# The Effects of Extra-Curricular Involvement on CÉGEP Student Success: A Correlational Study

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## ABSTRACT

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The topic of extra-curricular involvement has been studied extensively in various forms. However, most research has focused on extra-curricular involvement at the secondary education level with a large number of studies examining after school programs and athletics. Fewer studies have looked at higher education students as a population and those that have returned mixed results. The purpose of this research is to study how involvement in extra-curricular activities (ECAs) affects student success as determined by academic standing. In conducting this study, a modified version of the National Survey for Student Engagement was used as the primary instrument to gather data from 135 students (64.4% male, 35.6% female) enrolled in various academic programs in a Montréal area Anglophone CÉGEP. A quantitative correlational design was used to address several research questions which focused on determining the relationship between ECAs and student success. Furthermore, ECAs were categorized into groupings and tested to ascertain which sets have the greatest impact on student success. Results, limitations, implications, future direction, and conclusions are discussed.

*Keywords:* extra-curricular activities, student success, student engagement

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It has certainly been a journey, however, this is but the beginning…

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# The Effects of Extra-Curricular Involvement on CÉGEP Student Success: A Correlational Study

## Chapter 1 – Background

As a student, at one point or another you may have probably asked yourself: what can I do to do better academically? What is the key to student success, and how can I get there? Even if you have not asked yourself those questions, it is something you have heard your teachers, guidance counsellors, and administrators mention probably more than once. It should of course come as no surprise since student success is at the heart of every educational institution. Student success is not a simple concept however and evidently, one's success is dependent on multiple factors. Furthermore, as Kuh, Kinzie, Schuh, and Whitt (2010) point out, there is no clear blueprint for student success and educational institutions have found varying ways to engage their students either through their own practices or through practices borrowed from other institutions.

Looking at the individual, most models that examine student success consider five sets of variables: (1) background characteristics and demographics of students, (2) institutional characteristics such as mission, selection criteria and size, (3) student interactions with faculty, staff and peers, (4) how students perceive the learning environment, and (5) the effort students put towards activities that are educationally purposeful (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). Another line of reasoning states that student engagement in educationally purposeful activities is linked to student success as measured by desired outcomes such as grades and persistence (Kuh, 2001a; Pascarella & Terenzini, 2005). This later point was of particular interest to us in this study. Not only are educationally purposeful activities considered the single best

predictor for learning, according to Kuh (1997), such activities are not limited to the classroom environment but in fact, also include activities which take place beyond standard class curriculum (Astin, 1993; Kuh et al., 2010; Pace, 1980). Extra-curricular activities (ECAs) can be looked at as a sub-set of educationally purposeful activities, especially if they are sanctioned by an educational institution and aim to engage students in meaningful ways. As such, the research problem that this study aims to address is the effects of extra-curricular involvement on student success while looking at CÉGEP (Collège d'enseignement général et professionnel) students as the population.

An interest in the research problem in question arose as a result of the principal investigator's employment at Vanier College, a CÉGEP located in Montréal, Québec. At the time of this writing, Vanier is in the process of developing their five-year strategic plan which is expected to come into effect as of 2015. Whereas their 2008-2013 strategic plan focused on four priorities: student success, resources, international presence, and continuing education, the college's new plan is once again putting student success front and center (Vanier College, 2008). An early environment scan of stakeholders across the college has defined a successful student as one who has developed critical thinking skills, is prepared for challenges, and is willing to be engaged in their learning (Vanier College, 2012). Leadership skills, ability to collaborate in team settings, taking learning outside the classroom, and communication skills were also identified as factors that make up successful students (Vanier College, 2012). Although still in discussion at the time of this writing, Vanier seeks to express the importance of engagement in out of classroom activities as a transforming agent for student success. Essentially, the theory is that students who get involved are more likely to succeed. This study is interested in

exploring suggestive relationships that are aligned with the mentioned theory by looking at ECAs as the beyond the classroom factor.

The topic of student engagement (or involvement if you will) in ECAs is important for several reasons. First, past research suggests that it may have a direct link on student success (Kuh et al., 2010). Secondly, it may have implications for higher educational institutions on how they develop their methods of improving student success. Lastly, we know that learning is multi-dimensional and is not limited to the classroom. As such, certain types of ECAs could offer participants the chance to extend their learning in various ways, especially since some ECAs are designed to develop skills that might not necessarily be taught in class.

**Statement of the Problem**

Given our mentioned problem, the purpose of this research is to study how involvement in extra-curricular activities affects student success in an Anglophone Montreal-based CÉGEP.

**Research Questions**

In addressing the purpose of this study, three main research questions were asked:

1. What is the relationship between CÉGEP student involvement in school sanctioned extra-curricular activities and student success as measured by course grades and R-score? More specifically,
2. What is the relationship between students who get involved in academic versus nonacademic types of school sanctioned extra-curricular activities and student success as measured by course grades and R-score?

3. When compared to CÉGEP students who are not involved in school sanctioned extra-curricular activities; are students who do get involved more likely to achieve success as measured by course grades and R-score?

By providing answers to each of the questions, we aim to verify the validity of our primary alternative hypothesis which states that there is a positive correlation between CÉGEP students involved in school sanctioned ECAs and student success (hypothesis 1). We further hypothesize that CÉGEP students who get involved in ECAs with strong academic components will produce higher student success outcomes (hypothesis 2). Finally, we hypothesize that CÉGEP students who do get involved in ECAs are more likely to achieve higher levels of academic success when compared to their non-involved counterparts (hypothesis 3).

**Significance of the Study**

The significance of this study is best expressed by the fact that past research examining the relationship between ECAs and student success has in many ways focused on two aspects. A number of studies have focused on the effects of extra-curricular involvement on student achievement in high school students and are often longitudinal in nature (Broh, 2002; Fredricks, 2012; Jordan, 1999; Lisella & Serwatka, 1996; Zaff, Moore, Papillo, & Williams, 2003). Second, studies involving students in higher education (e.g., college, CÉGEP, or university) are few, offer mixed results, or tend to focus in large part on sports specifically as a dimension of extra-curricular involvement (Emerson, Brooks, & McKenzie, 2009; Snyder & Spreitzer, 1992).

In contrast to the mentioned study focuses, this study would examine the effects of a more comprehensive set of ECAs beyond athletics and instead focus on CÉGEP

students specifically – a population which has not been studied as extensively when compared to high school students or other higher education level students outside of the CÉGEP system. Not only would this study attempt to look at the statistical differences between students who get involved in academic versus nonacademic ECAs, it would also examine sub-categories of each in order to probe which ECA sub-categories are most influential on student success.

Ultimately, data collected here would add to the pool of existing research on extra-curricular involvement's effects on student success at the higher education level. Furthermore, the scope of this study may not allow for it to be generalizable, however the results might offer a perspective that could help influence a similar, larger and more generalizable study in the future.

# Chapter 2 – Literature Review

## Extra-Curricular Involvement in Secondary Education

A great deal of past research has focused on the influence of ECAs on student success with secondary school students as the target population. In most cases, these studies have considered US samples as drawn from national longitudinal studies (e.g., NLES). Others have explicitly examined the same research problem but with racial minority students as the focal point (D. Bergin, Cooks, & C. Bergin, 2007; Jordan, 1999; Lisella & Serwatka, 1996).

A research study by Broh (2002) examined the link between extracurricular programming and academic achievement in order to determine who benefits and why. Pulling from NLES:88 on a sample that includes 1,052 high schools across the US, her quantitative study looked primarily at how student involvement in sports promotes achievement and whether benefits associated with sports participation were unique to those activities or generalizable to non-sport activities as well. Broh (2002) makes a distinction between types of sports: intramural sports, or those that exist and are played within the educational institution in question and interscholastic sports, or those that occur between educational institutions. The author's results indicate that students who participate in intramural sports see a decline in academic achievement when compared to their non-participating peers. Interestingly enough however, students engaged in interscholastic sports appear to benefit the most with respect to academic achievement when compared to students involved in other ECAs – though, the benefits are still small overall. Among the other ECAs tested, participation in vocational clubs also showed a negative effect on student achievement.

The results produced by Jordan's (1999) study are in line with Broh (2002). Focusing instead on a minority population, Jordan (1999) found that students who participate in high school sanctioned sports do better academically as measured by grades when compared to their non-sport peers. The implications thus suggest that schools should consider the importance of ECAs such as sports and develop programs to engage students in such activities. It is however interesting to point out two limitations identified by Jordan (1999). Since, like Broh (2002), the author drew data from NLES:88, it is possible that students were not considered as being involved in athletics related ECAs if their grades fell below a certain bar, and there exists the possibility that high school coaches sometimes pressure teachers into giving their players better grades. Although no evidence of the latter exists in Jordan's (1999) study, the possibility is not unheard of and if true in a statistically significant amount of cases, then studies which look at sports as ECAs exclusively may be subject to bias with respect to academic achievement. However, since pressuring teachers into upgrading grades for athlete students presents a significant breach of ethics, what is more likely is that coaches may advise athletes to take easier courses. As a result, this may explain why students who participate in sports teams come out as being academically stronger than non-athlete students.

In contrast to Jordan (1999) and Broh (2002), an older study by Goode (1960) examined roles and found that individuals who commit fully to a role are likely to find it difficult to adequately commit to another. Coleman (1961) indirectly adds to Goode (1960) by stating that students who get invested in athletics are less likely to pursue their academic objectives since putting energy into both such roles and achieving excellence in each is overly challenging. If Goode's (1960) and Coleman's (1961) role theory stands,

one would argue that a student who commits to being part of a school sanctioned sports team or equally committed to another ECA would see their academic achievement suffer. A study by Snyder and Spreitzer (1992) analyzed the attitudinal and behavioral correlates of four groups of high US school students based on data from the High School and Beyond study of 1980 and 1982. The four categories examined were: scholar-athlete, pure scholar, pure athlete, and students who fit neither the scholar nor the athlete profile. The authors found that students who are involved in athletics or who fit the scholar profile tend to be active in more than one ECA. In support of involvement beyond the classroom (e.g., school sanctioned ECAs), Snyder and Spreitzer (1992) also found that benefits to students are proportional to the level of engagement in the social structure of the high school. Contrary to Goode (1960) and Coleman (1961), the authors suggest that the involvement in multiple roles provides opportunity to display outstanding social psychological attributes, or they develop these social characteristics via their involvement in these roles (Snyder & Spreitzer, 1992).

Zaff et al. (2003) also looked at high school students as a population in order to determine the implications of ECA participation on positive outcomes. Outcomes included: academic achievement as measured by enrolment and attendance in college, voting behavior, and volunteering. Their findings indicate that students who consistently participated in ECAs from 8$^{th}$ to 12$^{th}$ grade were 70.4% likely to attend college when compared to students who occasionally participated (48%) or never participated (16.4%). Similar trends were reported when it came to voting behavior and volunteering which supports later claims that involvement in ECAs may have benefits beyond student success. Zaff et al. (2003) conclude by stating that students who are involved in ECAs at

school may be more likely to engage in other aspects of school such as academic and civic programs.

An earlier study by Lisella and Serwatka (1996) agrees with Zaff et al. (2003). Even when examining minority students in urban high schools, Lisella and Serwatka (1996) also found that ECA participation was linked to academic success. Instead of looking at academic achievement as a factor of attending college, the authors examined student GPA. On a sample of students that were of African American, Hispanic or Native backgrounds, male and female students who participated in science fairs – an academic ECA, had higher GPAs when compared to their non-participating classmates. These findings by Lisella and Serwatka (1996) agree with Jordan (1999) who found that students of minority background that engage in sports also showed higher grades. Together, these studies may imply that students may increase their academic performance if they decide to involve themselves in ECAs that are either academic or non-academic in nature (e.g., athletics).

Although the studies that were investigated did primarily show evidence of participation in ECAs as positively influencing student outcomes, a meta-analysis conducted by Shulruf (2010) suggests different outcomes. Shulruf's (2010) systematic review examined 29 studies from data collected mostly from the US. Looking at secondary school students as the population, it turns out that most effect sizes on academic achievement as an outcome of participating in non-specific ECAs were small. In particular, Shulruf (2010) found that most included studies did not show enough evidence to suggest causal effect between variables – a limitation that was pointed out by several studies (Lisella & Serwatka, 1996; Zaff et al., 2003). Seven criteria were

presented and although most studies did show statistical significance, no study met all the elements. In fact, the biggest limitation of the studies was that none employed measures for change over time or that student achievement outcomes had increased or decreased over a given time span. In short, Shulruf's (2010) meta-analysis points to the fact that many studies related to the research problem suffer from methodology limitations and as such, it is vital that future research aim to create conditions in their design that consider building a more solid causal effect.

There is no doubt a challenge when it comes to determining whether there is a causal relationship between ECAs and student academic outcomes. Do students who get involved in ECAs do well because of what they gain from their consistent participation? Or are academically strong students simply more likely to get involved in ECAs? In addition, as some authors have pointed out, a large limitation is that it is not clear which ECAs lead to higher levels of academic achievement. In other words, are some ECAs more effective at influencing student success outcomes than others? Furthermore, as per Shulruf's (2010) meta-analysis, it is often challenging to predict if involvement in ECAs is the primary catalyst in influencing academic achievement. Point of fact, some studies (Burns, 2010) have shown that a combination of factors play a part in influencing student success and as such, ECAs alone may not be sufficient.

**Extra-Curricular Involvement in Higher Education**

Although a large body of research indicates that high school students who get involved in ECAs, be it sports, clubs, or other, tend to do better academically when compared to students who do not get involved beyond the classroom, the same is less certain in college or university students. Since this study aims to examine the effect of

ECA involvement with respect to CÉGEP students who fall into the higher education category, it is important to gain insight based on prior findings.

A recent study conducted by Emerson et al. (2009) looked at 80 colleges across the US to determine if there were links between student achievement and involvement in athletics. The authors found that when different types of sports were examined, some student athletes achieved academic outcomes that were either comparable or better than those of their non-athlete peers. Their findings also indicate that at many of the colleges, student athletes perform as well academically as non-athlete students. Although it is not elaborated on, Emerson et al. (2009) do bring up studies that suggest disturbing trends when it comes to choice of academic program when comparing college athletes to non-athletes. In particular, student athletes achieving higher academic outcomes than non-athletes may be attributed to the possibility that athletes are more likely to enroll in majors that traditionally yield higher GPAs.

Although Emerson et al. (2009) looked specifically at one type of ECA – athletics – Strapp and Farr (2009) questioned whether students should get involved or not and instead looked more broadly at a range of ECAs that were related to psychology (e.g., being a member of a society, working as a teaching assistant, etc.). Looking specifically at graduating psychology majors, their research found that there was a relationship between involvement and academic outcomes as measured by GPA. The authors also found that students who were more involved were more satisfied with their experiences as majors in psychology which suggests that involvement in ECAs impacts more than academic achievement. Strapp and Farr (2009) conclude by agreeing with Kuh et al. (2010) in that faculty should encourage student engagement in such out-of-classroom

activities. Of course, schools need to also be mindful that it is not uncommon for college students to work off-campus. As such, their capacity to become involved in ECAs can be highly limited due to their time constraints.

A study that included 627 third-year students from a college in Taiwan also found student participation in ECAs shared a positive correlation with academic outcomes (Huang & Chang, 2004). In particular, Huang and Chang (2004) looked at co-curricular activities, that is, activities that fall outside of the curriculum of the classroom but that complement it. Their results add to the pool of research that contradicts the assumptions proposed by Goode (1960) and Coleman (1961) that ECAs / co-curricular activities take time and focus away from academic studies (Black, 2002; MacKinnon-Slaney, 1993). It should be mentioned however that the findings put forth by Huang and Chang (2004), and Strapp and Farr (2009) are limited by the fact that they cannot be generalized to all college students since their selected samples are restrictive and non-representative of the population.

On the other hand, some research sees the relationship between ECAs and student success in the college setting somewhat differently – perhaps not as direct as other studies have shown. A literature review on the topic of out-of-class experiences and their influence on learning and cognitive development by Terenzini, Pascarella, and Blimling (1999) looked at studies involving college students in the US. Several dimensions of out-of-class activities were examined including: living in residence, being a part of a sorority or fraternity, joining intercollegiate athletics, employment, and other ECAs. Notably, some of these dimensions would not necessarily fall under the category of ECAs. Still, the authors offered two interesting outcomes that may have implications for causal effect

of ECAs on student success. First, the authors suggest that the largest influence on student learning appears to be thanks to the interpersonal interactions students have with faculty, staff, and their peers. Terenzini et al. (1999) suggest that involvement in ECAs has an indirect relationship on student learning and is in fact mediated by the amount and nature of the interpersonal interactions each activity constitutes. Second, the learning impacts of students' experiences are likely cumulative. Essentially, their research shows that no single intervention/activity is likely to significantly influence learning and cognitive development, however, involvement in a multitude of activities that are educationally meaningful will offer a larger magnitude of influence.

If we consider the results of Terenzini et al.'s (1999) literature review and involvement in several ECAs is required to significantly impact academic outcomes, then studies should aim to determine which types of ECAs are more likely to offer the most gains. Kuh et al. (2010) and Terenzini et al. (1999) suggest that students should engage in activities that are educationally meaningful, though, there could very well exist a variance between sets of ECAs and if involvement in certain types show a higher level of influence with relation to academic achievement, then these ECAs would potentially offer the largest benefits to students.

**Benefits of Extra-Curricular Involvement Beyond Academic Achievement**

Student engagement is a key component of student success, particularly if the activities are educationally meaningful (Kuh et al., 2010). A large bulk of research on the topic indicates that there are many associated benefits for students who choose to actively involve themselves in ECAs (Fredricks, 2011; Mahoney, Harris, & Eccles, 2006). As it were, it turns out these advantages go well beyond increased academic achievement and

may have implications for these students later in life. As educational institutions have increasingly moved towards becoming more student-centered, the offering of school sanctioned ECAs has grown and students are encouraged to get involved. Looking beyond academic achievement, what other benefits can be reaped from involvement in ECAs?

Lindsay (1984) conducted a quantitative survey design study that looked at data from high school students across the US in order to test the hypothesis that students who get involved in ECAs in high school are more likely to be socially involved as young adults. Considering a sample of 8,952 students as extracted from the National Longitudinal Study of the High School Class of 1972, the study validated the stated hypothesis and did indeed find that students who participate in ECAs during high school are more prone to participating in a large range of social activities when they are older (Lindsay, 1984). It turns out that a later study by Zaff et al. (2003) also found evidence to imply that students involved in ECAs throughout their schooling are more likely to become involved in social activities as adults. In particular, they found that students who participate consistently are 66.4% more likely to vote and 51.1% more likely to volunteer when compared to non-participating students who were only 38.8% likely to vote and 14.9% likely to volunteer (Zaff et al, 2003).

Furthermore, benefits of participation have also shown to include additional social and personal factors. Broh (2002) found that students who were active participants in sports in the $10^{th}$ and $12^{th}$ grades saw significant increases in their social ties with family, and their school. Mahoney et al. (2006) also found that involvement in ECAs led to an increase in “quantity and quality of interactions with their parents” (p. 1). Further, that

same study found that participation led to higher chances of school completion, psychological adjustment, as well as decreased chances of smoking and using drugs. Girod, Martineau, and Zhao (2004) looked at after-school clubhouse programs geared to teach students computer technology skills and echoed Mahoney et al. (2006) in that such ECAs may occupy students and discourage them from becoming involved in drugs and alcohol use. Equally important, Girod et al. (2004) conclude by stating that of the students who participated in the KLICK! after school clubhouse, the program was the most effective for the set of students who initially valued school the least. As such, this suggests that certain ECAs may have the ability to change student perceptions about school in a positive way.

It is also of value to point out that school completion and student retention is linked to participation. Whereas Mahoney et al. (2006) found evidence suggesting that participation in ECAs does increase the chance that students graduate when expected, an older literature review by Tinto (1975) made the suggestion that ECAs provide social and academic rewards that increase an individual's commitment to the institution, therefore reducing their chance of dropping out. Like Kuh (2001a), older literature described by Tinto (1975) found that there is a direct link between involvement in ECAs and persistence. A later literature review by Finn (1989) found that students who participate in school-relevant activities and develop a sense of identity with respect to their school are less likely to withdraw from their education before completing all K-12 levels. To little surprise, literature identified by Finn (1989) supports that in-class participation directly affects classroom performance. What is perhaps more surprising is that the author identifies studies which find that students who spend extra time in an educational

environment are more likely to develop feelings of belonging, and hence inspire a deeper sense of attachment to school. Further, the author found evidence in research that agrees with Zaff et al.'s (2003) more recent study: students who get involved in ECAs are not only more likely to have higher educational aspirations and attend college, they are also more predisposed to participating in political and/or social activities as young adults (Finn, 1989).

Although this study seeks to focus on academic outcomes specifically, it is clear that the additional benefits outlined by previous studies should offer some level of incentive for educational administrators and faculty to push for student participation in ECAs. Of course, involvement in any sort of out-of-class activity should never be undertaken at the expense of a student's academic success.

**Pitfalls of Over-Involvement in Extra-Curricular Activities**

As pointed out, involvement in ECAs certainly hold many benefits for students who choose to commit the time and effort. However, this review of the literature would fall short if it did not take into consideration the pitfalls associated with over-involvement in ECAs. Some literature suggests that students who over-schedule their commitment in ECAs risk negative consequences (Elkind, 2001; Rosenfeld & Wise, 2000). Three main concerns for this have arisen. First, time involvement in ECAs can be heavy thus reducing time for leisure and family (Melman, Little, & Akin-Little, 2007; Shaw, Caldwell, Kleiber, & Douglas, 1996). Second, over-involvement can add a layer of stress for students who begin experiencing troubles balancing their ECAs and their other obligations, which is especially problematic when faced with the difficult task of scheduling time for homework. The prior point is placed into perspective if one accepts

the fact that, based on the Québec government's Ministère de l'Éducation, du Loisir et du Sport, for every hour students are in class, they should be completing one hour of homework. For a CÉGEP student taking on a normal course load, this equates to an average of 30 hours of homework per week which might be difficult to schedule if said students are too involved in their ECAs in addition to other non-academic related weekly events. The third concern is that some students may get involved in ECAs primarily out of pressure from parents or simply as a means to inflate their chances of being accepted into competitive university programs such as medical/pre-medical school which attribute value to extra-curricular involvement (Luthar and Sexton, 2004; Mahoney et al., 2006).

A study conducted by Mahoney et al. (2006) looked at data from a nationally representative sample of US students ranging from 5 to 18 years old in order to compare two opposing perspectives: (1) involvement in activities beyond the classroom results in positive outcomes for academic, educational, social, civil and physical development and, (2) over-participation in activities due to external pressure can be harmful to youth. Mahoney et al. (2006) identified several main findings. Pressure from family or career goals are rarely the reason why youth choose to participate in activities. Among other things, those who participate have shown positive results when it comes to academic achievement, completion rate, and entrance into desired college. In conclusion, the authors found that there is limited support for the over-scheduling hypothesis and go on to state that perhaps a bigger issue is the fact that many youth do not participate in activities and that those who do participate are more likely to see positive developmental outcomes as a result.

Fredricks (2011) also examined the over-scheduling hypothesis by employing a quantitative survey-based design which examined involvement by looking at breadth and frequency of ECAs. Using data from the Educational Longitudinal Study of 2002, Fredricks (2011) observed four academic outcomes for grade 12 students across US high schools: mathematics achievement test scores, grade point average, educational expectations, and educational status. The results of the author's study is in line with many of the studies mentioned earlier which point to the advantages of involvement in ECAs. However, even though participation in ECAs was found to be associated with favorable academic adjustment, the author does conclude by stating that there is a threshold where if passed, "greater involvement is no longer associated with increased benefits" (Fredricks, 2011, p. 305). Interestingly, Fredricks' (2011) research is in agreement with Mahoney et al. (2006) and suggests that few students are over-scheduled and a sizeable amount are not involved in any school sanctioned ECAs.

Looking at different outcome variables, Melman et al.'s (2007) examination of the overscheduling problem found that youth who participated in activities tended to report higher levels of anxiety compared to those who did not participate. The authors do point out one important limitation however; the sample was drawn from middle to upper class adolescents who are very likely to attend college. Since activity participation is a criteria that colleges observe in candidates, these students might be experiencing external pressures from their parents with regards to the activities they are involved in which could play an influence on the increased anxiety levels reported. A more representative study could very well yield different results.

Although there is a lack of empirical data to suggest that involvement in ECAs can be detrimental when compared to the larger amount of research which points to the benefits, it is important to point out the over-scheduling problem as it can impact student success negatively for those students who over commit. In the context of this study, high levels of commitment to ECAs associated with low ranging grades could be a sign of over-scheduling, though, it is equally possible that other factors would be responsible for unfavorable academic standing and would need to be evaluated in a case by case basis.

# Chapter 3 – Methodology

## Study Design

Three research questions were proposed earlier in order to address the research problem: What is the relationship between CÉGEP student involvement in school sanctioned extra-curricular activities and student success as measured by course grades and R-score? What is the relationship between students who get involved in academic versus nonacademic types of school sanctioned extra-curricular activities and student success as measured by course grades and R-score? When compared to CÉGEP students who are not involved in school sanctioned extra-curricular activities; are students who do get involved more likely to achieve success as measured by course grades and R-score? To answer these questions and to determine the validity of the hypothesis presented, a quantitative methods approach will be utilized. Specifically, this study sought to employ an explanatory correlational design on two co-varying variables, extra-curricular involvement and student success. A multiple regression component with focus on two explanatory variables: academic linked ECAs and non-academic linked ECAs was also used as a way of determining which types of ECAs are most effective at influencing higher levels of student success.

Previous studies have used a number of methodologies to answer questions that address the same research problem on similar treatment and outcome variables, extra-curricular involvement and student success. Various designs are suitable in tackling the research problem in different angles. Since this study was especially interested in the relationship between the two measures and how they influence each other, a correlational study was an appropriate choice (Creswell, 2012; Urdan, 2010). Furthermore, the

outlined methodology was designed based on five characteristics offered by Creswell (2012): data is collected at a single point in time, participants are analyzed as part of a single group, at least one score for each measure is collected from each participant, a correlational statistical test is used during analysis, and interpretations and conclusions were drawn from the results of the correlational statistical test.

**Measures**

Two measures were studied. Extra-curricular involvement was looked at as the predictor variable whereas student success was observed as the outcome variable. Past research studying similar variables have offered slightly different definitions and varying scopes for each. For instance, student success can be seen as equivalent to student achievement or student achievement can be seen as a sub-set of student success, depending on the researcher's take. In some cases even, the scope of each variable is not thoroughly defined thus leading to possible speculation on the reader's part. In brief, well defined variables or measures serve as guide-points for other researchers and allow for a better understanding of the topic. Thus, we define and operationalize each of the measures in detail here while drawing as much as possible from past research.

**Measure 1: Extra-Curricular Activities.** The first measure (and predictor variable) considered here is extra-curricular activities. In particular, we operationalize the measure as the level of an individual student's involvement in ECAs over a period of time. A student's level of involvement can be measured in at least two ways: via the frequency of taking part in an ECA or set of ECAs, and by the number of ECAs a student chooses to participate in. As such, total involvement per student can be calculated as a product of those two factors, number of ECAs and frequency of participation in each of

those ECAs. ECAs themselves can be quite broad in scope and can range from academic focused out-of-classroom activities sanctioned by a school to volunteering at a local homeless shelter. In Shulruf's (2010) systematic review, he attributes a broad scope for ECAs, however, for this study ECAs are limited to school sanctioned activities including: out-of-school or out-of-class activities, school club memberships, sports teams, mentoring/student support, and intramural/extramural activities. A comprehensive list of 49 ECAs currently being offered at Vanier College has been provided in Appendix E.

Since this study's second research question calls for determining whether certain types of ECAs are more influential at increasing student success outcomes, we built categories to analyze our results against. Table 2 offers the complete list of sub-categories as based on Vanier College's ECA offerings. Since there is an interest to explore the effects of both academic and nonacademic ECAs, these formed the two main categories. We define academic ECAs as activities that include components that are visibly linked to curriculum and allow students to transfer their classroom knowledge into the activity in question. Nonacademic ECAs on the other hand are activities that may offer life skills, soft skills and personal growth without the solid link to curriculum. Splitting ECAs further into logical groups was accomplished in large part based on Vanier College's (2013) Student Transcript Activity Record (S.T.A.R.) program initiative. A Québec government initiative launched by the Ministère de l'Enseignement supérieur, de la Recherche, de la Science et de la Technologie du Québec (2014), S.T.A.R. (or Reconnaissance de l'engagement étudiant au collégial) acknowledges and certifies CÉGEP students if they complete a minimum of 60 hours of volunteer work in one of the categories (Vanier College, 2013). The categories of volunteering for S.T.A.R. were used

as a basis for the ECA groupings since they offered a logical starting point and aligned well with the ECAs offered at the college. Seven sub-categories of ECAs were used: Athletics, Arts and Culture, Government and Politics, Social and community, Application and Research, Informative, and Tutoring.

**Measure 2: Student Success.** The second measure (and outcome variable) examined here is student success as evaluated by an individual student's academic standing during a given semester. Looking once again at Shulruf's (2010) systematic review, outcomes related to student success include academic achievement, attitudes toward school, participation, and self-concept. In this study, the scope of the outcome is limited to academic achievement as tracked by course grades, and current R-score. Kuh (2001a) as well as Pascarella and Terenzini (2005) also consider academic achievement an important facet of student success and factor related measures into their studies. In addition, the main data collection instrument detailed in Appendix D includes questions that attempt to isolate the outcome to the treatment since one of the challenges is to account for mediating variables that may influence the outcome and yet, not be related to involvement in ECAs.

## Participants

Participants were recruited from Vanier College; an Anglophone Montreal-based CÉGEP founded in 1970 and is currently one of the largest educational institutions of its type in the province of Québec. Like many CÉGEPs, Vanier offers pre-university and career programs for students who are interested in entering the work force after graduation. As of 2014, 6,500 students are enrolled in 14 career programs and 12 pre-university programs. In addition, the College also offers Continuing Education in the

form of non-credited personal and development courses or credited Attestation of College Studies (ACS) program courses, Recognition of Acquired Competencies (RAC) program courses and career enhancement courses.

Vanier College was selected as the primary and single research site for several reasons. The location of the site facilitated access for the researchers, offered the possibility of applying to conduct on-site research, and provided a sizable pool of possible participants that would meet the study's inclusion criteria. Out of the 286 students who were interested in taking part in the study, 135 (64.4% male, 35.6% female) were accepted. Out of the 151 surveys which were excluded, 130 were removed for being incomplete, 11 surveys were terminated due to the participants' non-full time study status, and the remaining 10 surveys were submitted by students who did not meet the minimum age requirement. Accepted participants came from a wide variety of ethnic backgrounds where 54.8% considered themselves White/Caucasian, 8.1% South Asian, 7.4% Arab, 7.4% Chinese, and 22.3% from other ethnic backgrounds. Participants represented a total of 19 academic programs, where 80% (108) were enrolled in Pre-University programs, and 20% (27) in Technology programs. More specifically, the majority of participants stemmed from Science (42.2%), Social Science (14.1%), Computer Science and Mathematics (8.9%), and Commerce (7.4%) programs. Out of the valid sample, 20.7% of participants reported that they began their schooling at Vanier College in the Fall 2014 semester. Another 49.6% of participants mentioned that they would be graduating at the end of Winter 2015 semester. Table 3 summarizes the characteristics of the whole sample.

Since correlational design requires that all participants be treated as part of the same group, students were not split into control and experiment groups (Creswell, 2012). Further, in order to be included, students were required to be at least 18 years of age, and enrolled full-time in a credited day division academic program which was either pre-university or career oriented in nature. Students were not considered if they were enrolled in continuing education credited programs such as ACS, RAC or taking evening career enhancement courses while not being enrolled in an academic program. Students studying in day division programs were considered prime choice since they were more likely to become involved in ECAs when compared to students in continuing education who normally have their classes scheduled during the evenings when college sanctioned ECAs are not typically held.

**Ethical Considerations and Access to Participants**

As is required of all research studies, several ethical considerations needed to be taken into account. Of particular importance was receiving the green light from Concordia University to undertake this research, gaining access to the research site and the participants while taking proper measures to ensure that participants were protected and well informed throughout their involvement in the study. The mentioned are discussed in detail.

As was the case with all aspects of this study, the tri-council policy was used as the guiding reference for ethical considerations of volunteering participants. The tri-council policy statement on ethical conduct for research involving humans presents three core principles that expand on the policy's underlying value of respect for human dignity: respect for persons, concern for welfare, and justice (Canadian Institutes of Health

Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences, & Humanities Research Council of Canada, 2010). These three principles touch on participant autonomy and the importance of informed choice, wellbeing of the participant, privacy and control of personal information, and the fair and equitable treatment of all those involved in the study (Canadian Institutes of Health Research et al., 2010).

Before even obtaining access to the participants however, we were required to gain approval from the research site, Vanier College and from the institution supporting this study, Concordia University. In advance of the planned data collection period, a proposal and ethics approval documentation was prepared and submitted to both institutions. In the documentation, this study was described accurately, and the information provided related to potential benefits, risks, procedures, confidentiality, and consent were thorough and factual on all accounts. In the event that modifications were made to the study such that any of the pertinent aspects were changed, documentation was amended accordingly and submitted for re-approval. Feedback received from each institution was considered and researchers acted within the expected guidelines as imposed by the tri-council policy and the research site. In particular, researchers minimized their intrusiveness as much as possible. While on site, class rooms were never interrupted and possible participants were only personally approached in areas where the researcher's presence would not disrupt the environment. For instance, quiet study areas of the College library were not used for recruitment purposes.

Participants were recruited in several ways and in all cases the researcher introduced themselves, briefed them on the study, and presented them with a digital

participation consent form. The consent form included the purpose statement, procedures, risks and benefits, confidentiality details and conditions of participation as well as the principal investigators contact coordinates – information which was required for inclusion by both the research site and Concordia University. Appendix B includes the complete consent form. Possible participants were asked to share their date of birth to ensure that they were at least 18 years of age. No deception was used and researchers answered any inquiries in a punctual, honest and transparent manner. Furthermore, the nature of this study is such that no potential risks for physical or other harm exist.

Protecting participant data, privacy and anonymity was highly important. Since all collected information was stored electronically behind SSL encrypted web pages, passwords to all services used were generated and managed through Passpack, a password management web application. Since the passwords always included at least fifty alphanumeric and symbolic characters, the likelihood of unauthorized brute force access to participant data was very minimal. Access to participant data was limited to the research team. Furthermore, in order to protect anonymity, participants were never asked to share their names or any other directly identifying information through any of the instruments.

As is required of all studies, participants were informed that they had the option to withdraw their involvement from the study whenever they wanted so long as the request was made before the report was published. As explicitly stated in the consent form, students faced no negative consequences if they did decide to withdraw. The withdrawal process was simplified thanks in part to the fluid surveys platform, a web tool that facilitates the creation, administration, and distribution of electronic surveys. While

completing the screener, participants were asked to provide a username of their choice. In the event that a participant wanted to remove themselves from the study, their username along with their date of birth could be provided to researchers who would then track and destroy all data associated with the identifier. By default, any surveys that were left incomplete were considered not valid and the data was withdrawn. If withdrawals took place during the data analysis stage or later, the analysis was re-conducted to account for the changes. That said, a deadline of June 25th 2015 was provided to participants through the consent form. If participants did not want their information to be included as part of the study, they were required to contact the principal investigator before that date.

To ensure that the data collected from participants was properly handled post-reporting, participants were informed that the information they provided researchers with would be destroyed at the conclusion of the one year period following the start of the data collection period. As all data was collected electronically, the data will be destroyed by permanently deleting the survey response records.

Participants who completed their outlined requirements were thanked for their involvement and upon the publishing of this study; they would be given access to the full written report along with a point form summary of findings. The same report would also be made available freely to Vanier College.

**Procedures**

Once permission was granted by the research site, data collection procedures began in late January 2015, at the start of the first week of CÉGEP classes for the fall semester. The first step was to spread awareness of the study throughout the campus in hopes of recruiting diverse participants. Since day-division students were the target

population, recruitment took place during normal day-class hours, anywhere between 8am and 6pm. A Facebook page advertising the study and inviting individuals to participate was set up and launched in advance of the data collection period. Current Vanier students were invited and encouraged to pass on the invitation to other Vanier students from their friends list. A recruitment message as outlined in Appendix A was also posted to the Facebook page. The message included a link to the consent form and screener questionnaire which was used to ensure that interested individuals met the previously outlined participation inclusion criteria.

Participants were primarily recruited in person (55.1%). During each week day of the data collection stage, the principal investigator spent up to two hours approaching students in various public areas of the college in order to inform them of the research and encourage participation. The researcher's access to tablets facilitated recruitment as students were able to use the devices to gain access to the consent form and complete the screener questionnaire. When students were pressed for time, they were provided with a bookmark that directed them on how to get involved with the study. Recruitment was also achieved through snowball sampling as 22.1% of the participants reported that they were informed of the research study through their friends. The remaining 22.8% of participants discovered the research study through Facebook, faculty and staff members, or through the Vanier College Student Association.

Once students completed the screener questionnaire, if they met the inclusion criteria they were forwarded to the main data collection instrument – a second survey which asked questions related to the study's measures, extra-curricular involvement and student success. Students who did not meet the criteria were instead thanked for their

willingness to participate and informed why they were not eligible to continue with the study. The main questionnaire required approximately 10 minutes to complete and could be done so at the participant's convenience. Upon completing and submitting the main questionnaire, participants were sent a thank you and informed that nothing more would be required from them.

Students interested in participating were given approximately eleven weeks to complete the screener and main data collection survey from the moment that the recruitment campaign began. At the end of the eleventh week, the questionnaires were closed and students who had only partially completed them were dismissed as participants and their data was not used in the analysis that followed.

Throughout the eleven week data collection stage, the principal investigator was available to answer any inquiries. Since participants were provided with a phone number, an email address and on-site office coordinates, individuals had several methods of contact and were encouraged to use them if they had questions or concerns. Emails and missed phone calls were returned within 12 hours. The principal investigator could also be contacted post data collection using the same methods which was especially important for participants who might have wanted to withdraw from the study. Further, at the conclusion of the project, participants could also contact the principal investigator if they would like to have a final copy of the research report.

**Instruments, Reliability and Validity**

Two data collection instruments were put together for this study. As mentioned, one served as a screener questionnaire in order to determine participant inclusion/exclusion, and the other was used as the primary data collection questionnaire

which sought to collect information aimed at answering the research questions. In particular, the main survey allowed us to collect measureable data that would make it possible to analyze a correlation between the two measures considered.

**Screener Instrument.** The screener questionnaire presented to all candidate participants was designed to gather identifying information which would later be used as part of the analysis. In particular, questions 3 and 5 asked about gender and academic program whereas questions 6 and 7 acted as filtering questions. Participants who selected options that fell outside of what was being looked for in participants were flagged as non-participants. As part of the demographic data collected, question 4 asked participants to select the ethnic group which they identify with. The list of choices provided is based on Statistics Canada's (2002) Ethnic Diversity Survey (EDS). The screener instrument used included 8 questions which can be found in Appendix C.

**Main Instrument.** Whereas many related past studies conducted a longitudinal study using data collected from iterations of the National Longitudinal Education Study (NLES), this study opted for alternative instruments for two reasons. First, NLES tracks students from high school into higher education or the workforce however; it does not draw data from students throughout their enrolment in higher education (National Center for Education Statistics, 2002). Second, NLES includes representative data from students in the United States and does not include Canada thus the data would not necessarily represent this study's target population (National Center for Education Statistics, 2002). Certain literature also mentions the use of several other instruments including: the High School and Beyond study, and the College Sports Project, both of which were not appropriate data sources in addressing our questions.

Although statistical data related to this study's research problem are available through Canadian governmental organizations, they lack information required to categorize ECAs and thus, do not contribute to answering our second research question which seeks to determine if some types of ECAs are more effective than others on student success. As such, instead of extracting data already collected from previous surveys, a new set of data was collected. The main data collection questionnaire was based on a modified version of the National Survey of Student Engagement (NSSE), an instrument which was designed to determine the level of student engagement in empirically derived educational practices associated with learning and development (Kuh, 2001a; National Survey of Student Engagement, 2014). Four areas of the mentioned instrument were of particular interest here: participation in educationally purposeful activities, perception of the college environment, estimated of educational and personal growth, and background/demographic information (National Survey of Student Engagement, 2014). The two first areas are of particular importance since time and effort students invest as well as how an institution distributes resources and organizes learning opportunities and services aimed at influencing student participation are considered key components of student success (Kuh et al., 2010). Several sets of questions which are included in the NSSE were omitted from the instrument used here since they touched upon aspects that were not directly related to the measures we are addressing. Furthermore, several questions were added in order to compensate for the NSSE's lack of items that allow for retrieval of academic success outcomes as measured by course grades and R-score.

The modified instrument was designed to include items that would address the predictor variable, involvement in ECAs and the outcome variable, student success. Out

of the 19 questions included, 7 questions focused on collecting data from respondents related to the predictor variable whereas 8 questions addressed the outcome variable. The remaining 4 questions add context to the respondents and serve as questions whose answers support the results of the analysis.

**Reliability and Validity.** The NSSE relies on student self-reporting which although a common practice in research; it does raise validity and credibility concerns (Kuh, 2001b). Kuh (2001b) brings up two factors that affect the accuracy of self-reports: the respondents' inability to provide accurate information in response to a given question, and the unwillingness from the respondents to provide truthful information. Kuh (2001b) further mentions that time estimates can impact validity, especially when participants are asked about events that took place more than six months ago. In order to address this, the modified NSSE instrument used in this study asks respondents for time estimates related to the fall 2014 semester of study. Despite the validity issues that come with self-reporting, evidence supports that students are credible and accurate reporters when it comes to their involvement in activities and how they have benefited from their educational experience, given that questions are clearly worded and students have the information they need to correctly provide answers to the questions (Kuh, 2001b).

Instrument reliability was assessed using Cronbach's alpha. An exploratory factor analysis was conducted on a set of 3 items from the survey, all of which measured involvement in ECAs. The initial factor analysis, using principal components extraction and orthogonal factor rotation produced a single factor with an eigenvalue greater than 1.0. This factor explained 61% of the variance while the remaining 39% of the variance was explained by two additional factors which were discarded as they were not

considered meaningful (eigenvalues < 1.0). The factor analysis was followed by a reliability analysis in order to examine the internal consistency of the determined factor. This analysis revealed that the three ECA items formed an acceptably reliable scale (Cronbach's $\alpha = .68$) and the alpha would not be improved with the removal of any of the items since these items had an item-total correlation greater than .40.

## Timeline

This study was conducted within a 14 month span between May 2014 and July 2015. Table 1 includes a detailed outline of eight milestones: the initial review of the literature, an early proposal followed by a secondary, more focused search of the literature, a final proposal, the ethical approval stage, data collection, analysis, and reporting.

## Chapter 4 – Results

Several distinct steps were taken in order to conduct the analysis of data. First, as mentioned earlier and as shown in Table 3, descriptive statistics and frequencies were calculated for the demographic information of all participating students. Secondly, a correlational analysis was performed based on each participant's involvement in ECAs, and on two separate outcome variables, self-reported R-scores and grades. Thirdly, a multiple linear regression analysis was executed with the goal of determining the effects of several predictors related to ECA involvement on R-scores. Fourthly, a frequency matrix was constructed in order to observe how involvement in sub-categories of ECAs, as described in Table 2, affected student grades for the semester in which the involvement took place. Lastly, a chi-square test was undertaken in order to determine how general involvement in ECAs affects students being accepted into their prime program choices in university. The same test was also utilized to determine differences between involvement and non-involvement on the outcome. All statistical tests employed in this study were executed through the use of the IBM Statistical Package for Social Sciences, SPSS version 20 as made available through Concordia University.

### Correlational Analyses

**R-Score/Grade Range Correlation.** Two measures of student success were observed in this study, current R-score and average grade range for courses taken at Vanier College. Although they are related, R-score and percentage grades differ. Whereas grades reflect a student's individual achievement within a course, R-score (also known as the Cote de rendement collégial by the Government of Québec) is calculated as a factor of a student's standing in a course as compared to other students in different sections of

the same course (Vanier College, 2014). It allows university admission offices to compare and rank CÉGEP students on an equal playing field (Vanier College, 2014). To stress the difference, a correlation was ran between reported R-score and grade range which turned out positive, very strong, and statistically significant ($r = 0.79$, $p < .01$). The coefficient of determination ($r^2 = 0.62$) revealed that 62% of the variance in R-scores was explained by course grades. Although the correlation is expectedly very strong, the variables are not perfectly related. For this reason, both of these outcome measures were considered and treated separately in the correlations analyses that follow.

**ECA Involvement/Success Outcomes Correlations.** Since the main purpose of this study was to determine the relationship between involvement in ECAs and student success, a correlation was conducted on the summation of hours involved in ECAs per week (post outlier removal) and R-score. This produced a negligible negative correlation that held no statistical significance ($r = -0.03$). The coefficient of determination ($r^2 = 0.001$) showed that less than 1% of the variance in R-score was explained by involvement in ECAs. A second correlational analysis instead looked at the relationship between the summation of hours involved in ECAs and grades. Much like with R-score as an outcome, this correlation was also negligible and non-significant ($r = -0.08$). The coefficient of determination ($r^2 = 0.006$) showed that less than 1% of the variance in grades was explained by student involvement in ECAs.

Since this study was also interested in determining if involvement in certain types of ECAs were more prone to effect student success measures, correlations were observed between success measures and the summation of hours involved in ECAs per week for academic and nonacademic activities (see Table 2 for categories). While looking at R-

score as the outcome, academic ECAs produced a weak negative correlation with no statistical significance ($r$ = -0.21) which accounted for 4.5% of the variance. Involvement in nonacademic ECAs produced a weak positive correlation with no statistical significance ($r$ = 0.16) and accounted for 2.6% of the variance. Grades as the outcome produced comparable results with no statistical significance in any case.

Students were also asked whether they felt that their involvement in school-sanctioned ECAs was a factor in influencing their academic standing. Correlating that with R-score as an outcome produced a very weak, though positive correlation with no statistical significance ($r$ = 0.11). A coefficient of determination ($r^2$ = 0.013) revealed that 1.3% of the variance in R-score was explained by student feelings on the effects of ECA involvement on their academic standing. When looking at grades as the outcome, the correlation was nearly equivalently non-existent ($r$ = 0.13) and with an $r^2$ = 0.017, only 1.7% of the variance was explained.

**Preparing for Class/Success Outcomes Correlations.** The modified NSSE data collection instrument used also questioned participants regarding their study habits. In particular, it asked students how much time they devoted to preparing for class during a typical 7-day week. Since the literature points to the fact that there are relationships between homework/studying and student success, a final correlational analysis was conducted in order to determine if additional variance on success outcomes could be explained by preparing for class in the form of reading, completing homework, and studying for exams. The correlation between preparing for class and R-score was found to be moderately strong, positive, and statistically significant ($r$ = 0.32, $p$ < .01). With an $r^2$ = 0.099, students preparing for class only accounted for 9.9% of the variance in R-

score. Grades as an outcome measure led to a slightly weaker statistically significant positive correlation ($r = 0.23$, $p < .01$) where $r^2 = 0.05$ explained 5% of the variance.

The scatter plots pertaining to each of the correlations mentioned are shown in figures 1 through 11.

**Regression Analyses**

Two multiple regression analyses were conducted in order to examine the predictors of student success with R-score as the outcome measure. R-score was specifically chosen as the dependent measure over looking at grades since it is a stronger representation of a student's overall academic standing from the point in time in which they began their collegial studies. The following predictors were common to both analyses: student age, year they started at Vanier, and summation of hours spent preparing for class per week which was initially examined in the earlier correlational analysis. The goal here was to determine if a larger amount of variance could be explained by examining a set of predictor variables.

**Regression Model with Overall ECA Involvement.** The first analysis sought to build a model that looked at how the overall involvement in ECAs affects R-score. In addition to the common predictors mentioned earlier, this model also included the following three ECA related items: summation of hours involved in ECAs per week (item 1), number of hours dedicated to ECAs per week (item 2), and the extent to which students felt that ECA involvement impacted their academics (item 3). Table 4 shows how the models were constructed.

The overall model shows a strong positive correlation ($R = 0.41$) and explained a 17% variance ($R^2 = 0.17$). Further, the overall model proved to be a statistically

significant ($F(6,77) = 2.51$, $p < .05$) predictor of student success as measured by R-score. From among the individual predictor items, year started ($\beta = 0.231$, $t = 1.95$, $p < .05$) and preparing for class ($\beta = 0.330$, $t = 3.04$, $p < .01$) were shown to be statistically significant.

**Regression Model with Categorized ECA Involvement.** This second analysis looked to build a model that examined ECA involvement based on two categories, academic and nonacademic type ECAs (see Table 2). Breaking down overall ECA involvement as analyzed in the previous regression analysis allows for the possibility of determining if there are notable differences between how these two types of categories of ECAs impact the R-score measure. In addition to the common predictors mentioned above, this model included the summation of hours dedicated to academic ECAs per week and the summation of hours dedicated to nonacademic ECAs per week. Table 5 shows how this model was constructed.

The overall model shows a strong positive correlation ($R = 0.58$) and explained a 33% variance ($R^2 = 0.33$) on the R-score outcome. However, the overall model did not yield any statistical significance. Whereas year started ($\beta = 0.232$) and preparing for class ($\beta = 0.334$) were positively associated with R-score, both academic ($\beta = -0.264$) and nonacademic ($\beta = -0.026$) ECAs produced a negative association. None of the individual predictor items were shown to be statistically significant.

**Frequency Data**

Looking beyond the performed regression analyses, involvement in ECAs can be broken down further to sub-categories of academic and nonacademic activities (see Table 2). The goal being to determine whether specific groupings of school-sanctioned ECAs represent a statistically significant difference in student grades. Since both grades and

ECA groupings are categorical variables, one can assume that a two-way chi-square test for independence would be an appropriate statistical model to use. However, a vital assumption for chi-square fails to be met. In particular, this poses a violation in the independence assumption since it is possible for students to have been involved in one or several of the ECA sub-categories. For instance, in a given semester, a student may have been involved in peer tutoring and at the same time, been part of an athletics team. Looking at Table 6, a single student's data may appear in more than one cell.

Since a chi-square test could not be used, a distribution table of how students involved in each ECA sub-category faired is presented in Table 6. Although there is a significant limitation to the process, the table can be observed in order to determine visual trends in data. When it came to academic type ECAs, students involved in Informative ECAs reported the highest grades, followed fairly closely by Tutoring. Students involved in Application & Research ECAs reported grade ranges that proved to be more evenly distributed where the largest concentration of grades were reported in the 70-79 range. For nonacademic type ECAs, Government & Politics as well as Social & Community ECA groupings were observed as having large concentrations of students who reported high grades with their respective majorities falling into the 90-100 grade range. Similar trends were seen with students who got involved in Athletics however, a majority of those students reported grades in the 80-89 range. Since only two students reported involvement in Arts & Culture type ECAs, the observations for that row were considered negligible.

## Chi-Square Analyses

**Involvement Versus Non-Involvement in ECAs.** Since this study also sought to answer the question of whether students who get involved in ECAs do better academically when compared to those who do not get involved, a two-way chi-square test for independence was used in order to find out if involved/not-involved students were represented across grade ranges. Out of the 135 valid participant responses, 91 students (67.4%) indicated that they participated in at least one school-sanctioned ECA whereas the remaining 44 (32.5%) did not report any such involvement. The analysis produced a statistically significant Chi Square Value ($\chi^2$ [$df$ = 3] = 12.49, p < .01) indicating that there exists a relationship between student participation in ECAs and grades. In addition, Cramer's V reported an $\varphi_c$ = 0.30 which shows a significant moderate association between the two variables considered in this chi-square analysis. The graphical representation of the comparison between grades of students involved and not involved in ECAs is shown in figure 12.

It is equally important to address two confounding variables. As pointed out in the literature review, a student's academic program choice and financial situation may play a role on student success outcomes. As such, the same two-way chi-square test for independence was conducted however; academic program and work situation were controlled for using stratification. When controlling for work situation, the analysis produced a non-significant $\chi^2$ value (7.76, $df$ = 3, *ns*) for students who did report that they were working off-campus, and a non-significant $\chi^2$ value (5.49, $df$ = 3, *ns*) for students who were not working. On the other hand, when academic program was controlled for, the analysis produced a statistically significant Chi Square Value ($\chi^2$ [$df$ = 2] = 6.67, p <

.05) for commerce majors, and ($\chi^2$ [$df$ = 3] = 2, p < .05) for science majors. Both these significances indicate that there exists a relationship between student participation in ECAs and grades for commerce and science majors.

**Student Success as Measured by University Acceptance.** Finally, a two-way chi-square test for independence was conducted in order to determine whether the summation of hours dedicated to ECAs, organized on an ordinal scale, were represented across all seven possible situations describing where graduating students are headed in the academic year to follow. Since not all participants in the sample were in their final semester at the time of the data collection, 72.2% answered the question with regards to post-CÉGEP plans. This analysis produced a non-significant $\chi^2$ value (54.86, $df$ = 49, *ns*), indicating that neither grouping of hours dedicated to ECAs were overrepresented in any of the seven situations describing where graduating students are headed after CÉGEP. Furthermore, Cramer's V reported an $\varphi_c = 0.24$ which shows a non-significant moderate association between the two variables considered in this chi-square analysis.

## Chapter 5 – Discussion & Conclusion

The results presented in this study demonstrate that when looking at CÉGEP students as the population, student involvement in ECAs may not have a strong influence on student success. As such, findings here do support Shulruf's (2010) position that participation in ECAs is not the primary influencer on academic achievement.

Although the focus of this study was on the effects of ECAs, a number of other factors including preparedness for class, and year started at Vanier were examined in order to determine if together with involvement, these factors could explain a larger effect on student success. That said, Burns (2010) did identify academic preparedness, social capital, socio-economic status, and student characteristics as facets affecting student success. Although the aforementioned factors are certainly worth exploring as contributors to student success, the scope of this study was largely limited to student participation in ECAs and so, this discussion will focus with that in mind.

### Hypotheses

In the current study, hypothesis 1 stated that there would be a positive correlation between CÉGEP student involvement in school sanctioned ECAs and student success. However, this hypothesis was not supported as there was no statistical significance despite whether R-score or grades were being looked at as the outcome measure of student success. This was particularly surprising since a large body of the literature does point to the fact that student participation in ECAs does positively affect student success outcomes in some form (Huang & Chang, 2004; Jordan, 1999; Lisella & Serwatka, 1996; Strapp & Farr, 2009; Zaff et al., 2003). Granted, in most of the studies examined here, the

population was either high school, college or university students. None examined CÉGEP students specifically.

Hypothesis 2 stated that students who get involved in ECAs with strong academic components will produce higher student success outcomes. Not only was this hypothesis not supported, the results point to the possibility that students involved in academic-type ECAs are less likely to succeed academically when compared to students involved in nonacademic-type ECAs. However, the mentioned findings were not shown to be statistically significant. Still, the findings here do contradict the claim made by Kuh et al. (2010) and Terenzini et al. (1999) who suggest that students should become engaged in activities that are deemed to be educationally meaningful. Hypothesis 1 and 2 were rejected by the results produced via the correlation, regression and chi-square analyses conducted.

In hypothesis 3, it was stated that CÉGEP students who do get involved in ECAs are more likely to achieve higher levels of academic success when compared to their non-involved counterparts. Unlike the previous two hypotheses, this hypothesis was supported by the chi-square analysis.

**Correlational Analyses**

Several correlations were calculated. As stated earlier, correlational analyses revealed that ECA involvement was not significantly related to student success outcomes regardless of whether one looked at R-score or grades. As a result, hypothesis 1 was not supported. Furthermore, the weak relationship shows a downward trend which suggests that students who are active in ECAs see a drop in their academics. Though, this trend is not statistically meaningful. Looking at figure 2, self-reported results clearly indicate that

a large portion of the students sampled who dedicated anywhere between 1 and 40 hours of their time per week to school-sanctioned ECAs were achieving a fair to excellent academic standing. At the same time however, a number of students who did not report any involvement in ECAs also reported a fair to excellent academic standing. In some cases, low academic performance was reported by students who were actively involved in ECAs.

Correlations looking at academic and nonacademic-type ECA involvement separately both found that there was no significant relationship to success outcomes for either R-score and grades. This extends the previous correlational finding mentioned above and suggests that even when students chose to participate in activities that were purely academic in nature, no predicted influence on success existed. Since involvement in academic ECAs specifically yielded no relationship on the outcome, hypothesis 2 was not supported.

The correlation that looked at the link between student perceptions of whether ECA involvement contributed to student success and grades as well as R-score outcomes were not shown to have any significant relationship. Figure 8 clearly shows that students have a wide range of perceptions. Some felt that ECA involvement did impact their academic standing and did in fact achieve high standings while others who felt the same way ended up with poor academic standings. One possible explanation is that active participation in ECAs may take time away from activities more directly related to academic success (e.g., studying and preparing for class). That possibility is in line with Melman et al. (2007) and Shaw et al. (1996) who both argued that over-commitment to ECAs can have negative effects in areas that can affect student success (e.g., reduced

family time, increased stress and anxiety). In brief, the negligible correlation certainly points to the fact that perceptions were not in line with academic outcome.

Even though it did not aim to directly test any of the hypotheses, a final correlation did show that there was a positive relationship between how many hours students dedicated to preparing for class each week and academic achievement. Although this finding is unsurprising, it did not explain a very large percentage of the variance thus suggesting that student success is affected by more than ECA involvement and preparedness for class.

**Regression Analyses**

The overall regression findings of this study were modest but did partially support the hypotheses stating relations between ECA involvement and success as measured by academic outcome. As explained earlier, year started, student age and preparedness for class were taken into consideration.

Looking at the first regression analysis, there was a significant relationship when combining ECA involvement measurements, age, year started, and preparedness for class as a predictor for academic achievement. However, it is important to note that only two of the predictor variables reached significance on academic achievement. When all other predictors were controlled for, the year in which students started at Vanier, and the hours they put in weekly to prepare for class independently showed moderate links on the outcome variable. Although preparedness is not surprising, the moderate correlation between year started and the outcome can perhaps be explained by the fact that students in pre-university programs will aim to complete their degree in two years whereas those in technology programs will take three years. Although some students will extend their

stay by a semester or two out of choice, most students are forced to extend their stay as a result of failing one or more courses. Therefore, students who have been at Vanier longer are perhaps more likely to see lower academic outcomes when compared to students who do not end up extending their stay in CÉGEP.

For the second regression analysis, the overall model which included nonacademic and academic-type ECAs combined reached no significance as a predictor of academic achievement thus further showing no support for hypothesis 2. Even when the predictor variables were looked at individually, none of them showed any meaningful links to academic achievement. As was the case with the earlier correlational analysis, academic ECAs as a predictor actually showed a negative association which suggests that students who devote time to ECAs that are academic in nature are likely to experience lower academic outcomes.

**Chi-Square Analyses**

As mentioned earlier, a chi-square analysis did support the hypothesis which stated that student involved in ECAs were more likely to reach higher academic success levels than students who were not involved in any ECAs. When categorical grade ranges representing how well students did in their courses during the semester in which they were involved in their reported ECAs were compared between involved and non-involved students, the involved students did report higher grades. Looking at this analysis independently, what is certainly less clear is whether 1) participation in ECA does actually influence grades to some degree, or 2) students who participated are “keeners” and are among the type of students that would have achieved high academic standing regardless of their involvement levels. The correlational analyses discussed earlier that

did specifically focus on comparing ECA involvement and student success measures would suggest the latter. Furthermore, when asked the question, only 32% of students surveyed reported that they felt that being involved in ECAs did help increase their academic success. Also supporting the possibility that involved students are also high achievers regardless of the fact that many students who are seeking to apply into competitive university undergraduate programs such as pre-med, pre-dentistry, or law will strive for high academic standing and get involved in ECAs as well as out of school volunteering opportunities in order to give them a competitive edge. Statistically, this notion is further supported by the fact that with respect to almost all other academic programs represented, science majors were more likely to achieve higher grades when they were involved in ECAs. Since pre-med and pre-dent are popular future career paths for many science students, it is likely that many science students fit into the "keeners" category and would have seen academic success regardless of their involvement in ECAs. Essentially, we cannot dismiss the possibility that motivation to be accepted into a first choice undergraduate program may be acting as an intervening variable affecting student success.

The second chi-square analysis conducted instead found that there was no meaningful relationship between categorical summation of hours per week students dedicated to all the ECAs they were involved in and student success measured as a factor of where graduating students were headed in the academic year that followed. It is however interesting to note that out of the 67 graduating students, 24% of them who did participate in one or more ECA reported that they were accepted into their first choice university program, whereas only 6% of non-involved students were accepted into their

first choice. This trend, although not statistically significant, seems to be somewhat in line with Zaff et al. (2003) who also found that high school students who did get involved in ECAs were more likely to enroll in college compared to students who were marginally involved or not involved at all. It is also important to mention that at the time of data collection, 31 out of the 67 graduating students were still waiting to hear back from universities regarding their admission status. This finding further supports the correlations and regressions which, as mentioned, also found no meaningful influence between hours devoted to ECAs and student success.

**A Comparison of Extra-Curricular Activities**

Seven sub-categories of ECAs were examined: Application & Research, Informative, Tutoring, Athletics, Arts & Culture, Government & Politics, and Social & Community (see Table 6). When academic achievement of involved students was examined for each category, certain interesting trends were noticed. Although these trends do not directly add significance to the hypotheses, they do seem to support some of what the literature states.

Students who were involved in peer tutoring reported high grades which is not surprising considering that most peer tutoring programs at Vanier have strict requirements when it comes to academic standing. In order to maintain the integrity of such peer tutoring programs, staff focus on recruiting from among the college's top ranking students as they are believed to have the stronger mastery of the subjects that they expect to tutor. There are however studies that suggest that pairing up academically strong students with weak students do not yield the best results for both the tutor and tutee (Topping, 2005).

Students involved in Athletics also reported high grades. Despite this however, it is difficult to discuss the trend since at Vanier, student athletes are required to be in good academic standing in order to be allowed to play for any of the varsity teams. Follow up programs are also in place which help to ensure that struggle athletes quickly receive the help they need in order to receive passing grades in all their courses. Essentially, it is not clear whether involvement in Athletic-type ECAs influences grades, or whether the conditions for being a varsity athlete are more of an influencer on grades.

ECAs that fall under the sub-categories of Tutoring, Athletics, Government & Politics, and to some extent Application & Research are characterized as long lasting and often span the course of the semester or the entire academic year (e.g., Vanier Robotics Team), and command a high level of involvement from students who participate. Furthermore, these types of ECAs are characterized by the fact that they are highly social where collaboration, team work, communication, and interpersonal skills are vital. For instance, it is hard to imagine a varsity football team or a student government being successful without the aforementioned. Interpersonal interactions in particular is cited by the literature as influencing student learning, and although Terenzini et al. (1999) do not specifically make mention of a link between student learning and student success, other studies have shown meaningful relationships between the two.

As stated earlier, any discussion related to Arts & Culture type ECAs is limited since too few students reported involvement in that group of activities.

**Summary**

Overall, findings in this study suggest that as a whole, CÉGEP student involvement in ECAs does not predict student success as measured by R-score and

grades. Even when academic and nonacademic ECA involvement was compared, participation in either pointed to no meaningful prediction on student success outcomes. In addition, when students were asked about whether they felt getting involved in ECAs contributed to their academic success, the prediction on student success was negligible. The results equally showed that involvement in ECA did not significantly predict whether graduating students were accepted into their prime choice programs at University.

In contrast and perhaps unsurprisingly, students who invested more time preparing for their classes each week did see a fair positive influence on their grades. It was also found that students who do get involved in ECAs are more likely to reach higher levels of academic achievement when compared to students who do not get involved in any ECAs.

Certainly, despite the overall weak links to student success found in this study, being involved in ECAs allows students to receive more out of their CÉGEP experience. Through involvement, students open themselves up to the opportunity to make friends and expand their social networks, and contribute to the institutional and local communities all while benefiting from a more holistic educational experience that brings students above and beyond academic success.

**Limitations of Data**

Several limitations exist within the study and are discussed here. The main limitations that are present affect the generalizability of the results to the population in question. In this study, the sample was drawn from the population which consisted of CÉGEP students studying in an academic program full-time. Since the sample was drawn from a single institution which proved to be convenient for the principal investigator, the

sample is non-probabilistic and may not accurately represent the population (Creswell, 2012).

The sample is not representative for several additional reasons. For one, since Vanier College is an Anglophone CÉGEP, the sample fails to at least include students who are studying in francophone CÉGEPs of which there is a large majority of in the province of Québec. In fact, at the time of this writing, there exists five Anglophone CÉGEPs among the 47 public francophone CÉGEPs (Ministère de l'Éducation, du Loisir et du Sport., n.d.). The Ministère de l'Éducation, du Loisir et du Sport (n.d.) also states that there are over 50 private CÉGEPs and post-secondary institutions in the province that are not reflected in this study's selected sample. Since CÉGEPs can differ in some of the academic programs they offer, especially when it comes to their career programs, this study's sample does not include students from all possible academic programs within the CÉGEP network. Further, the sample is confined to Montréal and surrounding suburban areas and does not represent CÉGEP students from across the province. The sample also purposefully excluded potential participants if they were not full-time day division students and not enrolled in a career or pre-university credited academic program. In addition, students were excluded if they were not at least 18 years of age thus limiting the sample to students who were in at least their second semester of studies.

The size of the sample used in this study was modest and represents what Creswell (2012) describes as being close to a rough estimate of expected participants for a survey type study. However, Creswell (2012) also states that several other factors come into play when determining an ideal sample size and suggests that sample size formulas be considered for better size accuracy. Although such formulas were not considered here,

the sample size is evidently small when compared to the number of students in the population, which as stated by the Fédération des CÉGEPs (2013), equates to an estimated 177,451 students province-wide as of August 2013. With our sample of 135 participants from a single institution, this study only captures .076% of the population. As such, the size of our sample is another limitation that needs to be pointed out, especially if we are to even consider generalizing the results. A larger sample would have been considered a better representation of the population since a larger sample size leads to less error in the estimate about the population (Creswell, 2012; Urdan, 2010).

Finally, since the study asked participating students to self-report their grades and R-score, there is a degree of error that may have influences on the results. Although some participants may have very well gone through the trouble of looking at their latest transcripts to report the information as factually as possible, others may have over-estimated their grades.

**Implications & Recommendations for Future Research**

Although there may be a number of implications for educational institutions, the scope of this study is too narrow to make any meaningful inferences. It would be premature and possibly erroneous to state that schools should not invest in developing their ECAs due to the fact that, in this study, student participation in ECAs alone was not a significant predictor of student success as measured by R-score and grades. Instead, it would be prudent to keep in mind the stated limitations and consider our recommendations for future research.

For starters, perhaps what is less clear as it was not explored in this study is how involvement in ECAs can potentially foster growth in at the very least, communication

and leadership skills, and the ability to collaborate in a team setting. Studying the effects of ECA involvement on such factors would help educational institutions determine the broader impact of influencing their students to participate in school-sanctioned ECAs. This is especially of interest since student success is more than a measure of academic success. In fact, according grades to students based on standardized testing in general is arguably not even the most accurate method of measuring academic success. As such, student success should not be looked at as being synonymous with academic success. Instead educators should consider that student success is multi-faceted and although grades are common indicators of how well students understand course content, self-concept, self-esteem, motivation, and the development of leadership, literacy and communication skills play a pivotal role in fostering student success. As a result, schools should consider expanding their views on student success to consider the aforementioned while designing ECAs such that they address one or more of the facets.

In order to offset the limitations discussed earlier, future research should primarily aim to reproduce a similar study with the goal of addressing the stated limitations. In particular, researchers should seek government level funding that will allow for a larger scale study that might draw a randomly selected sample from CÉGEPs across the province with the goal of capturing a set of participants that are more representative of the population. It is especially important to consider the francophone CÉGEPs as well as private institutions if one seeks to successfully generalize the results. A larger scale study should also consider exploring a more holistic model for student success where the treatment variable is a set of factors. Involvement in ECAs may impact student success, however as expressed earlier on, student demographics, the structures of institutions,

interactions between faculty and peers, and student perceptions of the learning environment need also be considered (Kuh et al., 2008). Should permission be granted by the research site(s), participating student grades and academic information that can be retrieved from official means should be done so in order to remove any error that could arise from asking participants to self-report.

Above and beyond the stated limitations, should adequate funding be available, future research should consider a true longitudinal study that tracks students and their involvement in ECAs throughout their CÉGEP career. This approach would allow researchers to more accurately study trends over time and determine the influence of involvement in ECAs on student success beyond course grades and overall standing. For instance, a longitudinal approach would make it possible to track students after they complete their CÉGEP degree in order to determine if they pursued further education in a university program of choice and whether they felt that their involvement in ECAs played a role.

Bridging to the previous point, future research might also consider extending the scope of this study by appending a qualitative follow-up component where a sub-set of participants could be interviewed to determine their feelings and perceptions on how their extra-curricular involvement has helped them succeed academically. Essentially, applying an explanatory design to extend the research would make it possible to harness findings from the qualitative follow-up in order to explain the results in more depth (Creswell, 2012).

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Tables

Table 1

*Study time table*

| Milestones | Timeframe |
|---|---|
| Initial literature review:<br>• Focused on researching peer-reviewed articles related to the research topic.<br>• Conducted a read through of article abstracts.<br>• Conducted a full read through and summarized the 25 most relevant articles. | 2 months<br>May to June 2014 |
| Proposal (early stage):<br>• Drafted a one-page concept paper describing the research questions and methodology to be used for the study.<br>• Drafted an outline for the proposal which focused on all the necessary points for the background, literature review and methodology. | 3 weeks<br>July 2014 |
| Secondary literature review:<br>• Conducted further search for articles that tied into the major sections of the literature review and helped to ground the research questions. | 3 weeks<br>August 2014 |
| Proposal (later stage):<br>• Drafted the study proposal which included information on the study's background, the literature review and the methodology.<br>• Prepared drafts of modified data collection and screening instruments.<br>• Revised the study proposal iteratively based on feedback received from the study's committee. | 3 months<br>August to October 2014 |
| Ethical approval:<br>• Completed and submitted a Summary Protocol Form to Concordia University for study approval.<br>• Completed and submitted ethics approval forms to research site's Research Ethics Board. | 2 months<br>October to December 2014 |
| Data collection:<br>• Finalized edits on data collection and screening instruments.<br>• Deployed instruments to the electronic platform.<br>• Reached out to research site population to encourage voluntary student participation. | 80 days<br>January 20th to April 9th 2015 |
| Data analysis:<br>• Synthesized collected data. | 2 months<br>April to May 2015 |

| | |
|---|---|
| • Conducted data analysis using SPSS licensed software provided by Concordia University. | |
| Reporting:<br>• Drafted final report which included results, discussion, conclusion, limitations and future research possibilities.<br>• Revised the final report iteratively based on feedback received from the study's committee. | 2 months<br>June to July 2015 |

*Note:* This table outlines the eight milestones that took this study from its beginning through to the reporting. Several approval checkpoints were also factored into the timeline. The early proposal stage took into consideration that two weeks were required to allow time for the thesis committee members to review the proposal before offering their feedback. The ethical approval stage also considered up to a month's time for the research site and University ethics committees to review the submitted documentation. Finally, three weeks at the end of the reporting stage were set aside to allow for the thesis committee members to read through and offer their feedback on the completed draft. Following the reporting stage, this thesis was set to be defended at a set time and date.

Table 2

*Extra-Curricular Activities by Category*

| Category | Sub-category | Activity/Involvement Type |
|---|---|---|
| Academic | Application & Research | • Student Research Centre<br>• Science Fair (participant)<br>• Vanier Robotics Team<br>• Bridge Building Competition (participant or volunteer)<br>• Science, on tourne! Engineering Competition<br>• The Learning Centre Writing Contest(s)<br>• The Learning Centre Public Speaking Contest<br>• The Learning Centre Spelling Bee Competition<br>• Research project with Vanier teachers |
| | Informative | • Women in Science Day (volunteer or organizer)<br>• Science Lectures (every Friday)<br>• Science Week (volunteer or organizer)<br>• Science Program Outings (non-credit)<br>• Science Jeopardy (participant)<br>• Science Pictionary (participant)<br>• Social Science Festival (volunteer or organizer)<br>• International Education Project/Trip (non-credit)<br>• Humanities Symposium (volunteer or organizer)<br>• Holocaust Symposium (volunteer or organizer)<br>• English Symposium (volunteer or organizer) |
| | Tutoring | • Peer Tutor: Math and Science (Math and Science Centre)<br>• Peer Tutor: English (Learning Centre)<br>• Peer Tutor: Social Science Centre<br>• Peer Tutor: CLEO<br>• Peer Tutor: Modern Languages<br>• Peer Tutor (other, within Vanier) |
| Non-Academic | Athletics | • Vanier Athletics (Intramural or Sports Club)<br>• Sport Étude program |
| | Arts & Culture | • Nite of Nations<br>• Vanier College Music Choir<br>• Semaine de la francophonie (volunteer or organizer)<br>• Chess Competition (participant) |
| | Government & Politics | • Vanier College Student Association (VCSA) Executive<br>• Vanier College Student Association (VCSA) Student Representative |

| | |
|---|---|
| Social & Community | • Vanier College Student Association (VCSA) Club Member<br>• Vanier College Student Association (VCSA) Events volunteer<br>• Vanier TV: Host<br>• Vanier TV: News Reporter<br>• Vanier TV: Videographer<br>• Vanier TV: Production Assistant<br>• Key Society Member<br>• Campus Organization Reaching Everysoul (CORE) Activities<br>• Vanier Open House: Tour Guide/Volunteer<br>• The Learning Centre Volunteer/Assistant<br>• The Math & Science Centre Volunteer/Assistant<br>• Sustainability Office Volunteer<br>• Student Services Volunteer<br>• Student Coop: Jake's Café (volunteer)<br>• International Education Office Assistant/Volunteer |

*Note:* This table categorizes ECAs at Vanier by two main categories, academic and non-academic. Each main category is split further into distinct sub-categories that further group the activities. A comprehensive list of ECAs offered at Vanier College is available in Appendix E.

Table 3

*Demographic Characteristics of the Sample (in Percentages)*

| Characteristic | Percentage |
|---|---|
| Participant Gender | Male (64.4) |
| | Female (35.6) |
| Ethnic Background | White/Caucasian (54.8) |
| | South Asian – e.g., Indian, Sri Lankan, etc. (8.1) |
| | Arab – e.g., Egyptian, Syrian, Lebanese, etc. (7.4) |
| | Chinese (7.4) |
| | West Asian – e.g., Iranian, Afghan, Pakistani, etc. (6.7) |
| | Filipino (3.0) |
| | Southeast Asian – e.g., Vietnamese, Cambodian, etc. (3.0) |
| | Black (2.2) |
| | Latin American (1.5) |
| | Korean (.7) |
| | Other (5.2) |
| Academic Program | Science (42.2) |
| | Social Science (14.1) |
| | Computer Science and Mathematics (8.9) |
| | Commerce (7.4) |
| | Computer Science Technology (3.7) |
| | Liberal Arts (3.0) |
| | Nursing (3.0) |
| | Business Administration (2.2) |
| | Computerized Systems Technology (2.2) |
| | Industrial Electronics (2.2) |
| | Special Care Counselling (2.2) |
| | Modern Languages (1.5) |
| | Music (1.5) |
| | Respiratory & Anesthesia Technology (1.5) |
| | Science and Social Science Double DEC (1.5) |
| | Animal Health Technology (.7) |
| | Building Systems Engineering Technology (.7) |
| | Early Childhood Education (.7) |
| | Environmental and Wildlife Management (.7) |
| Started Vanier | Fall 2013 (56.3) |
| | Fall 2014 (20.7) |
| | Fall 2012 (11.1) |
| | Fall 2011 (3.7) |
| | Winter 2013 (3.7) |
| | Winter 2012 (2.2) |
| | Winter 2014 (2.2) |
| Graduating at the end of Winter 2015 | No (50.4) |
| | Yes (49.6) |

Table 4

*Models for Regression Analyses Looking at Overall Commitment to ECAs*

| Model | Predictor(s) |
|---|---|
| 1 | Student Age |
| | Year started at Vanier College |
| 2 | Student Age |
| | Year started at Vanier College |
| | Summation of hours dedicated to ECAs per week (item 1) |
| | Number of hours dedicated to ECA involvement (item 2) |
| | Extent to which students feel that ECAs impact their academics (item 3) |
| 3 | Student Age |
| | Year started at Vanier College |
| | Summation of hours dedicated to ECAs per week (item 1) |
| | Number of hours dedicated to ECA involvement (item 2) |
| | Extent to which students feel that ECAs impact their academics (item 3) |
| | Number of hours dedicated to preparing for class |

Table 5

*Models for Regression Analyses Looking at ECA Commitment as Academic and Non-Academic*

| Model | Predictor(s) |
|---|---|
| 1 | Year started at Vanier College |
| 2 | Year started at Vanier College |
| | Number of hours dedicated to preparing for class |
| 3 | Year started at Vanier College |
| | Number of hours dedicated to preparing for class |
| | Summation of hours dedicated to academic ECAs per week |
| | Summation of hours dedicated to non-academic ECAs per week |

Table 6

*Frequency Matrix of ECAs by Sub-Category and Grades*

| ECA Sub-Category | Grades | | | | |
|---|---|---|---|---|---|
| | < 60 | 60-69 | 70-79 | 80-89 | 90-100 |
| 1. Application & Research | - | 8.3% | 37.5% | 25.0% | 29.2% |
| 2. Informative | - | - | - | 25.0% | 75.0% |
| 3. Tutoring | - | 5.3% | - | 42.1% | 52.6% |
| 4. Athletics | - | - | 12.5% | 50.0% | 37.5% |
| 5. Arts & Culture | - | - | - | 100.0% | - |
| 6. Government & Politics | - | - | 18.8% | 37.4% | 43.8% |
| 7. Social & Community | - | 4.2% | 20.8% | 25% | 50% |

*Note:* This table showcases the distribution (measured in percentages) of grades for students per ECA sub-category. Sub-categories 1 through 4 pertain to academic-type ECAs, whereas sub-categories 5 through 7 pertain to nonacademic-type ECAs.

Figures

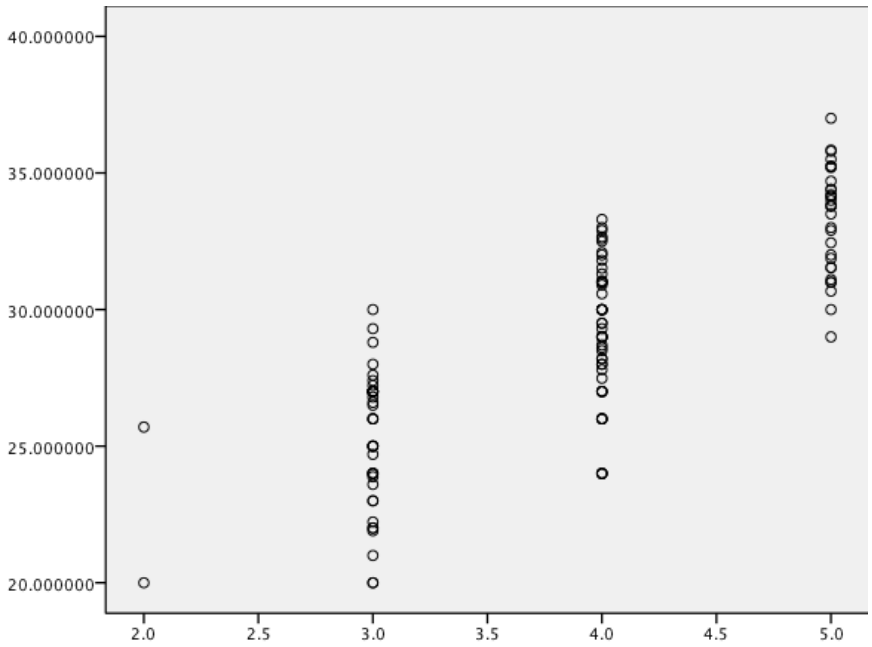


*Figure 1.* Scatter plot of the effect of grades on R-score.

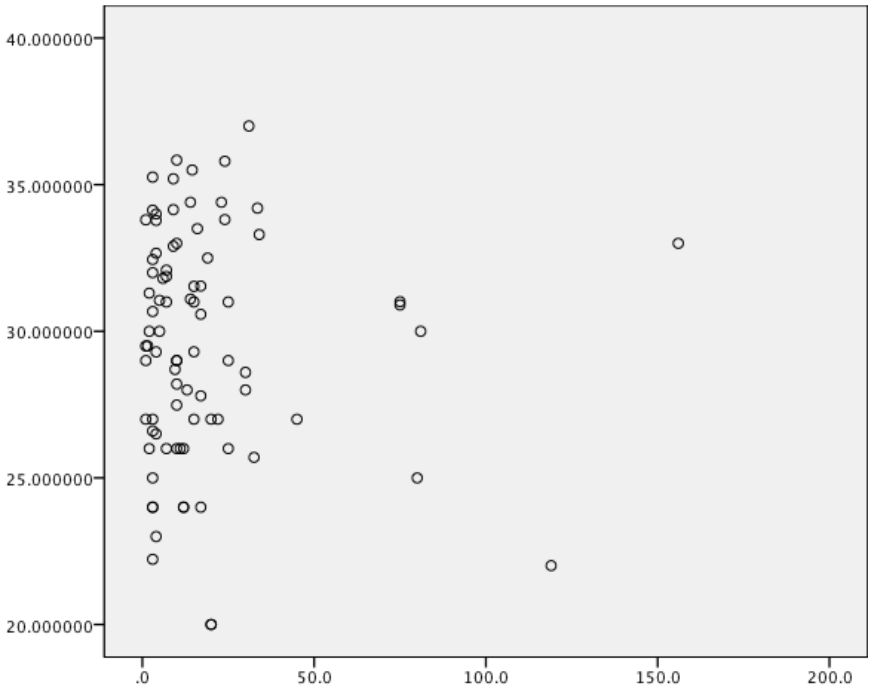


*Figure 2.* Scatter plot of overall ECA involvement as measured by hours per week on R-score.

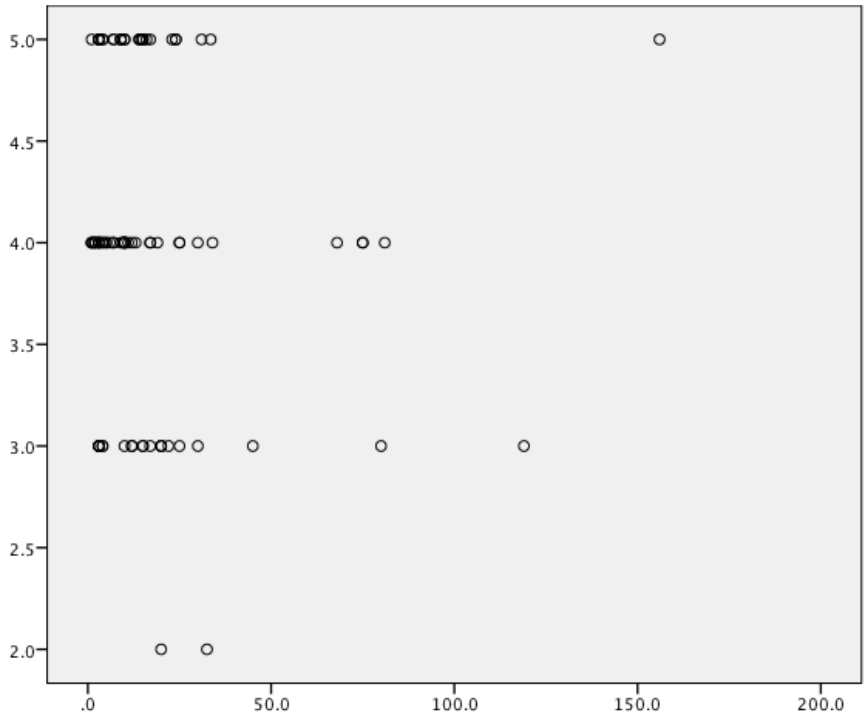


*Figure 3.* Scatter plot of overall ECA involvement as measured by hours per week on grades.

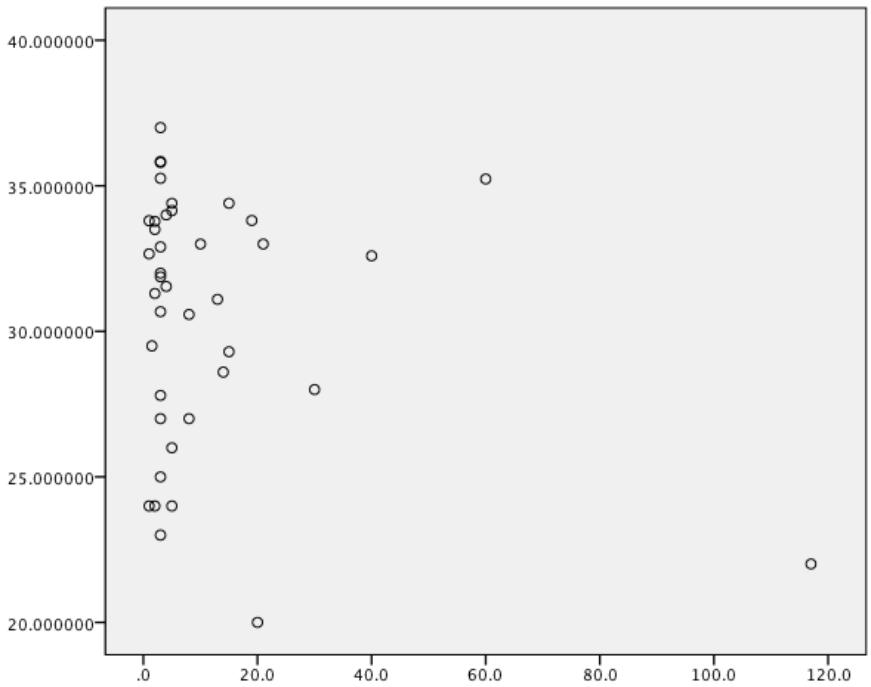


*Figure 4.* Scatter plot of involvement in academic-type ECAs as measured by hours per week on R-score.

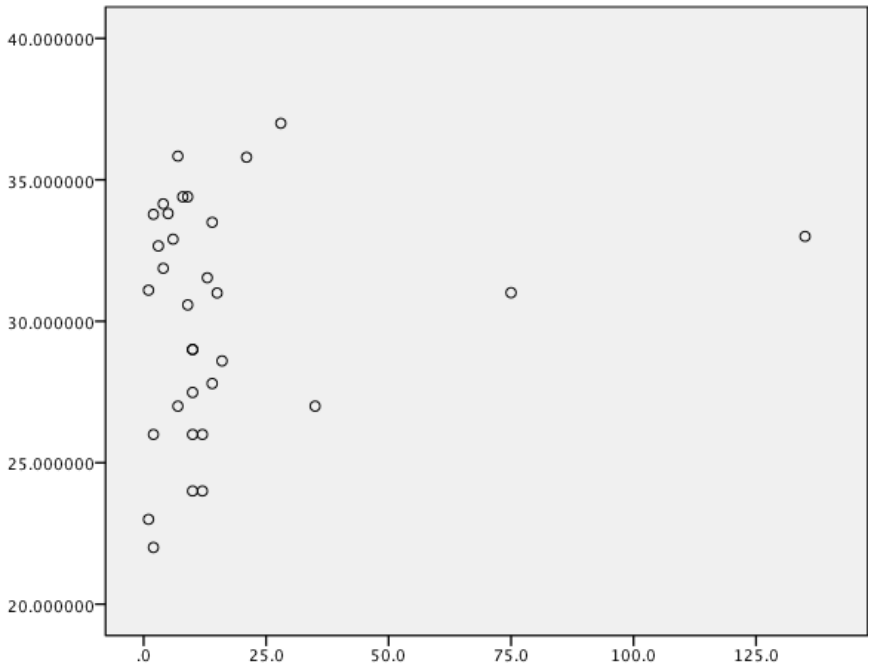


*Figure 5.* Scatter plot of involvement in nonacademic-type ECAs as measured by hours per week on R-score.

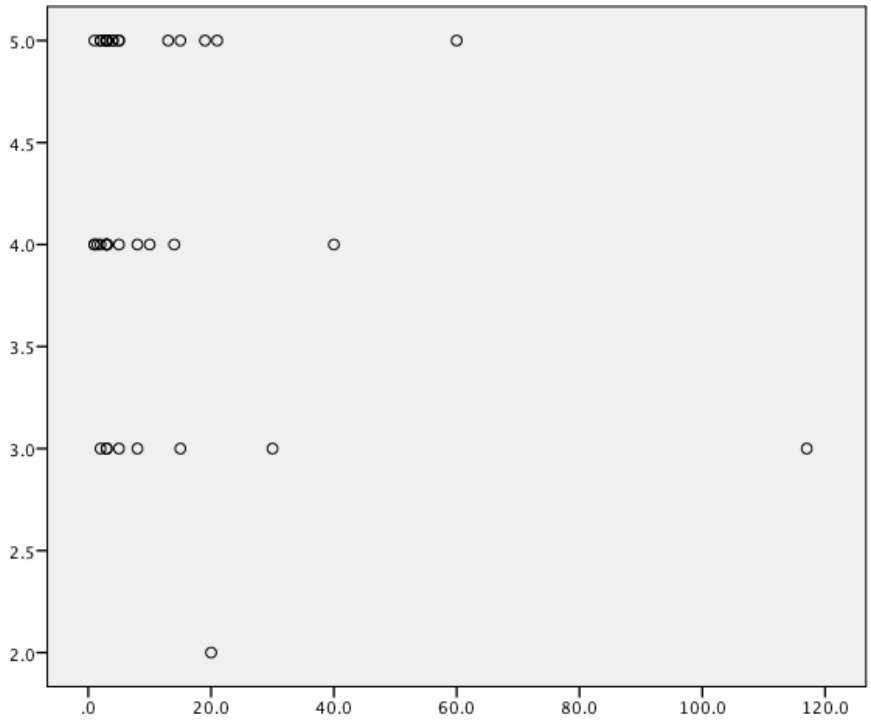


*Figure 6.* Scatter plot of involvement in academic-type ECAs as measured by hours per week on grades.

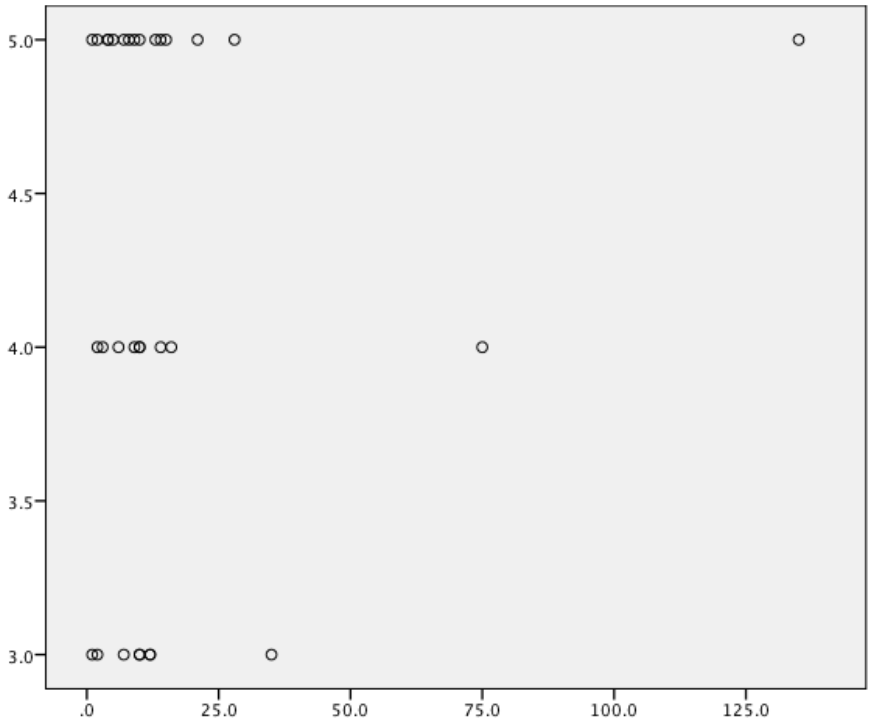


*Figure 7.* Scatter plot of involvement in nonacademic-type ECAs as measured by hours per week on grades.

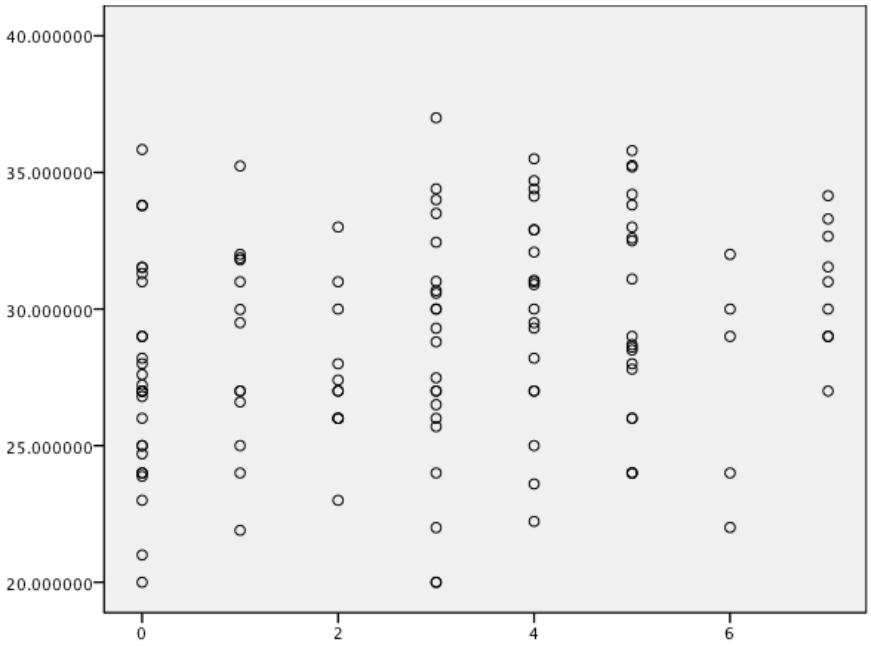


*Figure 8.* Scatter plot of student perception that involvement in ECAs affects academic standing on R-score.

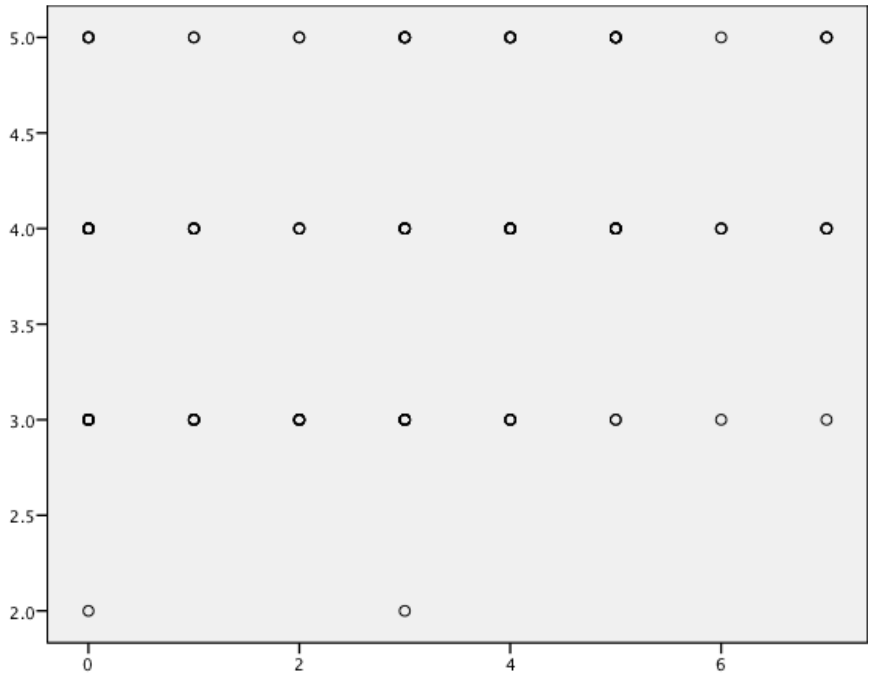


*Figure 9.* Scatter plot of student perception that involvement in ECAs affects academic standing on grades.

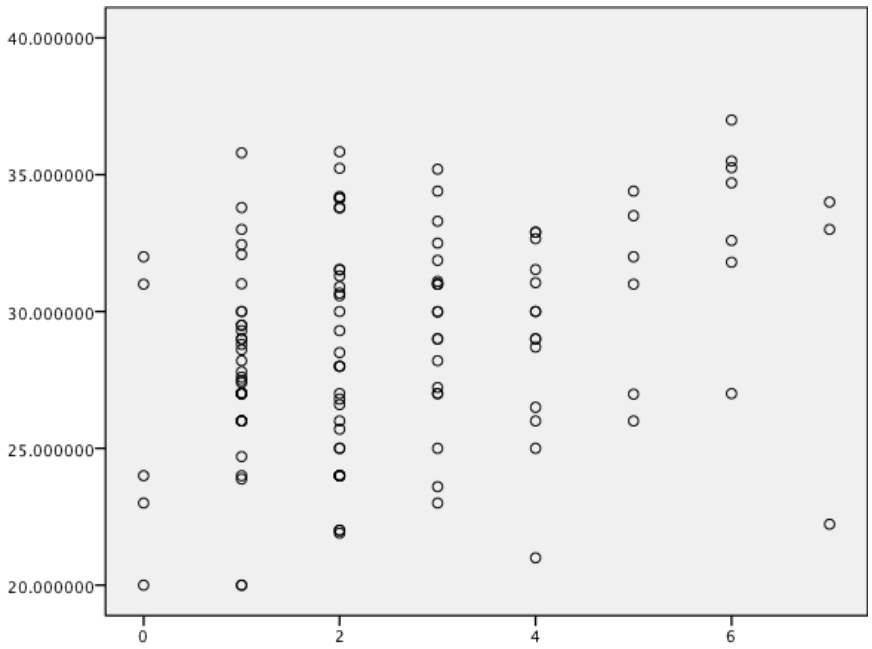


*Figure 10.* Scatter plot of hours per week dedicated to preparing for class on R-score.

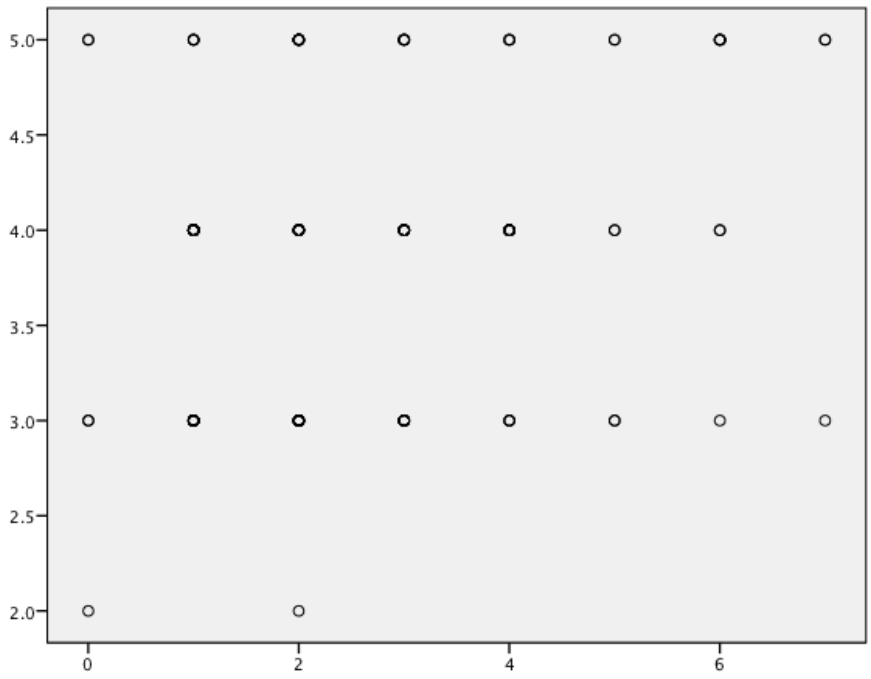


*Figure 11.* Scatter plot of hours per week dedicated to preparing for class on grades.

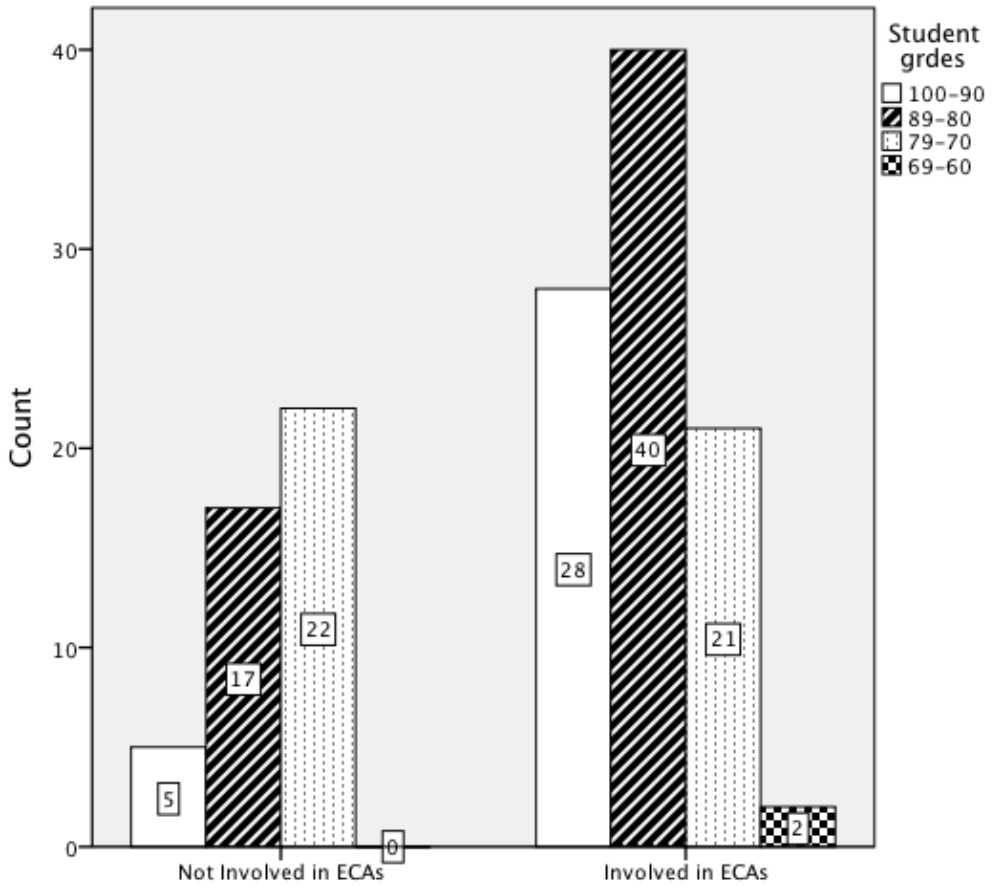


*Figure 12.* Bar chart depicting how grades are represented across student involvement/non-involvement in ECAs.

## Appendix A – Recruitment Message

SUBJECT: Invitation to participate in a short study

Hello:

I am currently working on my Master of Arts thesis as part of my graduate requirements. The title of my study is *The Effects of Extra-Curricular Involvement on CÉGEP Student Success: A Correlational Study* and we are seeking student participants that would be willing to complete two short questionnaires.

The purpose of this research is to study how involvement in extra-curricular activities affects student success while considering CÉGEP students as the population.

If you are interested in participating in this short study (**your participation will not take more than 15 minutes**), please click on this link and follow the instructions provided: http://fluidsurveys.com/s/kavallos-student-success

Should you decide to participate in all aspects of this study, you will be given full access to the written report upon publication.

Thank you for your time,

Haritos Kavallos
Principal Investigator
M.A. Educational Technology (candidate)
Department of Education
Concordia University

Appendix B – Information and Consent to Participate in a Research Study


Consent to Participate in: The Effects of Extra-Curricular Involvement on CÉGEP Student Success: A Correlational Study

**Researcher:** Haritos Kavallos
**Researcher's Contact Information:**
kavalloh@vaniercollege.qc.ca | Tel: 514-744-7500, Ext. 7501 | Vanier F-540A Office
**Faculty Supervisor:** Dr. Robert M. Bernard
**Faculty Supervisor's Contact Information:**
bernard@education.concordia.ca | 514-848-2424, Ext. 2027

You are being invited to participate in the research study mentioned above. This form provides information about what participating would mean. Please read it carefully before deciding if you want to participate or not. If there is anything you do not understand, or if you want more information, please ask the researcher.

**A. PURPOSE**
This research – The Effects of Extra-Curricular Involvement on CÉGEP Student Success: A Correlational Study – seeks to study how involvement in extra-curricular activities affects student success while considering CÉGEP students as the population.

**B. PROCEDURES**
- I understand that if I do meet the research criteria after completing the screener questionnaire, a second questionnaire will be provided to me which I will be able to complete in my own time.
- I understand that my participation does not go beyond completing the screener questionnaire and the main data collection questionnaire.

In total, participating in this study will take 15 minutes of your time.

As a research participant, your responsibilities would include: completing the screener questionnaire and the main data collection questionnaire.

**C. RISKS AND BENEFITS**
- I understand that there are no risks associated with me participating in this study.
- You might or might not personally benefit from participating in this research. Potential benefits include:
    - Participating in extra-curricular activities may be linked to higher academic success.
- This research is not intended to benefit you personally.

**D. CONFIDENTIALITY**

We will gather the following information as part of this research:

- Personal information used for demographic purposes.
- Information related to your academic standing.
- Information related to your involvement in CÉGEP.

By participating, you agree to let the researchers have access to information that you provide from the questionnaires that you will complete.

We will not allow anyone to access the information, except people directly involved in conducting the research, and except as described in this form. We will only use the information for the purposes of the research described above.

To verify that the research is being conducted properly, regulatory authorities might examine the information gathered. By participating, you agree to let these authorities have access to the information.

The information gathered will be indirectly identified. That means that the information provided is not associated with direct identifiers (such as your name), but it is associated with information that can reasonably be expected to identify you through a combination of indirect identifiers.

We will protect the information by double encryption methods in order to avoid unauthorized access to the electronic database storing data gathered from you and other participants like you.

We intend to publish the results of the research. However, it will not be possible to identify you in the published results.

I understand that all data collected from me as part of this study will be kept in a secured online database for a period of 1 year. At the conclusion of the 1 year period, all such collected data will be permanently deleted.

**E. CONDITIONS OF PARTICIPATION**

You do not have to participate in this research. It is purely your decision. If you do participate, you can stop at any time. You can also ask that the information you provided not be used, and your choice will be respected. If you decide that you do not want us to use your information, you must tell the researcher before June 25$^{th}$ 2015.

We will tell you if we learn of anything that could affect your decision to stay in the research.

There are no negative consequences for not participating, stopping in the middle, or asking us not to use your information.

We will not be able to offer you compensation if you are injured in this research. However, you are not waiving any legal right to compensation by signing this form.

**F. PARTICIPANT'S DECLARATION**

[ ] I, _____*(name)*_____ have read and understood this form. Further, I acknowledge that I am at least 18 years of age. I have had the chance to ask questions and any questions have been answered. I agree to participate in this research under the conditions described.

If you have questions about the scientific or scholarly aspects of this research, please contact the researcher. You may also contact their faculty supervisor.

If you have concerns about ethical issues in this research, please contact the Manager, Research Ethics, Concordia University, 514.848.2424 Ext. 7481 or email oor.ethics@concordia.ca.

## Appendix C – Participant Screener Questionnaire

Thank you for your interest in participating in our research.

Data collected using this form will be used for screening purposes. If you qualify to participate in this study, you will be directed to an online questionnaire that takes about 10 minutes to complete.

1. Username of your choice
   *Please remember this. The username can be provided to the researcher in the future if you decide to withdraw from the study.*
   _____
2. Date of Birth ____ / ____ / _____
3. Gender
   - Male / Female / Another gender identity / I prefer not to respond
4. Which ethnic group do you associate most with?
   - Aboriginal
   - Arab (e.g., Egyptian, Syrian, Lebanese, etc.)
   - Black
   - Chinese
   - Filipino
   - Japanese
   - Korean
   - Latin American
   - South Asian (e.g., Indian, Sri Lankan, etc.)
   - Southeast Asian (e.g., Vietnamese, Cambodian, etc.)
   - West Asian (e.g., Iranian, Afghan, Pakistani, etc.)
   - White / Caucasian
   - I prefer not to respond
   - Other, please specify _____
5. In which academic program are you currently studying in at Vanier College?
   - Pre-University: Commerce / Communications / Computer Science and Mathematics / Liberal Arts / Modern Languages / Modern Languages and

Music Double DCS / Music / Science / Science and Music Double DCS / Science and Social Science Double DCS / Social Science / Social Science and Music Double DCS

- Career: Animal Health Technology / Architectural Technology / Building Systems Engineering Technology / Business Administration / Computer Science Technology / Computerized Systems Technology / Early Childhood Education / Environmental and Wildlife Management / Industrial Electronics / Nursing / Office Systems Technology / Professional Music and Song Techniques / Respiratory & Anesthesia Technology / Special Care Counselling
- Continuing Education: Credited Attestation (ACS) Program

6. Are you currently a full-time day student at Vanier College?
    - Yes / No
7. Do you have any learning disabilities, mobility issues, health problems, or dealing with personal issues?
    - Yes / No / I prefer not to respond
8. How did you hear about this study?
    - I was approached by the researcher in person
    - A friend told me about the study
    - Other, please specify _____

## Appendix D – Participant Data Collection Questionnaire

Thank you for completing our screener questionnaire.

You have met our criteria and have been accepted as a participant. Remember that you can always opt-out by contacting the principal investigator, Haritos Kavallos (kavalloh@vaniercollege.qc.ca). Completing this final survey takes approximately 10 minutes and should be submitted by April 9th.

Please note that you can always save by clicking on the "save" button at the bottom of the page and come back at a later time to complete this survey.

1. When did you begin your studies at Vanier College?
    - Winter 2015 / Fall 2014 / Winter 2014 / Fall 2013 / Winter 2013 / Fall 2012 / Winter 2012 / Fall 2011 / Winter 2011 / Fall 2010 / Winter 2010 / Fall 2009 / Winter 2009 / Fall 2008 or before

2. During the fall 2014 semester, about how many hours did you spend in a typical 7-day week doing the following?

| Hours per week | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | More than 30 |
| Preparing for class (studying, reading, writing, homework/labs, etc.) | | | | | | | | |
| Participating in extra-curricular activities (organizations, student clubs, sports, outings, etc.) | | | | | | | | |
| Working for pay on campus | | | | | | | | |
| Working for pay off campus | | | | | | | | |
| Doing community service or volunteer work | | | | | | | | |

3. During the fall 2014 semester, which of the following extra-curricular activities were you involved with at Vanier College?
    - (Refer to Appendix E for list)

4. Of the extra-curricular activities you previously selected, how many hours did you spend being involved in each in a typical 7-day week?

5. Which of the following extra-curricular activities do you plan on doing before you graduate from Vanier College?
    - (Refer to Appendix E for list)

6. How much does Vanier College emphasize the following?

| | Very often | Often | Sometimes | Never |
|---|---|---|---|---|
| Spending significant amounts of time studying and academic work. | | | | |
| Providing support to help students succeed academically. | | | | |
| Using learning support services (peer tutoring, learning center, etc.). | | | | |
| Providing opportunities to be involved socially. | | | | |
| Helping you manage your non-academic responsibilities (work, family, etc.). | | | | |
| Attending campus activities and events. | | | | |
| Getting involved outside the classroom in extra-curricular activities. | | | | |

7. During the fall 2014 semester, about how often have you done the following?

| | Very often | Often | Sometimes | Never |
|---|---|---|---|---|
| Talked about career plans with a faculty or staff member? | | | | |

| | | | | |
|---|---|---|---|---|
| Worked with a faculty or staff member on activities other than course work (extra-curriculars)? | | | | |

8. During the fall 2014 semester, how would you rate your academic performance at Vanier College?
    - Excellent / Good / Fair / Poor
9. Since your first semester at Vanier College, how would you rate your academic performance at Vanier College?
    - Excellent / Good / Fair / Poor
10. How many courses did you take for credit during the fall 2014 semester?
    - 0 / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 or more
11. During the fall 2014 semester, to what extent have your courses challenged you to do your best work?
    - 0 (Not at all) / 1 / 2 / 3 / 4 / 5 / 6 / 7 (Very much)
12. To what extent do you feel that your involvement in extra-curricular activities has helped increase your academic success while studying at Vanier College?
    - 0 (Not at all) / 1 / 2 / 3 / 4 / 5 / 6 / 7 (Very much)
13. Will you be graduating from your academic program at Vanier College after you complete this semester?
    - Yes / No
14. [Branching: If YES was selected in the previous question]
    Which best describes your situation after graduating at the end of this semester?
    - I have been accepted into my first-choice University
    - I have been accepted into my second-choice University
    - I have been accepted into my third-choice University
    - My acceptance in University is still pending (institutions have not yet given me an answer)
    - I have not been accepted in any of my University choices
    - I will not be pursuing University studies and plan to look for a career in my field of study
    - I will not be pursuing University studies and already have a career in my field of study
    - Other, please specify…
15. What is your current R-score? _____

16. Which range best describes what most of your course grades have been up to now at Vanier College?
    - 100-90 / 89-80 / 79-70 / 69-60 / Below 60

17. Did you begin your CÉGEP studies at Vanier College or elsewhere?
    - Started at Vanier / Started elsewhere

18. Looking ahead several years, what is the highest level of education you ever expect to complete?
    - Some university but less than a Bachelor's degree
    - Bachelor's degree (B.A., B.Sc., etc.)
    - Master's degree (M.A., M.Sc., etc.)
    - Doctoral or professional degree (Ph.D., M.D., etc.)

19. Which of the following best describes where you are living while attending Vanier College?
    - Apartment (on your own or with roommates)
    - At home (with parent(s) or guardian)

The above survey instrument was modified from the National Survey of Student Engagement 2014 version as found here: http://nsse.iub.edu/html/survey_instruments.cfm

An electronic version of the waiver, screener, and questionnaire can be found here: http://fluidsurveys.com/s/kavallos-student-success

## Appendix E – List of Extra-Curricular Activities at Vanier College

The following list has been assembled thanks to the collective input from Vanier College faculty, staff and students.

- Women in Science Day (volunteer or organizer)
- Vanier College Student Association (VCSA) Executive
- Vanier College Student Association (VCSA) Student Representative
- Vanier College Student Association (VCSA) Club Member
- Vanier College Student Association (VCSA) Events volunteer
- Vanier College Music Choir
- Vanier Athletics (Intramural or Sports Club)
- Vanier TV: Host
- Vanier TV: News Reporter
- Vanier TV: Videographer
- Vanier TV: Production Assistant
- Vanier Robotics Team
- Vanier Open House: Tour Guide/Volunteer
- The Learning Centre Writing Contest(s)
- The Learning Centre Public Speaking Contest
- The Learning Centre Spelling Bee Competition
- The Learning Centre Volunteer/Assistant
- The Math & Science Centre Volunteer/Assistant
- Sustainability Office Volunteer
- Student Services Volunteer
- Student Research Centre
- Student Coop: Jake's Café (volunteer)
- Sport Étude program
- Science Lectures (every Friday)
- Science Week (volunteer or organizer)
- Science Program Outings (non-credit)
- Social Science Festival (volunteer or organizer)
- Semaine de la francophonie (volunteer or organizer)
- Science Fair (participant)
- Science Jeopardy (participant)
- Science Pictionary (participant)
- Science, on tourne! Engineering Competition
- Research project with Vanier teachers
- Peer Tutor: Math and Science (Math and Science Centre)
- Peer Tutor: English (Learning Centre)
- Peer Tutor: Social Science Centre
- Peer Tutor: CLEO
- Peer Tutor: Modern Languages

- Peer Tutor (other, within Vanier)
- Nite of Nations
- Key Society Member
- International Education Office Assistant/Volunteer
- International Education Project/Trip (non-credit)
- Humanities Symposium (volunteer or organizer)
- Holocaust Symposium (volunteer or organizer)
- English Symposium (volunteer or organizer)
- Campus Organization Reaching Everysoul (CORE) Activities
- Chess Competition (participant)
- Bridge Building Competition (participant or volunteer)