendix E

#### Sample University 101 Course Outline

COURSE DESCRIPTION: University 101 is most appropriate for students who are in their first year of study at university. It offers an introduction to the university as an institution of higher learning, an explanation of the various methods of inquiry employed therein, and demonstrations of the study skills and learning strategies that are required for academic success. Students will be encouraged and assisted to apply the information presented in this course to other courses that they are completing concurrently.

INTENDED AUDIENCE: University 101 is a central component of UNBC's Student Success Initiative. This initiative involves the development of an undergraduate course that is specifically designed to assist students to quickly learn the new academic skills and strategies that are necessary to successfully complete their first year of study at UNBC and to improve their academic performance in each of the subsequent years of their degree programs. University 101-3: Introduction to Higher Education is a three credit, multi disciplinary elective that is an appropriate foundation course for all university degree programs. The course is most appropriate for students who are in their first or second year of study at university, including those who have transferred from regional colleges, and for mature students who are returning to postsecondary study following an extensive interval of alternate activities. UNIV 101 is not appropriate for senior students or any students who may assume that the course will be an easy three credits. Former UNIV 101 students have indicated that the difficulty and workload of UNIV 101 are above the average for first and second year UNBC courses. Last, this part of the Student Success initiative is a pilot project that involves offering sections of University 101-3 to not more than 25 students per section for a period of six years. The results of the pilot will be evaluated during that period and at the conclusion of the project.

#### TOPIC OUTLINE

TOPI	COULTINE					
	Part One	Part Two				
	1. Introduction	7. Diverse Thinking				
	2. Time Management	8. Critical Thinking				
	3. Memory Enhancement	9. Effective Writing				
	4. Effective Reading	10. Interpersonal	Skills			
	5. Note Taking	11. Money and H	ealth			
	6. Test Taking	12. Future Thinking				
EV	ALUATION					
No.	Evaluation Task	Date or	Value			
		Due Date				
1	Library Research Skills Report					
	(Topic to be selected in class)	Thu 30 Jan 2003	10%			
2	Mid-Term Exam	Thu 13 Feb 2003	17.5%			
3	Library Research Topic Presentation					
	(Topic to be selected in class)	Tue 11 to Tue 18 Mar 2003	12.5%			

(Topic to be selected in class) Library Research Term Paper 4

(Topic to be selected in class)

5 Class Attendance and Participation

Final Exam (To be scheduled by Registrar) 6

#### COURSE TEXT

Ellis, D. (2000). Becoming a master student (Cdn., 3rd Ed.). Boston, MA: Houghton Mifflin Company.

#### SUPPLEMENTARY READINGS

During the course, lists of student success books, articles, study aids, and helpful Web sites will be circulated in class. **COURSE POLICIES** 

1. Course Registration: A Wait List is kept by the Registrar's Office to admit those who want to register if space becomes available in the class. Those who put their names on the wait list will be admitted automatically if spaces become available. This list will be discontinued on Thursday January 16, the last day to drop and add courses for this semester.

Thu 28 Mar 2003

24 Classes

7 April 2003

25%

05%

30%

2. Attendance: All students are expected to attend class regularly. The marks for missed evaluations (exams, quizzes, class presentations) due to absence will be adjusted if the absence was legitimately unavoidable and it is explained in writing by an appropriate authority; e.g., signed letter from doctor, minister, etc. Otherwise, the marks will be forfeited.

3. Late Submission of Assignments: Excepting those with a legitimate reason for a delay that is duly authenticated in writing by an appropriate official, those who have the advantage of additional time to complete and submit an assignment will be assessed a penalty of three percent per day for each day after the submission cleadline that the assignment is submitted or extended. The course instructor will assume responsibility only for those assignments that are submitted directly to him. Due to the risk of computer virus transmission and the loss of computer files, do not submit any assignment by computer.

4. Final Examination: The UNIV 101 final examination date will be announced by the Registrar in March. It will be scheduled during the examination period (Apr.7-16) and it may occur as late as 22:00 hours on April 16. Students are advised not to make any travel or employment commitments that may conflict with the exam schedule.

# Appendix F

# Sample University 101 Class Schedule

Date	Topics	Reading	Assignment Information	Important Notes
Tue 07 Jan	Course Introduction	Course Handouts	See assignments on Pg. 1 of Course Outline	
Thu 09 Jan	Text Introduction	Ellis, Ch 01	Complete Ch 1 Learning Style Inventory Do Chapter 01 Self Test	
Tue 14 Jan	Library Research Skills Lab	Library Skills Workbook	Library Research Report Start now!	This class will be held in the UNBC Library
Thu 16 Jan	Library Research Skills Lab	Library Skills Workbook		This class will be held in the UNBC Library <u>16 Jan. last day to</u> <u>add/ drop courses without</u> financial penalty
Tue 21 Jan	Time Management	Ellis, Ch 02	Do Chapter 02 Self Test	
Thu 23 Jan	Time Management	Ellis, Ch 02	Complete Ch. 2 Time Monitor Exercise	
Tue 28 Jan	Memory Skills and Strategies	Ellis, Ch 03	Complete Ch 3 Ex 13 Review Schedule Do Chapter 03 Self Test	
Thu 30 Jan	Efficient Reading	Ellis, Ch 04	Do Chapter 04 Self Test Complete Ch 4 Ex 16 Make it a habit	
Tue 04 Feb	Note Taking Strategies	Ellis, Ch 05	Library Research Progress Report Due	
Thu 06 Feb	Note Taking Strategies	Ellis, Ch 05	Do Chapter 05 Self Test	
Tue 11 Feb	Test Taking Preparation and Skills	Ellis, Ch 06	Do Chapter 06 Self Test	
Thu 13 Feb	Mid-Term Exam	Ellis, Ch 01-06 & Lectures	Mid-Term Exam	13 Feb. Last day to drop courses without academic penalty
17-21 Feb	Mid	Term	Study	Break
Tue 25 Feb	Public Speaking	Ellis, Ch 09	Mid-Term Exam Review	
Thu 27 Feb	Effective Writing	Ellis, Ch 09	Do Chapter 09 Self Test	
Tue 04 Mar	Effective Writing	Ellis, Ch 09		
Thu 06 Mar	Student Research Presentations	Lecture & Reading Notes	Presentation Group 1 / Eval Group 2	
Tue 11 Mar	Student Research Presentations	Lecture & Reading Notes	Presentation Group 2 / Eval Group 1	
Thu 13 Mar	Diverse Thinking	Ellis, Ch 07	Do Chapter 07 Self Test	
Tue 18 Mar	Critical & Creative Thinking	Ellis, Ch 08		
Thu 20 Mar	Critical & Creative Thinking	Ellis, Ch 08	Do Chapter 08 Self Test	
Tue 25 Mar	Interpersonal Skills & Relationships	Ellis, Ch. 10	Do Chapter 10 Self Test	
Thu 27 Mar	Interpersonal Skills & Relationships	Ellis, Ch. 10	Library Research Reports Due	
Tue 01 Apr	Physical & Mental Health	Ellis, Ch 11	Do Chapter 11 Self Test	
Thu 03 Apr	Future Thinking	Ellis, Ch 12	Do Chapter 12 Self Test Library Research Reports Returned	Final Exam Format Description
Mon 07 Apr	UNIV 101 FINAL EXAM	Ellis Chs 1-12 & All Lectures	Scheduled Examination (3 Hrs.)	Exam date will be set by Registrar

## Appendix G

## Subject Data Summary

Univ 101 <sup>ª</sup>	Admission Percentage <sup>b</sup>	Term 1 GPA°	Term 2 GPA <sup>c</sup>	GPA Difference <sup>°</sup> (Term 2 GPA - Term 1 GPA)	Gender		Univ 101 <sup>ª</sup>	Admission Percentage <sup>b</sup>	Term 1 GPA <sup>c</sup>	Term 2 GPA <sup>c</sup>	GPA Difference <sup>°</sup> (Term 2 GPA - Term 1 GPA)	Gender
Т	87.4	3.38	3.05	-0.33	F		C	88.40	3.73	3.33	-0.4	F
T	86.20	2.93	3.47	0.54	F		С	82.20	2.27	2.73	0.46	F
Т	93.60	4.33	4	-0.33	F		С	93.20	3.32	3.33	0.01	F
T	74.60	1.89	2.92	1.03	M		C	76.00	2.24	2.33	0.09	M
Т	85.40	1.93	1.83	-0.1	F		C	88.80	2.67	4	1.33	F
T	77.60	1.75	2.67	0.92	F		C	80.40	1.67	1.98	0.31	F
T	74.00	1.22	1.11	-0.11	M		C	77.20	3.2	1.78	-1.42	M
T	85.00	2.07	3.13	1.06	F		C	88.80	3.34	2.76	-0.58	F
	79.20	2.53	2.58	0.05	F		0	75.80	2.08	1.//	-0.31	F
	74.0	1.15	2.58	1.43	M	1000	0	72.40	3.11	3.13	0.02	IVI M
	76.60	2.40	2.04	-0.44	E E		C	83.0	3.07	3.02	0.3	F
T	79.00	2.05	1.08	-0.11	F		C	76.60	1.67	1.78	0.11	F
T	86.60	2.44	2.09	-0.40	F		C	89.20	2	2.83	0.83	F
T	76.00	1.93	1.67	-0.26	F		C	75.80	2.73	2.56	-0.17	F
T	68.20	2.25	1.67	-0.58	M		C	67 40	2	1.5	-0.5	M
T	75.60	3.84	3.61	-0.23	F		C	73.40	1.25	1.8	0.55	F
Т	70.60	2.75	2.56	-1 10	F		C	72.40	1.03	2.42	0.49	F
T	70.00	2.50	1.47	-1.19	M		C	72.40	2.98	2.42	-0.93	M
T	73.40	3.11	2.22	-0.89	F		C	77.00	2.59	2.00	-0.59	F
T	69	1.53	2.42	0.89	M		C	70.8	2.59	1.6	-0.99	M
T	69.80	1.92	2.09	0.17	M		C	71.80	2.58	2.33	-0.25	M
T	85.6	3.15	3.73	0.58	F		C	86.2	1.74	2.56	0.82	F
T	67.20	2.53	2.47	-0.06	M		С	68.60	1.92	1.8	-0.12	М
Т	69.8	3.4	3.5	0.1	M		C	72.6	1.33	1.34	0.01	М
Т	85.00	3.3	2.6	-0.7	F		С	85.6	2	1.5	-0.5	F
Т	94.40	4.33	4.33	0	M		С	91.00	3.72	3.62	-0.1	М
Т	81.6	2.98	2.88	-0.1	F		С	83.0	2.06	2.33	0.27	F
Т	74.20	2.81	2.04	-0.77	F		C	76.40	2.73	3.27	0.54	F
Т	69.4	1.92	1.33	-0.59	M		C	77.40	2.86	2.33	-0.53	M
T	74.4	2.47	1.78	-0.69	M		C	75.0	2.73	2.97	0.24	M
- T	72.6	1.75	1.42	-0.33	M	-	C	72.2	1.4	1.33	-0.07	M
T	84.20	2.58	2.08	-0.5	F		C	80.20	1.79	2.2	-0.57	F
T	80.00	3.83	3.34	-0.49	M		C	91.00	3.69	3.28	-0.41	M
T	71.00	2.67	1.78	-0.49	F		C	72.40	2.21	2 17	-0.04	F
T	82,80	3	2.89	-0.11	F		C	78,80	2.17	1.25	-0.92	F
T	66.60	2.67	1.5	-1.17	F		Ċ	69.20	1.54	1	-0.54	F
Т	80.8	2.93	2.58	-0.35	M	1	С	77.20	1.1	1.44	0.34	M
Т	85.40	2.8	1.78	-1.02	М		С	87.6	2.55	2.57	0.02	М
T	87.80	3.07	2.5	-0.57	M		С	86.60	3.93	3.94	0.01	M
Т	92.20	4.25	4	-0.25	F		С	92.60	4.26	4.18	-0.08	F
T	73.00	1.92	2.33	0.41	F		С	72.00	2.02	1.32	-0.7	F
T	73.60	2.5	1.6	-0.9	F		С	74.40	2.93	3.17	0.24	F
Т	72.60	2.33	2.8	0.47	F		С	75.00	2.5	1.6	-0.9	F
T	70.40	2.69	2.33	-0.36	M		C	73.80	1.89	2.13	0.24	M
	88.40	2.48	1.95	-0.53	F	Successive State	C	87.2	2.9	3.21	0.31	F

<sup>a</sup> T = subject took University 101, n=47; C= subject did not take University 101, n=47 <sup>b</sup> in percentages <sup>c</sup> in UNBC grade point