UNIVERSITÉ DE SHERBROOKE

Dépistage pour la réussite dans un programme d'arts visuels

par

Lucy Trahan

Essai présenté à la Faculté d'éducation

En vue de l'obtention du grade de

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ABSTRACT

In recent years, there has been a consistent focus on improving student success across all levels of the educational system. However, little research has been directed towards determining means of predicting success in visual arts programs. Therefore, this study attempts to profile a typical successful student in a visual arts program, namely the Illustration & Design program at Dawson College. To this end, questionnaires, designed by the researcher, served to investigate the students' reasons for choosing the program as well as provide demographic data. In addition, students' personality types were investigated by means of the online Sternberg & Wagner Thinking Styles Inventory (SWTSI) questionnaire. Using the SPSS statistical software, an analysis was done to determine whether students who offer intrinsically motivated reasons for applying to the Illustration & Design program are those who also demonstrate greater academic success. Furthermore, grounding this study in Sternberg's theory of mental self governance, students' college grades were correlated to their personality type to determine if Type I personality types perform better academically than Type II or Type III (Zhang, 2005). The participants consisted of three cohorts (128 students from semester 1, 3 and 5) of the Illustration & Design program, as well as two comparison groups, one from the Fine Arts program (24 students), and another from the Business Administration program, a non-visual arts program at Dawson College (20 students).

Using Sternberg & Zhang's typology, it was found that a typical successful student of Illustration & Design is either Type I or Type II personality types. While the majority of students gave intrinsic reasons for applying to the program, it did not appear to translate in a difference in academic achievement. The greatest predictor of

success was found to be High School Averages. Although there was no significant difference in the Entrance Portfolio Scores between males and females, female students showed significantly greater scores in academic achievement at all levels. Therefore, these findings indicate that the entrance criteria for admission into the program should be redesigned to include a criteria for High School achievement, but not to include a personality test as this did not prove to be significant in predicting their success.

RÉSUMÉ

Au cours des dernières années, il y a eu une focalisation constante sur l'amélioration de la réussite des élèves à tous les niveaux du système éducatif. Cependant, les recherches portant sur l'identification de moyens qui permettent de prédire la réussite dans les programmes d'arts plastiques sont très rares. Par conséquent, cette étude tente de dresser le profil de l'élève type qui réussit dans un programme d'arts visuels, à savoir le programme *Illustration & Design* au Collège Dawson. À cette fin, des questionnaires conçus par le chercheur ont servi à déterminer les raisons pour lesquelles l'élève a choisi ce programme et ont permis de fournir des données démographiques. En outre, les étudiants ont été catégorisés par type de personnalité au moyen du questionnaire *Sternberg & Wagner Thinking Styles Inventory (SWTSI)*. Grâce au logiciel statistique SPSS, une analyse a été effectuée afin de déterminer si les élèves dont la motivation comptait beaucoup dans leur choix du programme *Illustration and* Design étaient aussi ceux qui affichaient un taux de réussite plus élevé. En outre, en s'appuyant sur la *théorie d'autonomie de gestion mentale de Sternberg*, cette étude avait pour but de corréler les résultats scolaires des élèves à leur personnalité afin de déterminer si les étudiants du Type de personnalité I avaient de meilleurs résultats scolaires que ceux de Type II et de Type III (Zhang, 2005). Les participants étaient composés de trois cohortes (128 étudiants des 1er, 3e et 5e semestres) du programme *Illustration et Design* ainsi que de deux groupes témoins, un groupe de 24 élèves du programme de Beaux-Arts, et un groupe de 20 élèves du programme de Techniques de l'Administration, programme en dehors des arts visuels.

L'étude a démontré que l'élève type qui réussit dans le programme *Illustration & Design* appartient soit au type de personnalités I ou II de Sternberg & Zhang. Alors que pour une majorité d'étudiants la motivation explique leur choix de programme, cette motivation ne semble pas influencer leurs résultats scolaires. Le facteur le plus prédictif de la réussite scolaire au collégial s'est révélé être le résultat scolaire au secondaire. Bien qu'il n'y ait pas de différence significative entre les notes obtenues pour la qualité des portfolios soumis par les garçons et les filles lors de l'inscription, les filles obtiennent de meilleurs résultats scolaires à tous les niveaux. Ainsi, les résultats de cette étude indiquent que les critères d'entrée pour l'admission dans le programme *Illustration & Design* devraient être modifiés de façon à inclure un critère relié à la réussite scolaire au secondaire. Par contre, il ne semble pas nécessaire de faire appel à un test de personnalité puisque ce dernier ne s'est pas avéré être un facteur prédictif significatif en matière de réussite scolaire.

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INTRODUCTION

In recent years, there has been a consistent focus on improving student success across all levels of the educational system. Since the Illustration & Design program at Dawson College is the only program of its type in Quebec, students with artistic talent who want to earn a living as illustrators have no real other choice locally. Because there are twice as many applicants as there are available seats, it is crucial to select those with the greatest chances of success, both in the program and in their chosen career. Once the factors contributing to student success in this program are identified, the admission process should be designed in order to admit those applicants who demonstrate the characteristics most closely related to the identified predictors, therefore increasing the success rate of not only the individual students, but also the entire cohort.

1. BACKGROUND INFORMATION

During the last decade, the faculty of the Illustration & Design program at Dawson College have been contemplating the admissions process and trying to design entrance criteria that would maximize the chances of student success in the program. For many years, acceptance into the program has hinged on a Portfolio Evaluation Score, which consisted of a 50 % mark given for the presentation and contents of a portfolio (following specified criteria) and another 50 % mark for a drawing test of a still life or part thereof. Although many programs specify a minimum High School average as an entrance requirement, the Illustration & Design program requires no more than the college's basic admission criterion of a 65 % High School average. However, by means of promotional mailers distributed to

counsellors throughout the province, potential applicants are encouraged to complete the Art 512 course at the High School level prior to applying to the program.

At the close of the 2004-2005 academic year, when comparing Portfolio Evaluation Scores of the current graduating group with their final marks, it was noticed that those who had the highest Portfolio Evaluation Scores at admission also did well in their concentration (Illustration & Design or program-specific courses) marks (Trahan, 2005). However, the correlations of highest significance proved to be those of High School grades and of Average College Grades, implying that students' achievement in High School was more predictive of academic success in college than any other isolated factor. This finding led to this investigation of which other factors, if any, can serve to best predict success in this visual arts program, and which could possibly be extrapolated to other visual arts programs.

CHAPTER ONE
REVIEW OF THE LITERATURE

Since student success has been at the heart of educational debates for years, a large number of studies have been undertaken to determine the factors that contribute to student success. This knowledge can be used to more effectively teach the students, and to predict graduation and retention outcomes more accurately.

In the general academic environment, many factors contribute to success in post-secondary education. Some factors pertain to prior experience, such as High School performance (Noble & Sawyer, 1989; Wade & Walker, 1994; Skidmore, 2003), failures or successes in certain academic fields, self-efficacy, etc. (Urdan, 2004). Other factors consist of present circumstances and characteristics such as a student's socio-economic status, parental pressures, level of schooling, and cultural factors but can also be greatly influenced by personality traits such as learning styles (Woolley, 2005), thinking style and personality type (Zhang, 2005),   as well as level of motivation (Breen & Lindsay, 2002). Even students' perception of the future or the economic shifts in industries can have a bearing on their level of involvement and hence their ultimate success in a specific field of study.

1. Arts - a necessary part of the curriculum

In the United States, since the 1990's there has been a movement to reform the educational system. Much of the research done to this end concluded that incorporating the teaching of the arts as part of the curriculum not only enhanced students' potential as students but as citizens as well (Critical Links, 2002).

To support these conclusions, '*Americans for the Arts*' (2004) makes the following claims:

1. Students who participate in arts for a minimum of 3 hours/day for 3 days/week for a full year are fourfold more recognized for academic achievement;

2. Students who participate in arts for a minimum of 3 hours/day for 3 days/week for a full year are fourfold more likely to win awards for essay or poem writing;

3. Arts education **"**strengthens student problem-solving and critical thinking skills, adding to overall academic achievement and school success";

4. Art education contributes to students' development of "craftsmanship, quality task performance, and goal-setting--skills" ;

5. Art education contributes to development of the mind and body, reflection, higher level thinking and fosters active learning;

6. Art education stimulates imagination, cognitive skills, creative skills, and critical thinking;

7. Art education fosters the development of life skills, informed perception, articulation, problem solving, and decision-making; it builds self-confidence, self-discipline and responsibility.   *(Americans for the Arts,   2004, http://www.americansforthearts.org).*

Similarly, H. Gardner (1985), a psychologist from Harvard University best known for his theory of multiple intelligences (linguistic, logical/mathematical, spatial, musical, bodily kinaesthetic, interpersonal, intrapersonal, naturalist, and possibly existentialist), claims that all forms of intelligence are equally important. When exploring the roles of intelligence and creativity in the development of learning, he concluded that arts education played a major role in the development of basic cognitive skills. He proposed that when teachers only teach to the linguistic and logical-mathematical domains, they actually deprive students and by extension, limit their scope of intelligence.

Finally, E. Oddleifson, (a founding member of the Center for the Arts in the Basic Curriculum in Washington, DC.) voiced his concern in reaction to a movement from schools in the US to cut back on the arts in order to strengthen their base

curriculum. He stated, "The arts represent forms of cognition every bit as potent as the verbal and logical-mathematical forms of cognition that have been the traditional focus of public education." (Oddleifson, 1991, p.46)

Brain research has also shown how the arts may involve the neurological functions of the brain, resulting in greater learning across the curriculum. Nobel Prize winner Dr. Robert Sperry studied the "analytical, verbal, and sequential thought patterns of the left hemisphere" as well as the "creative, sensory, and global thinking patterns of the right hemisphere." He concluded that "when left and right hemispheric processes are used in tandem, learning and retention increase" (MAETF, 1990, p4). By integrating the arts into the traditional curriculum, both hemispheres of the brain are engaged in the learning process, and the inter-hemispheric functioning of the brain itself is neurologically strengthened (MAETF, 1990; Begley, 1996).

Much recent research has also shown that integrating arts into the school curriculum fosters learning, self-discipline, risk-taking, creative and critical thinking, problem solving, teamwork, and communication. The Arts Education Partnership's (AEP) Task Force on Research commissioned James S. Catterall (of the Imagination Group at the University of California at Los Angeles), Lois Hetland (of Project Zero at the Harvard Graduate School of Education), and Ellen Winner (of Project Zero at the Harvard Graduate School of Education and the Psychology Department at Boston College) to look at recent research in five art form areas: dance, drama, music, visual arts, and multi-arts. They summarized the effects of the arts in the education of children by compiling information from over 60 different research studies. They, also, found that controlled studies revealed "a powerful, positive relationship between study in the arts and other academic subjects, attitudes, and behaviours." (Critical Links, 2002) As an example, when investigating the data from 2500 students who had participated in the National Educational Longitudinal Study, and who had been followed from grades 8 to 10, researchers found that students who

had been involved in an art-rich curriculum had better grades than those with low arts involvement. Students with high arts involvement were also less likely to drop out, watched less television, showed greater involvement in serving the community, and had a more positive self-concept (Catterall, 1998 in Critical Links, 2002).

Therefore, one could surmise that students who receive art education would perform better academically in any discipline or subject. If we accept this conclusion, why is previous experience in art courses not a requirement of art schools and programs? For that matter, why is it not a requirement of education in general?

2. GRADE-POINT AVERAGE AS PREDICTORS

When investigating the multitude of schools offering post-secondary education in the visual arts, a standard criterion emerged. Most visual arts programs screen their applicants by means of a portfolio of work, usually within the confines of an interview with a designated person or body of evaluators/advisors. Usually, a High School diploma is required as well. Most do not state any specific requirements for prior art courses, although some mention these as 'recommended' courses and emphasize that they will not be used for selection purposes. For example, the Ottawa School of Art lists as admission requirements: Grade 12 diploma or equivalency, application fee, portfolio presentation and an interview with the Diploma Program Advisor. No mention is made of a minimum grade required except for the High School diploma, nor is there any requirement for a specific art background. Other well-known schools, such as Ontario College of Art (OCA) and the Dundas Valley School of Art (DVSA), have the same requirements. Although some may require a minimum high school average, these are normally substantially lower than the requirements for the other programs they offer.

However, in the last few years, there has been a change in attitude in some recognized art schools. The Art Institute of Toronto mentions only a High School graduation or a General Education Diploma (GED) as a prerequisite for admission. In 1997, the Pratt Institute changed their admission policy to focus more on academic achievement rather than solely on portfolios. Similarly, in 2004, Brock University posted their new admission requirements, primarily selecting students based on a 75 % high school average, and only subsequently selecting visual arts applicants based on a portfolio and interview process. Rather than increasing their demand for more art preparation, most schools are pre-selecting students by means of prior academic achievement scores.

This more recent development could result from prior studies claiming that high school averages were the best determinant of post-secondary achievement (Noble & Sawyer, 1989; Skidmore, 2003; Trahan, 2005; Wade & Walker, 1994). One of these studies by Wade and Walker (1994) tested for the effect of five academic and non-academic parameters on the performance of honours students at Southern University-Baton Rouge by means of their cumulative grade point average. They determined that high school grade point averages were the most consistent predictors of college success. Such measures as standardized tests of academic achievement, such as the American College Test (ACT), or the Scholastic Aptitude Test (SAT), had previously proven to be reliable predictors of college achievement (Noble & Sawyer, 1989).

More recently, in 2003, Robert L. Skidmore from Morehead State University conducted a study on the "Proximal Factors Predicting Student Performance in a Self-Paced College Psychology Course." He studied 149 students using self-report measures to assess motivational orientation, learning strategies, procrastination, and perceptions of daily hassles in order to predict student engagement in a self-paced introductory psychology course (122 of whom completed the course). In addition to a demographic survey, four other surveys were administered to measure the above-

mentioned constructs. In agreement with Walker & Wade (1994), only high school GPA proved to be a significant factor in distinguishing early from late course completers (Skidmore, 2003).

Even if these investigations did not specifically focus on visual arts programs, they were nevertheless studying diverse subjects and programs and the results seem to extrapolate to the college experience in general. High School grade point averages appear to be the latest trend in admitting students into higher education, regardless of the program.

3. GENDER EFFECTS

Since researchers are aware that other factors affect academic achievement, they continue to investigate other predictors of success. Another such factor found to be significant has been that of gender. Several studies concluded that males were significantly more likely to drop out than females at any educational level. (Lamb, 1994; Wyn and Lamb, 1996; Thiessen and Looker, 1999). Females perform better in school, demonstrate a lower frequency of failure, are more often selected for honours, and are more likely offered more advanced levels of classes (Looker, 1993). Females claim to like school better (Looker, 1993), appear to be better students and more cooperative, and have higher educational aspirations than males (Looker, 1997).

4. THINKING STYLES

In another direction of research, Li-fang Zhang, from the Faculty of Education at the University of Hong Kong, has recently published several studies pointing to the claim that various thinking styles can predict academic achievement. Her theory follows in the footsteps of the research done by R.J. Sternberg who proposed a theory of thinking styles where he specifies that styles are not abilities but

preferences in how people choose to use their abilities. Sternberg also calls this a theory of mental self-government because, as he contests, people operate in a similar way as governments do; they govern themselves the way governments do for communities or countries. He claims that people opt for various preferences in their daily functioning. A legislative person will prefer to create their own ideas and to self-dictate what and how they do things. An executive person will prefer to follow the dictates of others. A judicial person will tend to judge others' ideas. Sternberg offered 13 various thinking styles and explained that people are generally not governed by only one but rather, by a combination of thinking styles. The following chart lists Sternberg's 13 thinking styles and how these are reflected in people's preferences when approaching tasks (taken from Zhang & Sternberg, 2005):

Table 1

Thinking styles according to Sternberg's theory of mental self governance

	Thinking	Will prefer to work on tasks:
Function	Executive	With clear instructions and structures
	Legislative	That require creative strategies and like to choose their own activities
	Judicial	That allow them to evaluate and judge the performance of others
Form	Monarchic	That allow complete focus on one thing at a time
	Hierarchic	That are multiple but prioritized according to their own valuing of the tasks
	Oligarchic	That are multiple with multiple objectives but without setting priorities
	Anarchic	That would allow flexibility as to what, where, when and how one works
Level	Global	Allowing to pay more attention to the overall picture and to abstract ideas
	Local	That require working with concrete details
Orientation	Internal	That allow them to work as an independent unit
	External	That allow for collaborative ventures with others
Ideology	Liberal	That involve novelty and ambiguity
	Conservative	That allow them to adhere to existing rules and procedures

Based on Sternberg's theories, Zhang conducted studies in Hong Kong among school children (Zhang, 2001a) as well as on university students (Zhang, 2001b; Zhang & Sternberg, 1998). One such study examined 131 boys from a Catholic High School and 119 girls from a Protestant girls' school, where participants' scores on the Thinking Styles Inventory (Sternberg & Wagner, 1992, in Zhang, 2004) were gathered to predict achievement in sixteen different academic subjects. Variables such as age, gender, school class level and performance on the Sternberg Triarchic Abilities Test (Sternberg, 1993, in Zhang, 2004) were controlled. The results of the participants' scores were divided into the various thinking styles and correlated with their achievement in specific disciplines. Thus, a significant relationship was found between students who preferred a hierarchic style of thinking and achievement in social sciences and humanities. Similarly, a judicial thinking style correlated with achievement in the natural sciences, and a monarchic style correlated with achievement in design and technology.

Interestingly, in another research study, Zhang (2005) delineates three personality types (see Table 2 below). She describes Type I, the 'artistic' career personality type, as using a holistic mode of thinking and a divergent thinking intellectual structure. Type I is also delineated as having a perceptive and intuitive personality, a concrete random mind and an innovation decision-making style. Zhang also claims that while being field independent in perceptual style, they demonstrate a combination of legislative / judicial / global / hierarchical thinking style. Despite the fact that Sternberg (1993) and Zhang (2004) had correlated designing with monarchic thinking, in this more recent study by Zhang, the monarchic thinking style was attributed to a more conventional career personality type. The following chart illustrates a comparison of the various intellectual styles according to Zhang (modified from Woolley, 2005).

Table 2
Personality types according to Zhang (Wooley, 2005)

	TYPE I	TYPE II	TYPE III
Learning approach	Deep	Surface	Achieving
Career personality type	Artistic	Conventional	Realistic, investigative, social, enterprising
Mode of thinking	Holistic	Analytic	Integrative
Personality type	Intuitive, perceiving	Sensing, judging	Thinking, feeling, introverted, extroverted
Mind style	Concrete random	Concrete sequential	Abstract random, abstract sequential
Decision-making style	Innovative	Adaptive	
Conceptual tempo	Reflective	Impulsive	
Intellectual structure	Divergent	Convergent	
Perceptual style	Field independent	Field dependent	
Thinking style	Legislative, judicial, global, hierarchical, external, liberal	Executive, local, internal monarchic, conservative,	Oligarchic, anarchic, internal, external

Other studies found a significant relationship between certain thinking styles and creativity (Jacobson, 1993; Kim and Michael (1995), for instance, identified a relationship between creativity measures and thinking style preferences and found that those demonstrating a thinking style associated with right-brain dominance tended to perform better on creativity measures than those with either left-brain or integrated-brain dominance.

In Zhang's cross-cultural study of students' thinking styles (1999), she concluded that legislative and liberal styles are creativity-relevant styles, but that there was a negative relationship between the artistic type and the executive, local and conservative thinking styles. In a later study, she added that thinking styles requiring conformity (conservative), respect for authority (executive), and a sense of order (hierarchical) correlated positively to academic achievement, whereas those which were creativity-generating (legislative and liberal styles) contribute negatively. For students in the US, those demonstrating executive thinking styles (preferring to be guided by existing rules) were those demonstrating greater academic achievement scores (Zhang, 2004).

The study also found that Pearson correlation analysis shows that external types have significant positive relationship with legislative, judicial, hierarchical, oligarchic, anarchic, global, external, and liberal, but a negative relationship with executive, internal and conservative. Internal types have significant negative relationship with legislative, judicial, hierarchical, oligarchic, anarchic, global, external, and liberal, but a positive relationship with executive, internal, and conservative. (Yang, 2004),

In relation to artistic types, Zhang also mentions that 'field independence' relates to styles that are creativity-generating and are associated with higher levels of cognitive complexity. She concludes that Type I intellectual styles reflect the positive values sought after by academic fields (e.g., higher levels of cognitive development, higher self-esteem). On the other hand, Type II styles are usually linked to negative values (e.g., lower levels of cognitive development, lower self-esteem, and neuroticism or a tendency to experience negative emotional states). Type III styles are said to be less stable as they depend on the task being done or the person's feelings while approaching the task. Therefore, it appears that, using Zhang's thinking styles, those categorized as 'Type I' style should be the target of visual arts programs, or any program, if one aims at predicting academic success.

5. LOCAL FINDINGS

Notwithstanding all the previous schools of thought, in August 2005, research was undertaken to investigate which factor(s) most contributed to student success specifically in the Illustration & Design program at Dawson College (Trahan, 2005). This correlational study looked at the existing data for the Illustration & Design program from four cohorts (209 students admitted to the fall 2000, 2001, 2002, and 2003 academic years). It analyzed the relationship of High School average marks, gender, prior art instruction, and portfolio scores with the students' College averages (as a determinant of college success). Consistent with the Dawson College's Institutional Research findings (Dawson, 2005) and other gender related studies (Looker, 1993; Corbett, 2005), females showed better success rates than males. Although correlations were significant at the 0.01 level for portfolio scores, High School (Secondary V) averages as well as for gender, the highest correlation was for High School averages. Although much research in the U.S. has pointed to the significant impact of art in High School on students' academic achievement in general (Critical Links, 2002), the most unexpected finding in this particular study was that previous art instruction appeared to have no significant effect on either the concentration average or College grade average.

In another small study, entitled 'Promoting Student Success - A Focus Group', Taylor & Trahan (2005) investigated factors contributing to student success in two of Dawson's career programs: Community Recreational Leadership Training (CRLT) and Illustration & Design. Six third year students (3 from each program) were interviewed to determine what they perceived as factors contributing to their success in their respective programs. Analysis of the data showed that successful students are those who are prepared and correctly informed, talented and passionate about their field, in addition to being intrinsically motivated and committed to the courses. The data analysis pointed to three conclusions, one of which is that criteria

for acceptance in a career program "should involve factors such as volunteer experience, interest, and motivation to want to be there" (Taylor & Trahan, 2005).

It appears that no one single factor contributes to college success. In addition to the previously mentioned contributors such as art instruction, high school grades, gender, intrinsic motivation associated with their field of study, one could add many more: socio-economic status, cultural background, living arrangements, etc. However, from analyzing such a multitude of variables, it appears that some factors are more significant than others. It is incumbent on educational institutions, then, to target the most appropriate predictors and maximize the potential for student success within their institution, which translates to better life-long learning and empowerment for the individual student as well.

Apart from the local studies done on the Illustration & Design program, there seemed to be a gap in the body of scholarship focusing on predicting success specifically in visual arts. Therefore, it was imperative that some research endeavoured to focus on this field.

CHAPTER TWO
FORMULATION OF THE PROBLEM

More specific to visual arts, and not ignoring the studies pointing to the types of intelligence or the inclusion of art in high school to develop other transversal skills, it was still not clear how one could screen for success in a visual arts program. Certainly, including a portfolio component in admissions policies could not be eliminated as this is a means to measure or assess an applicant's artistic skills and prior art experience. However, portfolios do not tell the entire picture. At times these can also be misleading as students select what they want to portray, and the work shown usually gives no indication of how long the artwork took, with what external help or guidance, or if it was entirely done by the students themselves. Furthermore, although drawing skills are essential for a career in visual arts, if students are skilled but not intrinsically motivated to want to persevere in it, retention within a program is not assured. Therefore, how could we test for intrinsic motivation? Survey questionnaires could investigate: how and when students do their art; what activities they tend to persist in or conversely give up quickly, which areas students feel they are good at, and which they feel is their weakness. Furthermore, sketchbooks could determine the amount of invested time students put into their art, by considering the volume and/or the dates.

Considering that intrinsic motivation appears to be directly related to academic achievement (Lepper, 2005), that successful career students are those who 'really want to be in their program' (Taylor & Trahan, 2005), and that the level of maturity may have an effect on student motivation, surveys could investigate if and why certain students are more motivated than others are. One should examine whether those who apply to this program (Illustration & Design) are applying to the only program they truly want to be in, whether they have always been driven towards this type of activity (namely the visual arts and related activities) or whether

they simply chose this program because they felt it would be easier than more academic subjects.   A survey questionnaire should prove beneficial to distinguish which applicants choose Illustration & Design as only one of many options or as a career choice because of their passion for art. Investing in a longitudinal study to look for relationship between applicants whose only desire is to study Illustration & Design and their academic achievement in the program, may determine if those who truly desire to be in the Illustration & Design program are indeed those who perform best. A positive result could imply that entrance requirements should systematically involve a component to inquire into applicants' reasons for choosing Illustration & Design.

Although, academic achievement in High School can also govern a measure of intrinsic motivation (if students consistently do well, their self-efficacy should be enhanced), studies seem to point to certain thinking types as having predispositions that can predict achievement in artistic fields (Zhang, 2004). In addition to a survey questionnaire, a personality type test could be included to establish if, as Zhang claims (2005), those who score highly on the Type I (Artistic) personality styles are indeed those who perform best and consequently are best suited for this career. If a relationship is found between those who are categorized as Type I personality styles and those who demonstrate greater achievement in their concentration (Illustration & Design courses), then this type of testing could also be included in the admission process. Furthermore, positive relationships could add support to Sternberg and Zhang's theories and could be applied in the general profiling of students not only in visual arts careers, but also for other career programs.

In addition, no investigation has yet differentiated between students applying directly from high school, applicants who had previously studied in other programs in the same or other colleges, and those who had been in the work force before applying to Illustration & Design.

Although several mature students apply while studying at a university, many apply from the work force. From anecdotal evidence, it has been observed that many members of faculty hold the perception that mature students demonstrate a more serious commitment to their studies, greater motivation, and interest in their learning. Assumptions are made that this higher level of motivation can be attributed to the fact that some mature students have exerted greater effort to enter this program. Some had to forfeit full time employment in order to devote their time to a full-time three-year program. Others had time to experiment with other fields of education, and as a result, have a stronger conviction that their chosen field of study is the right career path. One could argue that those who come directly from the work force may have left school for quite some time, and may have gone directly in the work place from High School because they might not have been academically oriented. Nevertheless, mature applicants who have experience working for menial wages may strive to achieve higher goals and put greater effort in order to increase their employment potential upon graduation. This could positively affect their motivation, which, in turn, could translate into greater academic success.

Consequently, to begin addressing the lack of research related to student success in visual arts, studies were necessary to determine if the above-mentioned variables have a significant effect on student success in their program. Firstly, it was necessary to investigate whether mature students perform better in this program than those who apply directly from High School. Secondly, it would be useful to determine if those with the highest 'degree of wanting to be in the program' are those who perform best. Thirdly, a testing of the typical profile of visual arts students and a correlation with their college grades could help determine if those with Type I thinking styles perform better that Type II or III (Zhang, 2005). Lastly, an analysis could be done to see whether age, as a measure of the level of maturity, has any bearing on students' level of academic performance in this program. The implications are that the admission policies for Illustration & Design at Dawson

should be redesigned to better screen the applicants and ensure that they have the greatest chances of success in their college experience.

1. RESEARCH QUESTIONS

In considering the issues discussed above, the questions that have provoked this research endeavour are: Why do students choose Illustration & Design as their career choice? If they have chosen Illustration & Design because they are passionate about the field, do they perform better academically than those who chose this program for other reasons? Is there a personality type that can be identified as being most compatible with the performance required in Illustration & Design? In addition, are there particular thinking styles most predictive of student success in Illustration & Design?

Extrapolating from these questions, the researcher posed four hypotheses. First, students choose Illustration & Design because they are passionate about making a living doing art. It is assumed that the student's passion motivates them and is determined by personal choice as opposed to being directed by external factors or people. Second, students who choose Illustration & Design because they are passionate about making a living doing art, will perform better academically in college. Third, students who score highest on the Type I personality style will perform better academically than those with other personality types (referring to Type I, II, and III as defined by Zhang, 2005). Fourth, students who demonstrate a monarchic thinking style will perform well in design (compared with students demonstrating other forms of thinking styles) but not necessarily in general studies (Sternberg & Zhang, 2004).

Although not specifically part of the above hypotheses, gender was also considered in relationship to its effects on academic performance, thinking styles and personality types. Other variables, such as mother tongue, age, level of previous

schooling, and reasons for choosing the program were measured and were to some extent taken into consideration, when deemed appropriate. Finally, the place where the data was collected (Dawson College) and the age of the participants (approximately 17-24) were factors taken into consideration.

CHAPTER THREE
METHOD AND DESIGN

This study was of an exploratory nature investigating the reasons why applicants chose Illustration & Design as their career choice and attempted to profile the typical applicant in relation to their personality types (according to Sternberg & Zhang, 2004).

1. SAMPLE

As this study aimed to establish what factors determine success in Illustration & Design, it was important to select participants in this program. Therefore, the sample consisted of all current students in the Illustration & Design program (128 students). Two additional groups were studied to serve as comparison: one firstsemester class, a pre-university visual arts program (Fine Arts, 23 students) and one first-semester class from a non-visual arts field (Business Administration, 20 students). The purpose of these two additional samples served to not only profile the students of these programs but determine if there is significant difference in the targeted variables (reasons for choosing this program, age, mother tongue, level of previous schooling, thinking style, etc.).

Participants ranged approximately between 17 and 24 years of age. The sample was heterogeneous, and although the gender distribution showed a greater number of females for the entire group of participants (58 % to 42 %), the Illustration & Design program showed more males than females (86 males and 67 females). As in previous studies (Trahan, 2005) participants were ethnically diverse (from 19 different countries of birth and speaking 27 different languages, 21 different mother tongues) and have varied socio-cultural backgrounds.

2. DATA COLLECTION

Two surveys were used. The first survey was designed by the researcher and sought to collect demographic information from the participants as well as other pertinent personal characteristics (See Appendix A). The second survey consisted of the Sternberg & Wagner Thinking Styles Inventory (SWTSI), because it was available on line, free of charge and readily accessible. It was short and easy to administer within an existing introductory computer class (See Appendix D). The goal of the SWTSI survey was to determine which type of thinking style each student demonstrated. Focus groups were conducted to determine what prompted applicants to choose Illustration & Design at Dawson (See Appendix F). These were practical and convenient methods of getting qualitative data for the purpose of triangulation with the data collected from the demographic surveys, especially Question #32. Finally, the researcher used the College's available statistics to correlate student grades with the data collected on independent and intervening variables (previously stated) obtained by the other methods.

3. INSTRUMENTS

The first survey (for survey instruments, see Appendix A), designed by the researcher, was administered to each of the various groups of participants. The objective of the survey was to determine what factors affected the participants' choice of their program of study. Question 32 (an open-ended question) served as a validity check for students' reasons for choosing their program as a career choice. Data collected from the two comparison groups (Fine Arts and Business Administration) were used to determine if there were similarities between visual arts programs (Illustration & Design and Fine Arts) or whether there were significant contrasts to other non-visual arts programs.

The surveys were designed to ascertain demographic information: (age, province   or country of birth, mother tongue, languages spoken, High School attended, type of High School, whether the applicant came directly from High School, from a post-secondary environment, or from industry, their socio economic condition, whether they live at home with their parents, on their own, must work to support themselves, have children and/or other responsibilities, information on their parents' level of education, etc). For the purpose of this study, not all of these variables are taken into consideration, but may serve to inform the department for pedagogical decisions. Some questions required simple Yes or No answers, but others involved choices such as those that appear on Likert scales. Other questions investigated students' or applicants' 'level of wanting' to be in their program, what/who influenced them in their choice of Illustration & Design as a career choice, the role of parents, High School counsellors, peers, the influence of publicity, web search, etc., as well as what they prefer to do in their free time, with their friends? Certain results were recorded using nominal scales (Ex: reasons given for their choice of program were described as 'passion', 'interest', 'program reputation', 'personal traits', etc. The responses were coded by the author as 'intrinsic' and 'extrinsic' and served as indices of their motivation. Finally, a single essay question (question #32 in the demographic survey) was included to ascertain why participants chose Illustration & Design (or their selected program of study) as their career choice. (For a complete list of questions, see Appendix A)

Thinking styles were assessed using an abbreviated form (65 items) of the Sternberg-Wagner Thinking Styles Inventory (TSI or SWTSI) which was, at the time, readily accessible online through Trent University. A longer version of this test is available through the LDRC site (http://www.ldrc.ca/projects/tscale/).   A variation can also be taken with permission from the author's book, *Thinking Styles* (Sternberg, 1997).This instrument has been examined against other inventories based on different theories of thinking (such as the Myers-Briggs Type Indicator) and

resulted in the confirmation that it is a reliable and valid instrument for examining thinking styles (Zhang, 1999).

The abbreviated questionnaire included eight statements on each subscale (executive, legislative, judicial, global, local, internal, and external). The students used a scale of 1 to 7 to rank the degree to which the statements reflected their thinking styles. The following are examples of the types of questions included and, in brackets, the corresponding thinking style is indicated:

1. I tend to pay little attention to details. (Global)
2. I tend to break down a problem into many smaller ones that I can solve, without looking at the problem as a whole. (Local)
3. I enjoy working on things I can do by following directions. (Executive)
4. I like to check and rate opposing points of view or conflicting ideas. (Judicial)
5. I like situations where I can use my own ideas and ways of doing things. (Legislative)
6. When starting a task, I like to brainstorm ideas with friends or peers. (External)
7. I like to control all phases of a project, without having to consult others. (Internal)

Focus group interviews were conducted to determine what prompted applicants to choose Illustration & Design at Dawson. The researcher also investigated whether students believed that their personality types could affect their academic achievement. (See sample questions in Appendix F). These interviews were video taped, and the recordings were destroyed once transcriptions were complete.

4. PROCEDURES

The first demographic survey was administered by the researcher at the Portfolio Evaluation Day to Term 1 (of Illustration & Design) in April 2006, prior to their admission to the 2006-2007 academic year, and in the first week of classes in the Fall 2006 semester to Term 3 and Term 5 students. Similarly, a modified survey (to accommodate different programs) was also administered in the first week of classes to Term 1 Fine Arts students as well as a selected class from Term 1 of a non-visual arts program, Business Administration.

During the first week of class, all of the above students (from the first, second and third year of Illustration & Design, first year Fine Arts and a first year class in Business Administration) were given a Thinking Styles Inventory questionnaire (see Appendix D) in their introductory class to a computer component of their program.

All students were given an explanation as to the purpose of the study and their right to abstain from participation. Those volunteering to take part in the study were directed to go online at site: *http://www.trentu.ca/cgi-bin/SpNeeds/Profiler/ Profiler.pl* (see sample questions in Appendix D). Participants were given 30 minutes of class time to complete the questionnaire and hand in a printout of the results. As many were not able to print the results immediately, they were authorized to print it at a later date and submit them via email. Results were tabulated and the data was inputted into the SPSS software (to determine correlation with college grades). One of the benefits of doing this survey was the immediate results supplied which gave not only the students thinking styles but also gave the participants information on how to succeed in their studies by means of specific learning strategies to incorporate in their study methods. Furthermore, the students were informed that if they included their email address on the consent sheet, they would be sent the results of the research via email. Once the data collection and analysis

was complete, a document outlining the results of the research was written and distributed to all participants who had expressed an interest.

Focus group interviews were scheduled to be conducted in September 2006 with select students from the various programs to determine what prompted applicants to choose their program of study. However, these had to be rescheduled to the following semester (March 2007) as the college experienced a tragic shooting in September 2006 which greatly disrupted not only this research but the entire student and faculty life for a substantial amount of time.

The focus group participants were selected from first and second year and, as can be seen from the description below, were chosen so as to represent both students coming directly from High School and those who had prior post-secondary schooling, as well as representing various cultural backgrounds, language, and gender, etc.

For one focus group (March 13, 2007), the researcher selected six (6) first year Illustration & Design students, three females and three males equally from each of the two starting cohorts. They were chosen in order to have the widest possible variety of opinions, cultural background and experience. The three females were of Asian, Israeli and Canadian origin respectively, while the males were of African American, Philippino and Canadian origins. All participants spoke a minimum of two languages, with French, English, Tagalog, Hebrew and Korean mother tongues.

One female participant was a 27 year old mature student, born in Israel, who spoke four languages. She had extensive educational experience, having been to trade school, completed a DEC in Fine Arts at Dawson, had attended university and had also worked in the industry. The second female participant, of Korean origin, had been in a Performing Arts high school, in dance, then had completed one year of Visual Arts within the Creative Arts and Letters program (C.A.L.L.) at Dawson

before requesting a program transfer into Illustration & Design. The third female participants was bilingual and born in Canada, had done one year in the Commerce program at Dawson, then had been accepted to both York and the University of Toronto , but decided to pursue art instead.

One male, bilingual and born in Canada, had graduated from High School five years before, had completed grade 12 in a Quebec High School, and then attended the Fine Arts program at the Ontario College of Art and Design in Toronto. He had not found satisfaction in this program and returned to Montréal, took a year off, then completed one year in the Graphic Design at Dawson before transferring into the program. The second male, of mixed ancestry, whose mother tongue is French but also is fluent in English, had attended the Fine Arts program at Rosemont College but left it, unsatisfied and worked as a beta tester prior to applying to Illustration & Design. The last male participant, was born in the Philippines, speaks Tagalog as his mother tongue and also speaks French and English fluently. He had not successfully completed High School, but subsequently completed his Math and French in an Adult Education facility, then took one year off before applying to Illustration & Design.

The second focus group (March 12, 2007) was comprised of six second year Illustration & Design students, 3 females and 3 males also taken equally from each cohort group. The first female was a mature student, born in Canada but of Bengali origin and speaks 4 languages: Japanese, Bengali in addition to French and English. Prior to applying to Illustration & Design, she had been in Pure and Applied Sciences in McGill University but decided to redirect her studies as she felt that she would have more satisfaction pursuing a career where she could profit from her talents. The second is of French Canadian origin, born in Quebec, and comes directly from an entirely French High School environment. The third female is of English Canadian origin, bilingual, and applied to the Illustration & Design program directly from High School. One male, bilingual, born in Canada but of French West Indian

origin, had completed one year of Fine Arts at Dawson and transferred into the Illustration & Design program. Another male was of Spanish origin, spoke 3 languages and was previously in a Pre-University Science program at Vanier College. The last male was of Chinese origin and spoke French and English in addition to Chinese, his mother tongue, and came directly from High School.

During these two focus groups, the researcher not only investigated the students' reasons for choosing this program, but also whether students believed that their personality types could affect their academic achievement. (See sample questions in Appendix F).

5. DATA ANALYSIS

5.1. Qualitative

Qualitative data was collected by means of open-ended questions, one of which is included in the survey (see question #32 in Appendix A), as well as the discussions generated from the focus groups. This data was then evaluated by means of content analysis techniques described by Glicken (2003). Content of answers were grouped according to nouns and verbs, associated with the types of reasons for choosing Illustration & Design, and whether they demonstrated intrinsic or extrinsic motivation (see Appendices B and C for Data Grouping Charts and Membership Categorization Analysis Charts respectively).

5.2. Quantitative

Dawson College's Fall 2006 and Winter 2007 student grades were used as well as any High School grades which were available. The college grades retained for analysis were the concentration average (or the average of the program specific courses only), the overall college average (or the average of all the college courses taken while in their present program), as well as any current English, French or

Humanities grades listed on the college transcripts for the above mentioned semesters . In addition, 510/520 (Fine Arts specific) and 570 (Illustration & Design specific) courses were inputted separately in order to distinguish between 'concentration' courses in artistic programs from those of a non-artistic nature, as in the (410) Business Administration program.

The researcher performed a quantitative analysis of the student grades looking at correlations with several variables taken from the surveys (ex. Motivation operationalized as students' reasons for choosing their program, age, mother tongue, level of previous schooling, thinking style, etc.). The variables and data were incorporated and analysed by means of the 'SPSS$^{®}$ for Windows' statistical software to determine the incidence and significance of recurrent patterns. Measures of central tendency, percentages, *chi*-squares, T-Tests, and the ANOVA test were used to analyse the data. A Pearson product-moment correlation was drawn using student grades accessible through Dawson College's Institutional Research Department (existing grades in the database of all current, Term 1, 3 and 5 Illustration & Design students, as well as Term 1 students from Fine Arts and Business Administration) and for variables investigated through the questionnaires (reasons for choosing this program, age, gender, mother tongue, level of previous schooling, thinking type, etc). Upon request, the author is willing to make the tabulations of the raw data available.

Strength of correlations was interpreted and reported using the Davis convention (Davis, 1971). An alpha level of .05 was established a priori. Analyses were carried out to determine whether students who claimed to have passion and the sole desire to illustrate (or to be in the field they have chosen) were those with highest success rates in the program. Analyses were also carried out to determine whether students who demonstrated a Type I personality were those with highest academic success rates in the Illustration & Design program.

6. ETHICAL CONSIDERATIONS

6.1 Privacy, confidentiality and consent

Although this research involved human participants, there were no ethical considerations to worry about as all participants acted on a voluntary basis, and their participation had no impact on their status in the program (for potential or current students). A statement of confidentiality and purpose was included with all communications / surveys / questionnaires. Participants were informed that their name would be included only on a cover page of the surveys along with a number. These cover pages were detached from all the questionnaires and kept in a safe place to ensure anonymity. They were told that the names were be used for the purpose of correlation of the collected data with the student grades. Only the researcher ever had access to their names. All participants were informed of their right to withdraw at any time. A signed consent form was required for all participants in a Focus Group (see Consent Form in Appendix F*).* All surveys and SWTSI results were destroyed once the data was tabulated and recorded.

Furthermore, an application to conduct this study was submitted to Dawson College's Ethics Review Board and included a completed form signed by the research instructor, an informed consent and debriefing statement, a copy of all the instruments used, as well as a summary of the design and procedures used. The Ethics Review Board approved the research proposal on June 5th, 2006.

CHAPTER FOUR

PRESENTATION OF FINDINGS

1. DEMOGRAPHIC DATA FOR ILLUSTRATION & DESIGN, FINE ARTS AND BUSINESS
    ADMINISTRATION

Whereas students in Illustration & Design are evenly distributed as to gender, there were significantly more females than males in both Business Administration and Fine Arts programs (see Table 3). As predicted, except for a few outliers, most students surveyed in the Fall 2006 semester averaged 17-24 years old, with a mean *(m)* age of 20 years. However, first semester Illustration & Design students appear to be older than first semester Fine Arts students.

Table 3
Male / female ratio by program of study

Gender	Program of Study						Total	
	Business Administration		Fine Arts		Illustration & Design			
	%	N	%	N	%	N	%	N
Male	30	6	17.4	4	48.4	62	42	72
Female	70	14	82.6	19	51.6	66	58	99
Totals	100	20	100	23	100	128	100	171

2. LEVEL OF MATURITY

A participant determined to be 'mature' consisted of anyone not straight out of high school (based on answers for 'prior occupation', or based on 'year of birth' or 'student number' according to year of entry). Therefore, a student was not deemed mature if he/she was a first year student and his/her student number (typically listed as **A63**9221 or other similar numbers) started with A63 or A71 ('A' represents the

year 2000; A6 therefore represents 2006 and A7 stands for 2007; the third character represents the semester admitted into the college, 1 being Winter, 2 for summer, and 3 for Fall. Therefore, A63 stands for Fall 2006, whereas A71 stands for Winter 2007. The last 4 digits represent their numerical order of application for that particular year). However if someone's number started with A63 or A7 but whose year of birth was before 1987-89, it was an indication that they did not come straight from High School. As well, repeat students in Illustration & Design were considered mature as they were now a year behind others in their cohort, and were considered as those who started in other programs before coming to the current one. Only those coming straight from High School and who were in their proper cohort were not considered as mature.

Interestingly, none of the Business Administration students in this study had applied directly from High School. There were also a large number of students in Illustration & Design who had not entered the program directly from High School, or were out of sync with their cohort (see Table 4).

Table 4
Participants' level of maturity

| Maturity | Program of Study | | | | | | Total | |
| | Business Administration | | Fine Arts | | Illustration & Design | | | |
	%	N	%	N	%	N	%	N
Unknown			37.5	9	5.5	7	9.3	16
Comes from High School			54.2	13	39	50	36.6	63
Not directly from High School	100	20	8.3	2	55.5	71	54.1	93
Totals	100	20	100	24	100	128	100	172

3. RELATIONSHIP OF PERSONALITY TYPES AND THINKING STYLSE WITH PROGRAM OF STUDY

Although one cannot draw a significant conclusion, out of 52 (of the 128 total sample) Illustration & Design students who responded, 23 were of Type I compared to 19 of Type II and 1 of Type III, whereas only 7 were a combination of Types I & II and 2 were a combination of Type II & III. Fine Arts students were equally distributed, with 6 out of 14 being of Type I, 6 of Type II, and 2 were classified as both Type I & II, again meaning 50 % are of Type I and 50 % are of Type II (see Table 5). Although percentage-wise, there were twice as many Business Administration Type II students as Type I, there were too few respondents in this program to draw a conclusion (although 20 Business Administration students participated in the demographic survey, only four actually handed in their results for the SWTSI thinking styles test).

Table 5
Personality types by program of study

Personality Type	Program of Study						Total	
	Business Administration		Fine Arts		Illustration & Design			
	%	N	%	N	%	N	%	N
Type I	25	1	43	6	44	23	43	30
Type II	50	2	43	6	37	19	39	27
Type III					2	1	1	1
Type I & II	25	1	14	2	13	7	14	10
Type II & III					4	2	3	2
Totals	100	4	100	14	100	52	100	70

When categorizing students according to their thinking styles, students in Fine Arts seemed to be equally distributed in terms of their 'function' (refer to Table 1 on page 19) with a slight tendency towards a judicial thinking style. Those in Illustration & Design seemed to favour a legislative or executive approach over a judicial one. However, although there were too few participants from the Business

Administration program to draw conclusions, it appears that 3 out of 4 students favoured an executive approach (see Table 6).

Table 6
Thinking style (function) by program of study

| Thinking Style - Function | Program of Study | | | | | | Total | |
| | Business Administration | | Fine Arts | | Illustration & Design | | | |
	%	N	%	N	%	N	%	N
Legislative	25	1	29	4	27	14	27	19
Executive	75	3	21	3	38	20	37	26
Judicial			36	5	15	8	18	13
Judicial/Executive					4	2	3	2
Legislative/Executive			7	1	6	3	6	4
Judicial/Legislative			7	1	10	5	9	6
Totals	100	4	100	14	100	52	100	70

Table 7
Thinking style (forms) by program of study

| Thinking Style - Forms | Program of Study | | | | | | Total | |
| | Business Administration | | Fine Arts | | Illustration & Design | | | |
	%	N	%	N	%	N	%	N
Monarchic			29	4	17	9	18	13
Hierarchic			7	1	13	7	11	8
Oligarchic			29	4	19	10	20	14
Anarchic	25	1	29	4	21	11	23	16
Monarchic/Hierarchic					4	2	3	2
Hierarchic/Anarchic	50	2	7	1	4	2	7	5
Monarchic/Oligarchic	25	1			13	7	11	8
Oligarchic/Anarchic					8	4	6	4
Totals	100	4	100	14	100	52	100	70

From Table 7 above, there does not appear to be a significant single pattern for 'forms' (refer to Table 1 on page 19). When looking for 'monarchic' tendencies, oligarchic (19 %), and anarchic (21 %), were more prevalent than monarchic (17 %)

tendencies in Illustration & Design students. Although anarchic appears to be the greatest tendency for Illustration & Design students, if one adds the combined forms to these three forms, the result would be as follows:

Hierarchic: 21 %   (13+4+4)

Anarchic: 33 %   (21+4+8)

Monarchic: 24 %   (17+4+13)

Oligarchic: 40 %   (19+13+8)

Therefore, there are still greater oligarchic tendencies for Illustration & Design students, whereas Fine Arts students are equally distributed among monarchic, oligarchic and anarchic forms (at 29 % each).

Table 8
Thinking styles (levels) by program of study

Thinking style - levels	Program of study						Total	
	Business administration		Fine arts		Illustration & design			
	%	N	%	N	%	N	%	N
Global	50	2	42.9	6	63.5	33	58.6	41
Local	50	2	50.0	7	32.7	17	37.1	26
Local/global			7.1	1	3.8	2	4.3	3
Totals	100	4	100	14	100	52	100	70

Illustration & Design students tend to have thinking styles that are more global (63.5 %) whereas students from other programs are more equally distributed between global and local thinking styles (see Table 8). As seen in Table 9 below, all participants appear to be more internal (over 70 %) than external in orientation. Similarly, more students were conservative (64.3 %) than liberal (34.3 %) in their ideology (see Table 10).

Table 9
Thinking styles (orientations) by program of study

Thinking Style - Orientations	Program of Study						Total	
	Business Administration		Fine Arts		Illustration & Design			
	%	N	%	N	%	N	%	N
Internal	75.0	3	78.6	11	71.2	37	72.9	51
External	25.0	1	14.3	2	21.2	11	20.0	14
Internal/External			7.1	1	7.6	4	7.1	5
Totals	100	4	100	14	100	52	100	70

Table 10
Thinking styles (ideologies) per program of study

Thinking Style - Ideologies	Program of Study						Total	
	Business Administration		Fine Arts		Illustration & Design			
	%	N	%	N	%	N	%	N
Liberal	25.0	1	35.7	5	34.6	18	34.3	24
Conservative	75.0	3	57.2	8	65.4	34	64.3	45
Liberal/ Conservative			7.1	1			1.4	1
Totals	100	4	100	14	100	52	100	70

4. RELATIONSHIP OF THINKING STYLSE WITH GENDER AND LEVELS OF MATURITY

While males seem to be quite evenly distributed as to functions, females tended to show a greater tendency towards being of an executive thinking style (see Table 11). All students seem to be quite evenly distributed as to forms regardless of gender. However, considering that females outnumber male participants 42-27, there appear to be a larger percentage of males showing a tendency towards oligarchic and anarchic thinking styles (see Table 12).

Table 11
Thinking styles (function) and gender

Thinking Style - Function	Gender				Total	
	Males		Females			
	%	N	%	N	%	N
Legislative	29.7	8	26.2	11	27.6	19
Executive	25.9	7	42.9	18	36.2	25
Judicial	25.9	7	14.3	6	18.8	13
Judicial/Executive	3.7	1	2.4	1	2.9	2
Legislative/Executive	3.7	1	7.1	3	5.8	4
Judicial/Legislative	11.1	3	7.1	3	8.7	6
Totals	100	27	100	42	100	69

Table 12
Thinking styles (forms) and gender

Thinking Style - Forms	Gender				Total	
	Males		Females			
	%	N	%	N	%	N
Monarchic	18.5	5	16.7	7	17.4	12
Hierarchic	3.7	1	16.7	7	11.6	8
Oligarchic	29.6	8	14.3	6	20.3	14
Anarchic	29.6	8	19.0	8	23.2	16
Monarchic/Hierarchic	3.7	1	2.4	1	2.9	2
Hierarchic/Anarchic	3.7	1	9.5	4	7.2	5
Monarchic/Oligarchic	7.4	2	14.3	6	11.6	8
Oligarchic/Anarchic	3.7	1	7.1	3	5.8	4
Totals	100	27	100	42	100	69

Females were more likely to have global thinking levels (64.3 %) whereas males seemed to be divided equally between global and local thinking styles (see Table 13). Both genders favoured the internal thinking style over the external one. As demonstrated in Table 14 below, females showed a greater tendency to be conservative (69 %) than males (55.6 %).

Table 13
Thinking styles (levels) and gender

Thinking Style - Levels	Gender				Total	
	Males		Females			
	%	N	%	N	%	N
Global	48.2	13	64.3	27	58.0	40
Local	44.4	12	33.3	14	37.7	26
Global/Local	7.4	2	2.4	1	4.3	3
Totals	100	27	100	42	100	69

Table 14
Thinking styles (ideologies) and gender

Thinking Style - Ideologies	Gender				Total	
	Males		Females			
	%	N	%	N	%	N
Liberal	40.7	11	31.0	13	34.7	24
Conservative	55.6	15	69.0	29	63.8	44
Liberal / Conservative	3.7	1			1.5	1
Totals	100	27	100	42	100	69

Results, from performing *chi*-square calculations, indicated that none of the thinking styles were affected by students' level of maturity.

5. RELATIONSHIP OF ACADEMIC PERFORMANCE AND GENDER, LANGUAGE, LEVEL OF MATURITY, AGE AND MOTHER TONGUE

Students from Illustration & Design did not perform as well academically as those of Fine Arts or Business Administration. The mean *(m)* Total College Average for Fine Arts was 79.4 %, and 74.8 % for Business Administration, whereas it was 73.4 % for Illustration & Design (see Table 15 below).

Table 15
Total college average by program of study

Statistics	Program of Study		
	Business Administration	Fine Arts	Illustration & Design
Mean	74.78	79.38	73.43
Median	78.12	79.77	76.10
Standard deviation	9.13	7.98	14.50
Minimum	57.00	62.30	7.30
Maximum	85.00	90.80	93.30

Students in Fine Arts performed better in the 510/520 courses than students in Illustration & Design (see Figure 1). For the Fine Arts students, these courses represent their concentration courses, while for Illustration & Design students, these courses are those from contributing disciplines - courses which do not prevent them from progressing in their program if/when they are not passed. (One would expect that no data would be seen for Business Administration as 510/520 courses are strictly visual arts courses. However, as seen in Figure 1, one student in Business Administration showed as having a grade for 510 /520 courses because she had attended her first year of college in the Illustration & Design program before transferring to the Business Administration program.)
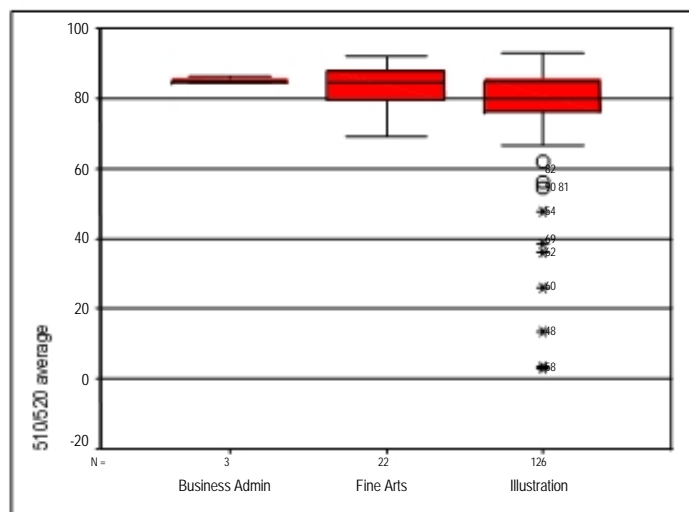

Figure 1
510 / 520 average by program

Students from Illustration & Design performed slightly lower than those of Business Administration and of Fine Arts in their Secondary 5 Averages (see Table 16). However, when investigating individual college subjects, Fine Art students were not consistently performing better than Illustration & Design or Business Administration. For example, the mean *(m)* averages for Business Administration, Fine Arts, and Illustration & Design in English, French and Humanities varied (refer to Table 17 below).

Table 16
Secondary 5 average by program

	Mean (*m*) Average per Program of Study		
	Business Administration	Fine Arts	Illustration & Design
Secondary 5	76.73 %	79.92 %	75.78 %

Table 17
Mean *(m)* average of core courses by program of study

Core Courses	Mean (*m*) Average per Program of Study		
	Business Administration	Fine Arts	Illustration & Design
English	70 %	68 %	70 %
French	70 %	71 %	65 %
Humanities	71 %	71 %	66 %

As shown in Table 18 below, there was a significant difference in grade averages between genders. Females consistently demonstrated a higher mean *(m)* average than males, both in High School (females $M= 78.5$ %; males $M= 73.6$ %) and in college (females $M= 77.7$ %; males $M= 69.8$ %). However, there was no significant difference in Portfolio Scores between males and females (males $M= 63.6$ %; females $M= 64.7$ %). An Independent Samples Test (Table 19) confirmed this significant difference between genders.

An ANOVA (Table 20) revealed that, although it appears that 510/520 courses (representing concentration courses for Fine Arts and contributing discipline courses for Illustration & Design) are affected by gender differences ($p=.008$) , the 570 (illustration specific) courses are not ($p=.174$). This should not be surprising as it was also discovered that gender differences had no effect on Portfolio Scores for Illustration & Design which implies that males and females do equally well in hands-on performance but not in purely academic performance. In addition, although 510/520 courses are considered 'contributing discipline' courses for Illustration & Design, they are Concentration Courses for Fine Arts. Since the majority of Fine Arts students are females, this factor may have a bearing on this statistical difference.

Table 18
Grade averages by gender

Means (m)	Male	Female
Total college grade	69.8	77.7
Concentration grade	73.7	79.7
Portfolio score	63.6	64.7
Secondary 5 grade	73.6	78.5

Table 19
Performance by gender

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Total College Grade Average	Equal variances assumed	2.808	.096	-3.912	168	.000	-7.813	1.9975	-11.7568	-3.8699
	Equal variances not assumed			-3.701	118.380	.000	-7.813	2.1109	-11.9934	-3.6333
Concentration Average	Equal variances assumed	3.609	.059	-2.774	166	.006	-6.012	2.1670	-10.2901	-1.7334
	Equal variances not assumed			-2.626	117.276	.010	-6.012	2.2890	-10.5448	-1.4787
portfolio score	Equal variances assumed	.345	.558	-.587	114	.559	-.1058	.18034	-.46308	.25143
	Equal variances not assumed			-.589	113.918	.557	-.1058	.17961	-.46164	.24999
Sec. 5 average	Equal variances assumed	.464	.497	-4.743	150	.000	-4.834	1.0192	-6.8474	-2.8199
	Equal variances not assumed			-4.716	135.002	.000	-4.834	1.0250	-6.8608	-2.8065

Table 20
Performance in 510, 520 and 570 courses by gender

		Sum of Squares	df	Mean Square	F	Sig.
570 average	Between Groups	426.667	1	426.667	1.865	.174
	Within Groups	29057.151	127	228.796		
	Total	29483.819	128			
510/520 average	Between Groups	1409.060	1	1409.060	7.190	.008
	Within Groups	29003.128	148	195.967		
	Total	30412.188	149			

A difference in levels of maturity (as defined on page 40) did not appear to translate into any significant difference in college performance.   Nor did this study show any significant difference according to students' age determined by their year of birth. Results did not show any significant difference in performance in 510/520/570 courses for students of various mother tongues or according to the number of languages they spoke.

6. RELATIONSHIP OF ACADEMIC PERFORMANCE WITH PERSONALITY TYPE AND THINKING STYLES

There appears to be no significant difference in total college averages between various thinking styles. No significant difference was found in Thinking Styles for predicting academic performance in any of the programs analyzed.

Table 21
Relationship of TSI orientations with performance in 570 courses

570 average

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	348.397	2	174.199	3.362	.043
Within Groups	2590.569	50	51.811		
Total	2938.966	52			

However, when analyzing the relationship between TSI internal / external orientations and Concentration (570) averages in Illustration & Design by means of an ANOVA (Table 21 above) , results showed that students' orientation had an effect ($p=.043$; $p<.05$)   on Illustration & Design students' Concentration Averages (570 courses). There was no significant difference in academic performance between local and global thinking levels. Students with liberal or conservative ideologies demonstrated little difference in their academic performance at the college level but showed a significant difference ($p=.048$; $p<.05$) in their Secondary 5 averages.

No significant difference was found either when performing a One Way ANOVA to see if there was a difference in college performance depending on students' forms of thinking. However, people with monarchic thinking styles seem to get better grades in Fine Arts than in Illustration & Design (see Figure 2 and 3). In addition, students' form of thinking seem to be more pure or clearly defined as one form or another in Fine Arts, whereas students from Illustration & Design appear to demonstrate a variety of thinking style forms which are mixed in nature.
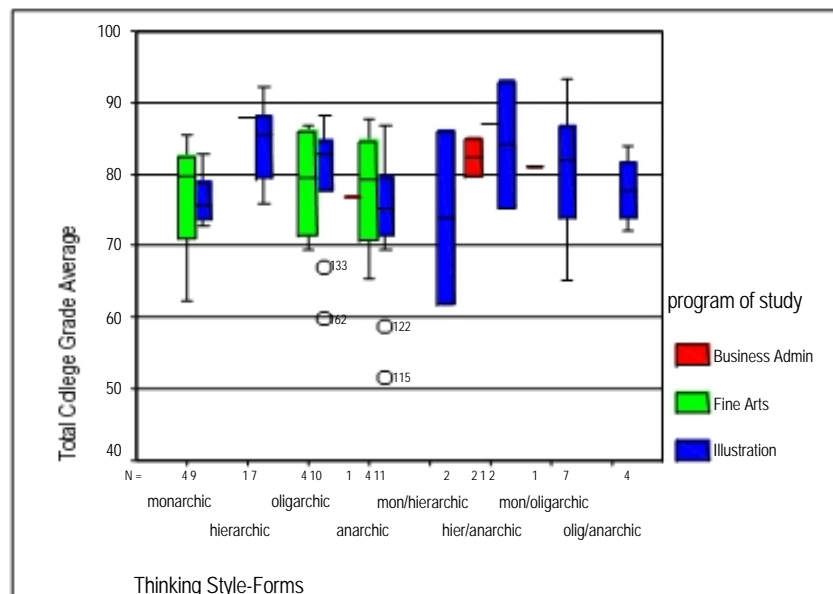
Figure 2
College average by thinking styles (forms) and program of study
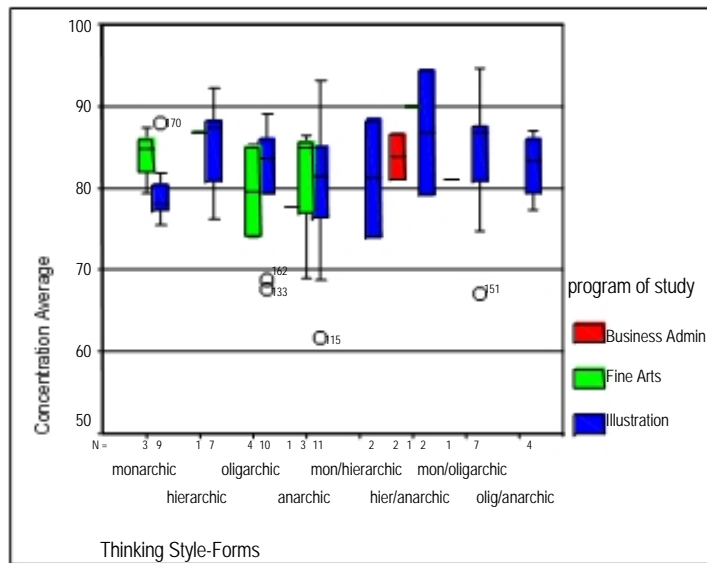
Figure 3
Concentration average by thinking styles (forms) and program of study

Illustration & Design students with a monarchic thinking style perform better in their concentration courses (see Figure 3) than in their other college courses (Figure 2). However, they do not perform better than those demonstrating other types of thinking styles (see Figure 4) within their program.
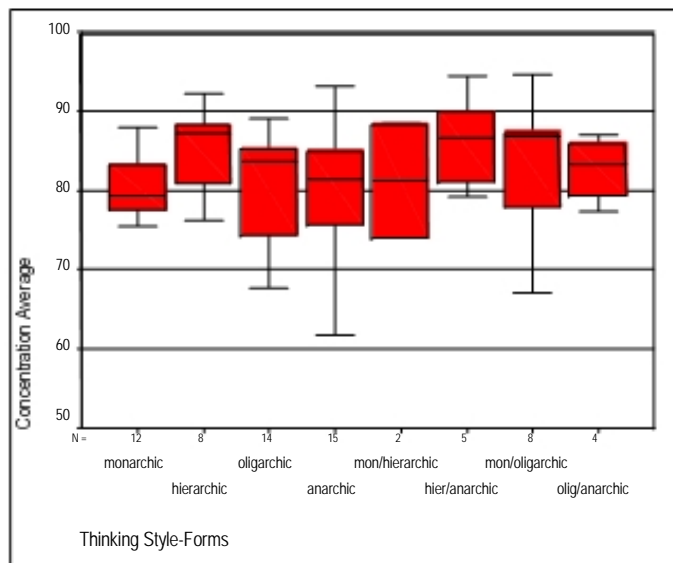
Figure 4
Concentration average by thinking styles (forms)

When investigating further, and as seen from the following box plots (Figure 5), Illustration & Design students with a monarchic form of Thinking Style showed the weakest academic performance (M = 79.2 %) in design (as measured in 570 Averages) when compared to other forms of thinking styles (hierarchic: M = 82.2 %; oligarchic: M = 81.5 %; anarchic: M = 81.6 % and the highest mean *(m)* being hierarchic/anarchic: M = 87.4 %). Furthermore, it is also clear that Illustration & Design students with hierarchic and oligarchic thinking styles outperform those with monarchic thinking styles in general studies courses (as measured in English, French and Humanities Averages).   However students with Anarchic Thinking Styles perform the weakest in these courses.

Figure 5
570 grade averages according to thinking styles (forms)

When analysing the academic performance of all participants, students with hierarchic and oligarchic thinking styles performed better than those with monarchic and anarchic thinking styles (English means *(m):* monarchic: $M = 67.6\%$; hierarchic: $M = 83.6\%$; oligarchic: $M = 71.8\%$; anarchic: $M = 62.3\%$. French means *(m)*: monarchic: $M = 65.4\%$; hierarchic: $M = 79.9\%$; oligarchic: $M = 77.7\%$; anarchic: $M = 52.5\%$.) In order to demonstrate these results statistically,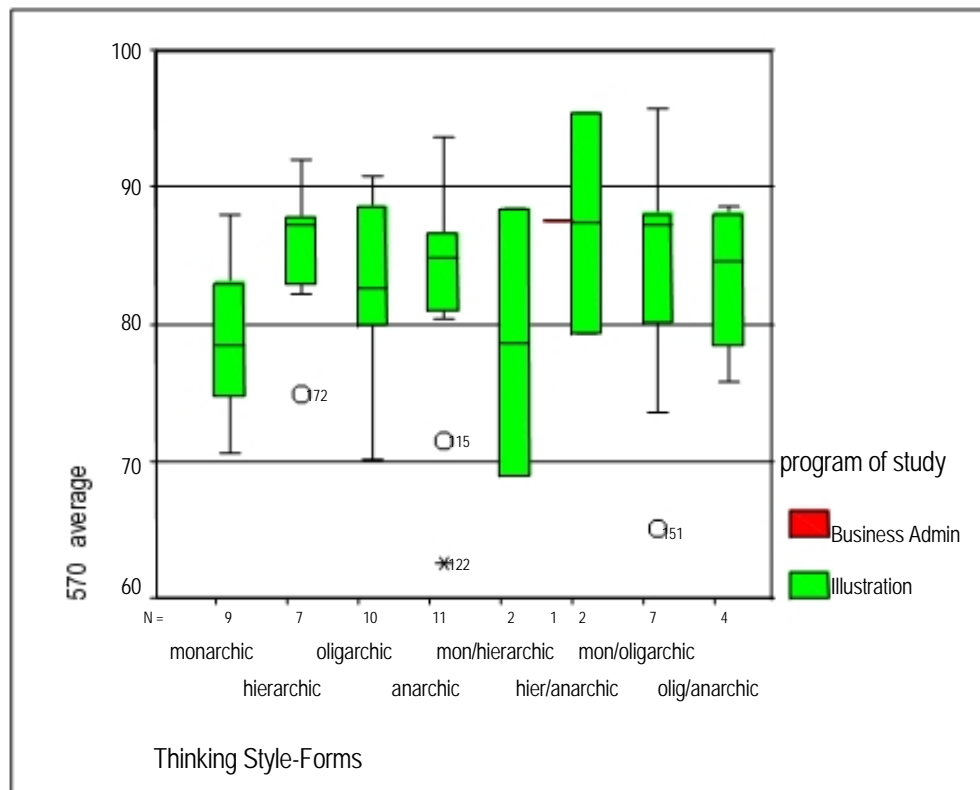 an ANOVA (see Table 22) was performed confirming a significant difference in performance in both English $(p=.034)$ and French $(p=.001)$ courses but not in Humanities $(p=.101)$.

Table 22
Effect of thinking styles (forms) on academic performance

			Sum of Squares	df	Mean Square	F	Sig.
570 average * Thinking Style-Forms	Between Groups	(Combined)	232.840	7	33.263	.553	.789
	Within Groups		2706.126	45	60.136		
	Total		2938.966	52			
510/520 average * Thinking Style-Forms	Between Groups	(Combined)	245.821	7	35.117	.951	.475
	Within Groups		2067.161	56	36.914		
	Total		2312.982	63			
Average English grade * Thinking Style-Forms	Between Groups	(Combined)	2826.867	7	403.838	2.367	.034
	Within Groups		9895.219	58	170.607		
	Total		12722.086	65			
Average French grade * Thinking Style-Forms	Between Groups	(Combined)	6735.176	7	962.168	4.181	.001
	Within Groups		12197.158	53	230.135		
	Total		18932.334	60			
Average Humanities grade * Thinking Style-Forms	Between Groups	(Combined)	6174.050	7	882.007	1.847	.101
	Within Groups		21961.274	46	477.419		
	Total		28135.324	53			

Students with executive thinking styles performed better in Concentration Averages in Fine Arts and Business Administration but not in Illustration & Design (see Figure 6). Although those demonstrating global functions appear to perform slightly better in artistic programs, evidence shows that those with local thinking styles perform better in the Business Administration program (Figure 7).

Figure 6

Concentration average by thinking styles (function) and program of study
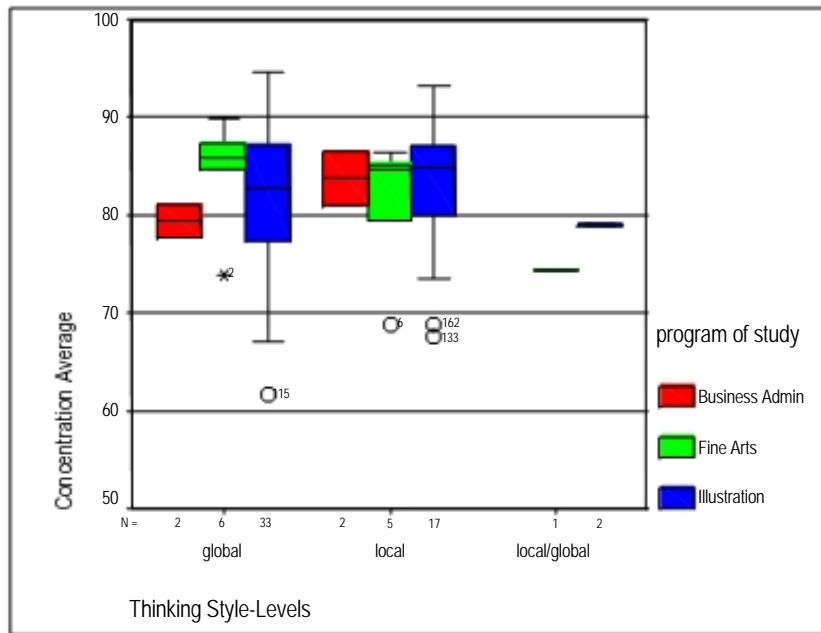
Figure 7

Concentration average by thinking styles (levels) and program of study

While students with internal thinking styles appear to perform better in Illustration & Design (see Figure 8), those with external thinking styles seem to perform better in Fine Arts. Similarly, students with liberal thinking styles appear to perform slightly better in Fine Arts, but this does not translate into a significant difference in Illustration & Design (see Figure 9). Students with conservative thinking styles, on the other hand, only outperform their classmates with other ideologies in Business Administration.
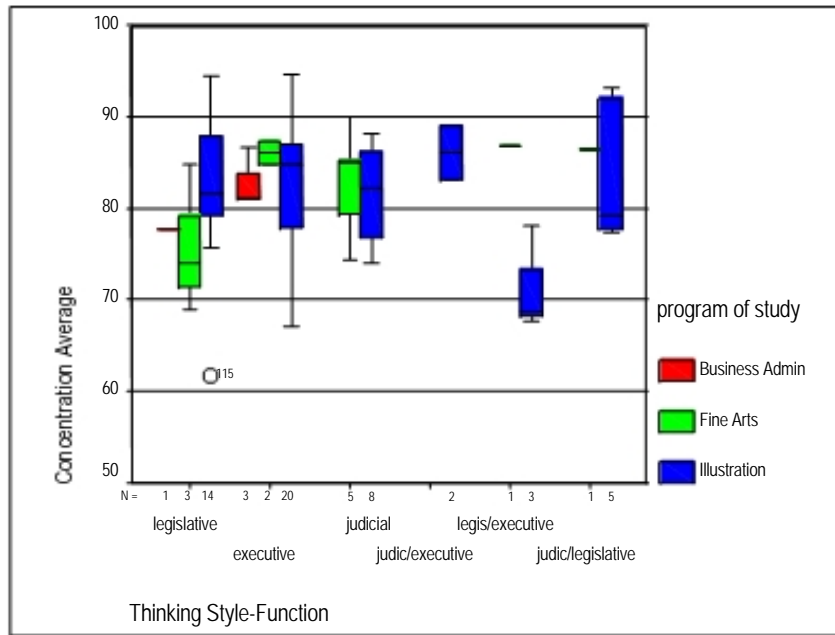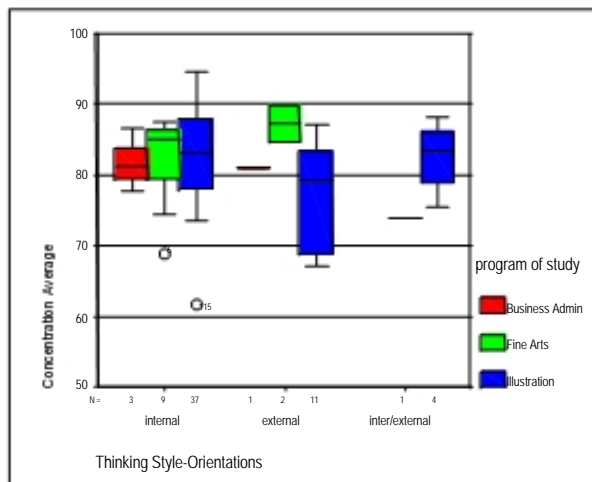

Figure 8
Concentration average by thinking styles (orientations) and program of study
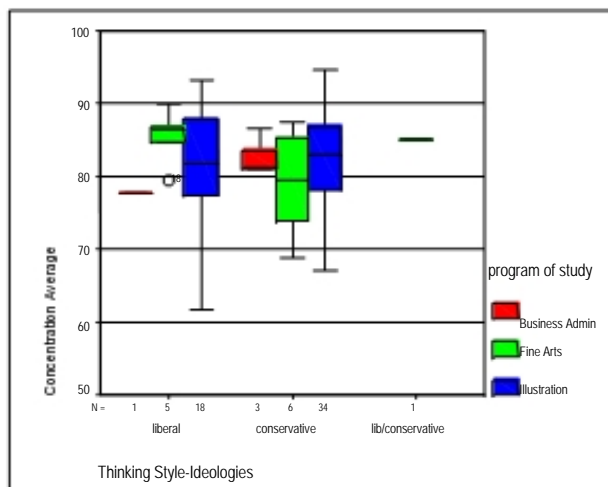
Figure 9

Concentration average by thinking styles (ideologies) and program of study

Judging from participants' performance scores in either 570 or 510/520 courses, it does not appear that any specific personality type (Type I or Type II) is best suited for performing in an artistic program (see Table 23). As can be seen in the following chart, Type I students scored a mean *(m)* average of 82.3 % in 570 courses while Type II students scored 83.3 %. In 510/520 courses, Type I students scored 83 % while Type II students scored 82.7 %. Similarly, when comparing total College Average means *(m)* to Concentration Average means *(m)*, there were no significant differences in performance (see Table 24).

Table 23
Academic performance in visual arts courses by personality type

p

	Personality Type	N	Mean	Std. Deviation	Std. Error Mean
570 average	Type 1	23	82.280	8.1545	1.7003
	Type 2	20	83.298	7.3134	1.6353
510/520 average	Type 1	28	82.972	6.1041	1.1536
	Type 2	24	82.749	6.9815	1.4251

Table 24
Academic performance in concentration and total college averages by personality type

	Personality Type	N	Mean	Std. Deviation	Std. Error Mean
Concentration Average	Type 1	30	82.264	7.2948	1.3318
	Type 2	25	81.658	7.4457	1.4891
Total College Grade Average	Type 1	30	77.966	9.6118	1.7549
	Type 2	27	79.974	7.9974	1.5391

7. CORRELATIONAL ANALYSIS WITH RESPECT TO ACADEMIC PERFORMANCE

Correlations were calculated between Secondary 5 Averages and Portfolio Scores with Total College Averages, Concentration Averages, 570 Averages and 510/520 Averages in order to determine factors which may help to predict academic performance in Illustration & Design (see Table 25). Results indicated that, while Portfolio Scores were statistically significant at the 0.05 level (2-tailed), the Secondary 5 Averages were the most significant at the 0.01 level (2-tailed). However, as can be predicted, there is a lack of linear relationship between Portfolio Scores and Total College Averages. This can be attributed to the fact that portfolios are scored or evaluated based mostly on manual artistic skills rather than the cognitive skills.

Table 25
Correlations predicting academic performance in college

		Total College Grade Average	Concentration Average	570 average	510/520 average	portfolio score	Sec. 5 average
Total College Grade Average	Pearson Correlation	1	.930**	.921**	.892**	.120	.501**
	Sig. (2-tailed)		.000	.000	.000	.202	.000
	N	171	169	129	151	115	152
Concentration Average	Pearson Correlation	.930**	1	.968**	.948**	.204*	.416**
	Sig. (2-tailed)	.000		.000	.000	.029	.000
	N	169	169	129	151	115	152
570 average	Pearson Correlation	.921**	.968**	1	.895**	.191*	.380**
	Sig. (2-tailed)	.000	.000		.000	.041	.000
	N	129	129	129	127	115	117
510/520 average	Pearson Correlation	.892**	.948**	.895**	1	.199*	.356**
	Sig. (2-tailed)	.000	.000	.000		.034	.000
	N	151	151	127	151	114	135
portfolio score	Pearson Correlation	.120	.204*	.191*	.199*	1	.093
	Sig. (2-tailed)	.202	.029	.041	.034		.350
	N	115	115	115	114	116	104
Sec. 5 average	Pearson Correlation	.501**	.416**	.380**	.356**	.093	1
	Sig. (2-tailed)	.000	.000	.000	.000	.350	
	N	152	152	117	135	104	153

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

8. RELATIONSHIP OF PORTFOLIO SCORES WITH PERSONALITY TYPE AND THINKING
    STYLES

No significant relationship was found when comparing Portfolio Scores with
Personality Types and Thinking Styles.

9. RESULTS - MOTIVATING FACTORS

9.1 Reasons for applying to program of studies (motivation)

Among the most cited reasons given by focus group participants   for choosing
Illustration & Design as a program of study were the following:

1. Other programs did not suit their inclinations (the Graphic Design program was
    too computer oriented, the Fine Arts program was not stringent enough in quality
    of work, and the Creative Arts program was too easy and did not lead to financial
    security).
2. Program reputation.
3. Personal recommendations from friends, teachers, etc.
4. Did not enjoy the sciences.

For the purpose of this study, students were classified according to the
reasons they gave for choosing their respective programs, based on their responses to
question #32 in the demographic survey (see Appendix A). Students' motivations
were classified as 'intrinsic' if they gave reasons focussing on themselves, such as: **"I
am"**, "want", "like", etc. On the other hand, they were considered 'extrinsic' if they
gave reasons of a nature external to themselves, such as: "the program is", "art is", etc.
(see chart on question 32 of demographic surveys in Appendix A.). A seen in Table 26
below, intrinsic reasons are most often cited for all programs (twice as

many in Fine Arts and Business Administration, but not as much for Illustration & Design: 49 intrinsic / 40 extrinsic).

When analysing the data collected from the Focus Groups, it appeared that the students' reasons for applying in the program were slightly more extrinsic in nature. However when investigating other categories, students supported intrinsic reasons for opting to apply to Illustration & Design. For example, although some participants claimed that they heard it was a good program from teachers and peers, they also stated that they applied to this program against parental wishes and against odds which favoured them pursuing sciences or business as this was deemed (by others) as a more lucrative prospect. Many participants claimed to have opted for this program because they felt they had a strong artistic ability and wanted to be happy doing what they enjoyed. Students were also aware that this program necessitated substantially more work but felt that it was the best, if not the only, avenue to accomplish their personal goals.

Table 26

Participants' reasons for choosing their program of study

| Motivation | Program of Study | | | | | | Total | |
| | Business Administration | | Fine Arts | | Illustration & Design | | | |
	%	N	%	N	%	N	%	N
Intrinsic	44.4	8	66.7	10	45.4	49	47.5	67
Extrinsic	22.2	4	33.3	5	37.0	40	34.8	49
Intrinsic / Extrinsic	12.8	6			17.6	19	17..7	25
Totals	100	18	100	15	100	108	100	141

9.2   Motivation and Academic Performance

As shown in the following Tables 27 and 28, there is no significant difference in performance in Total College Average and in Concentration Average for participants who chose their program (Illustration & Design or other) because of intrinsic reasons (passion).

Table 27

Grade averages by motivation (reasons for choosing their program of study)

	Reasons for applying	N	Mean	Std. Deviation	Std. Error Mean
Concentration Average	intrinsic	67	78.263	13.1834	1.6106
	extrinsic	49	75.277	17.4930	2.4990
Total College Grade Average	intrinsic	67	75.570	12.3658	1.5107
	extrinsic	49	72.378	15.2754	2.1822

Table 28

Statistical difference in grade averages by motivation

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference		Lower	Upper
Concentration Average	Equal variances assumed	2.655	.106	1.048	114	.297	2.985	2.8474		-2.6553	8.6261
	Equal variances not assumed			1.004	85.438	.318	2.985	2.9731		-2.9254	8.8962
Total College Grade Average	Equal variances assumed	1.560	.214	1.243	114	.217	3.192	2.5689		-1.8970	8.2811
	Equal variances not assumed			1.203	90.000	.232	3.192	2.6541		-2.0808	8.4649

9.3   Motivation and gender and program of study

As seen in Table 29, males appear to be more intrinsic (55 %) than extrinsic (35 %) in motivation when comparing to female ratios (intrinsic: 42 %; extrinsic: 34.6 %).

Table 29
Motivation according to gender

Motivation	Gender				Total	
	Males		Females			
	%	N	%	N	%	N
Intrinsic	55.0	33	42.0	34	47.5	67
Extrinsic	35.0	21	34.6	28	34.8	49
Intrinsic / Extrinsic	10.0	6	23.5	19	17.7	25
Totals	100	60	100	81	100	141

There seemed to be a substantial number of participants from all three programs who claimed to have chosen their programs because this is what they loved or enjoyed (see Totals in Appendix C). As shown in Table 30 below, thirty percent of males in Business Administration participants claimed that they chose their program to 'make money' and another thirty percent said they wanted to be 'successful'. On the other hand, thirty percent of the females in Business Administration claimed to choose this program because this is what they enjoyed and another 30 % claimed that this is what they wanted to become. The majority of all Illustration & Design (males = 50 % and females = 60 %) claimed that they chose their field because they loved art or had a passion for it. It is interesting that although a significant amount of participants from both Illustration & Design and Fine Arts said they had a passion for what they did, none of the Business Administration students did. A number of participants from both Business Administration and Fine Arts said they did not know what else to do. As a whole, a higher percentage of participants claimed intrinsic reasons for choosing their program of studies (see Table 30 on the next page).

When analysing whether students' motivations (reasons for applying to the program) could be affected by their Thinking Styles, no significant relationships were found with any of the Thinking Styles.

Table 30

Participants' reasons for choosing their program

QUALIFIER (Adverb)	I&D M	I&D F	FA M	FA F	BA M	BA F	I&D M	I&D F	FA M	FA F	BA M	BA F
Interested in learning/in program	1						0.0	0.0	0.0	0.0	0.0	0.0
Interested in this field	3				1		0.1	0.0	0.0	0.0	0.0	0.1
Love/like/enjoy/adore/fascinated (by art)	23	25	2	3	1	3	0.4	0.4	1.0	0.2	0.2	0.3
Passion (passionately) dreams	4	9	1	3		1	0.1	0.2	0.5	0.2	0.0	0.0
Talent		3					0.0	0.1	0.0	0.0	0.0	0.0
Skills((is good at) / abilities	4	4					0.1	0.1	0.0	0.0	0.0	0.0
Don't know what they want / have no other interest	1			4	1	2	0.0	0.0	0.0	0.3	0.2	0.2
To work/a job/make a living/be successful	6	4			2		0.1	0.0	0.0	0.0	0.3	0.0
Money / profit / opportunity		1				1	0.0	0.1	0.0	0.0	0.0	0.1
Career	6	13		2		1	0.1	0.2	0.0	0.0	0.0	0.1
To be/become/go into/do	4	3		2	4	2	0.1	0.1	0.0	0.2	0.0	0.3
To be happy/to do something I enjoy	9	8					0.2	0.1	0.0	0.0	0.0	0.0
To improve/explore/learn/ develop/ enjoy	5	7		3		1	0.1	0.1	0.0	0.2	0.0	0.1
To find myself / exp. Life / emotional outlet				1			0.0	0.0	0.0	0.1	0.0	0.0
Background	1	2					0.0	0.1	0.0	0.0	0.0	0.0
Person	2	1				1	0.0	0.0	0.0	0.0	0.0	0.1
Everything / (part of) my life	2			1			0.0	0.0	0.0	0.1	0.0	0.0
The only thing I see myself doing	3	7					0.1	0.1	0.0	0.0	0.0	0.0
An outlet / satisfying	2	1		3			0.0	0.0	0.0	0.2	0.0	0.0
Unique/great/good/best/more interesting/key		2					0.0	0.0	0.0	0.0	0.0	0.0
Skills/directs/covers/gives	6	9			2		0.1	0.2	0.0	0.0	0.0	0.2
Money / profit / opportunity		1			1		0.0	0.0	0.0	0.0	0.3	0.1
My happiness	1	2					0.0	0.0	0.0	0.0	0.0	0.0
Job / career / goals	5	7			1		0.1	0.1	0.0	0.0	0.2	0.1
	52	56	2	13	6	12	52	56	2	13	6	12
Ave. # words each	20.4	22.5	4.5	18.8	11.8	17.1	20.4	22.5	4.5	18.8	11.8	17.1

CHAPTER FIVE
DISCUSSION

1. DATA COLLECTION

Although the samples used in this study were representative of the Illustration & Design and Fine Arts programs, there were difficulties in obtaining a good sample of Business Administration students. Consequently, to some extent the resulting data was disappointing. Although 20 students from the Business Administration program completed the demographic survey, only 4 handed in their TSI test results. Many attempts were made to follow up with the faculty of this program. However, due to the unfortunate 'shooting' which happened at Dawson on September 13th, 2006, and the fact that the single person who died in the shooting was a student of Business Administration, it was deemed inappropriate to pursue this any further or to ask this cohort to redo the testing. On the other hand, the participants from Illustration & Design (52) were very responsive as the researcher was the chair of the program and students were eager to be participants in the study. Furthermore, the researcher had planned to do the tests within the first two weeks of class and within scheduled class time, and consequently had collected most of the data by the time of the shootings. As for the Fine Arts cohort (24), some participants (14) completed the TSI tests while others completed the demographic survey (16) but only 6 did both. Nevertheless, considering the eventful semester in which these tests had to be carried out, the researcher felt it best to carry on the research with whatever data was collected.

In addition, some Illustration & Design participants had to be disqualified because the data from their online TSI tests was slightly skewed as a result of the nature and design of the test itself. Once students had completed the test, they sometimes got an error message stating: 'inconclusive results' because their scores

were evenly distributed and the design of the test did not allow it to classify their thinking style.   Instead it was designed to result in a typing of a participant in one thinking style or another. Therefore, this resulted in some participants redoing the test until they either gave up or 'fibbed' some answers to force the test to make a conclusion.   In these instances, those participants were removed from the results of the TSI but the data collected from their demographic surveys was retained.

2. PARTICIPANTS

Most students (over 78 %) ranged between the ages of 17 to 21 years of age. All, except one, were under 29.   Nevertheless, the researcher felt the need to distinguish between students entering their program directly from High School from those with more educational (or other) experience. Therefore, it was necessary to operationalize the classification of 'mature students'. For the purpose of this study, mature students were those who had not entered the program directly from High School, regardless of their prior schooling or occupation. However, this meant that repeat students in Illustration & Design were considered mature as they were now a year behind others in their cohort, and were considered as those who started in other programs before coming to the current one. Consequently, this created a bias towards mature students of other origins since repeat students often are no surer of their choices and are those who struggle with their studies. Other types of mature students, such as those who come from the industry or from another program or from university, generally come fully prepared to give it all they have and therefore do much better academically. Hence, in the future, these two categories should be analysed separately.

It   should   be noted that students in Fine Arts are younger than those in Illustration & Design. This could be due to the fact that Fine Arts is a pre-University (2 year) program while Illustration & Design is a career (3 year) program. It is commonly understood that the Fine Arts program is a transition program leading to

university and not an end in itself. In addition, some students choose the Fine Arts program because, although they are convinced that they enjoy artistic expression, they are unsure of the direction they intend to take as a career. On the other hand, those who are willing to invest three years in Illustration & Design are usually those who have either tried Creative Arts or Fine Arts already, who have dabbled in a visual arts field and realized their need for further skills, or who have already made a commitment to this career. This difference may or may not affect the results of this study.

3. DISCUSSION OF THE RESULTS

 3.1 Thinking styles and personality types

Out of 52 Illustration & Design students, 23 were of personality Type I (Zhang, 2005), 19 were of Type II and 7 were a combination of the two. Fine Arts students were equally distributed. In Business Administration, there were twice as many Type II students as Type I, but more studies would need to be carried out to draw a conclusion as there were too few respondents from this program. Although in this study it was hypothesized that "students who score highest on Type I Personality Style (according to Sternberg & Zhang, 2004) will perform better academically", no significant difference was found in students' academic performance, whether in their Concentration or Total College Averages regardless of Personality Types.

While Fine Arts students were equally distributed in thinking styles - 'function', those in Illustration & Design had a tendency towards the legislative or executive approach (refer to Table 6 p. 43). Although this may not be significant in selecting who is admitted into the Illustration & Design program, it is nevertheless important pedagogically, as these two categories would represent the bulk of the program's clientele. In the Business Administration program, however, although there were too few participants to draw conclusions, 75 % were executive. If there

was a larger pool of Business Administration respondents, perhaps it would be possible to establish whether or not there was a significant difference between students in an artistic program and a non-artistic program. When comparing genders, males were evenly distributed among legislatives, executive and judicial thinking styles, while females demonstrated a higher tendency for executive thinking (18/42 compared to 11/42 and 8/42 for legislative and judicial respectively). Although Zhang claimed that Type I intellectual styles were associated with positive values generally sought after by the academic field, and despite the fact that she had categorized executive thinking styles with Type II personalities, executive types in Fine Arts and Business Administration preformed better academically than other types in Fine Arts and Business Administration. However in Illustration & Design, executive types did not perform as well as other types, confirming Zhang's claims. Since one would assume that Fine Arts students and Illustration & Design students would think similarly as they are all from artistic programs, more studies would be needed to determine why this discrepancy appeared.

When investigating students' thinking style - forms, Zhang (2005) claimed that 'monarchic' forms were better suited for design than other academic areas of studies. Consequently, one would expect that more Illustration & Design students would display monarchic thinking styles than other forms of thinking styles. However, Illustration & Design students were somewhat evenly distributed as to their forms of thinking styles, especially for females. Males showed greater tendencies towards oligarchic (8) and anarchic (8) compared to monarchic (5) and hierarchic (1) forms. Overall, there were still greater oligarchic tendencies for Illustration & Design students (refer to page 44), whereas Fine Arts students are equally distributed among monarchic, oligarchic and anarchic forms (at 29 % each or 4:4:4 students respectively). In addition, 13 out of 14 Fine Art students had 'pure' scores rather than combined scores, whereas 15 out of 52 Illustration & Design students showed combined scores. This could explain the difficulty that arose for the Illustration & Design students in getting conclusive results on the TSI

questionnaires, and resulting in frustration over having to redo their TSI tests. Furthermore, considering the various forms of thinking within the Illustration & Design students, the monarchic styles performed the least (refer to Figure 5 on page 54), apparently contradicting that 'monarchic styles perform better in design' (Zhang, 2005). Therefore, the second hypothesis in this study which stated that "students who demonstrate a monarchic thinking style will perform better in design (compared to other thinking styles) but not necessarily in general studies" was disproved. Interestingly, Fine Art students with monarchic thinking styles preformed better academically than those of Illustration & Design (refer to Figure 2 on page 52). This could be explained by a difference in teaching styles between programs and teachers' expectations or grading criteria. Furthermore, since Zhang used different academic subjects to distinguish 'art and design' from 'design and technology', it is also possible that Zhang implied 'design' as in 'engineering' rather than 'artistic', which could explain the discrepancy in results. Additionally, since Zhang distinguished the Type I personality (artistic) from Type II (conventional) and including monarchic thinking styles as being of the Type II personality, it could further explain why Illustration & Design students who were monarchic did not perform as well academically as those of other thinking styles. However, it was observed that students in Illustration & Design with 'monarchic' styles performed better in their concentration courses as opposed to their over all college averages, implying that they did not perform as well in their 'general studies' or more 'academic' courses. One could assume that this could somewhat confirm Zhang's theory that they are better suited for design than academics.

A pattern that was revealed in this study is that most participants in Illustration & Design performed better in their concentration courses regardless of their thinking style. To this effect, on could rationalize that career students have chosen their respective field of study because of their aptitudes and preferences. It would therefore be logical that they would put greater effort in the courses which focus on these preferences rather than those courses which are deemed more

academic and which consequently are relegated to receiving less attention. Furthermore, many career programs have academic achievement requirements where their students must pass all their scheduled concentration courses from one semester before they can be permitted to start the next semester. Therefore, if students encounter difficulties in completing their assignments on time, the courses which usually get put aside are the ones which will not hamper their progression in their program, namely the general studies courses. The researcher has observed during the last two decades of experience within the Cegep system that, as a result of such advancement policies, there is a tendency of career program students to give lower priority to their general studies assignments.

Illustration & Design students tended to think more globally than locally (63.5 % global) whereas students in other programs are more equally distributed across the different levels of thinking styles. When comparing genders differences in levels of thinking styles, females tended to favour global thinking (27 global compared to 14 local) whereas males seemed to be divided equally between global and local (13 global, 12 local). *Chi*-square calculations revealed that none of the students' thinking styles were affected by the level of maturity.

All participants, males and females alike, appeared to demonstrate a greater tendency towards having an internal orientation rather than external. However, due to the nature of the programs studied in this research, this could simply be an indication that students had chosen the path they most preferred and enjoyed. It could also be an indication of the age and developmental stage of the participants.

Another interesting finding was that, according to Zhang (2005), 'liberal' thinking styles were associated with Type I personalities. However, in this study a greater number of students from all three programs demonstrated 'conservative' thinking styles (44 conservative, 24 liberal). The gap between conservative and liberal thinkers was less apparent for the males (15 conservative, 11 liberal) than for

the females (29 conservative, 13 liberal). This imbalance was even greater in Business Administration, but a greater sample and additional studies should be done to see if this proves to be significant. This conservative tendency could also be an indication of the students' age and developmental stage.

4. ACADEMIC PERFORMANCE

Students in Fine Arts appeared to perform better in their Total College Average (M = 79.4 %) than those of Business Administration (M = 74.8 %) or Illustration & Design (M = 74.4 %). This, as stated earlier, could be an indication of many factors. The greatest factor lies in the fact that Illustration & Design students are in one of the most intense of career programs in the college and required to take 13 classes per week totalling 30.5 hours of instruction. This does not include the additional homework involved. Fine Art students, on the other hand, are required to take 11 classes totalling only 24.5 hours of instruction. In addition, the Academic Standing and Advancement Policies in Illustration & Design specify that any student who fails a concentration course (570) cannot advance to the next semester of studies, but if he/she fails a 510 or 520 or general studies course, he/she may proceed. Consequently, many students choose to focus their energies on their 570 courses at the expense of all other courses. Business Administration, on the other hand, post the following on their web page : "a student who is missing one or two specialisation courses and/or one or two non-specialisation courses may be permitted to advance". Another repercussion of this policy is that students' Total College Average is then affected, especially when students either apply a minimum of effort to the classes that do not hinder their progress, or when they drop these altogether in order to salvage what they consider the 'most important' ones.

In addition, when comparing Figure 10, 11 and 12 below, some Illustration & Design students had Total College Averages less than 35 % which usually indicate that a student has stopped attending their classes. At least three of the participants

demonstrating these low averages are known to have dropped out of college as a result of the trauma caused by the tragic shootings of September 13, 2006. For some of the others who had dropped out, other factors could have contributed to their dropping school, namely the above mentioned heavy course load requirements or possibly family and living conditions, since many students have to work to support themselves. Nevertheless, these outlier numbers skews the accuracy of the results since they affect the mean *(m)* score of the total program.
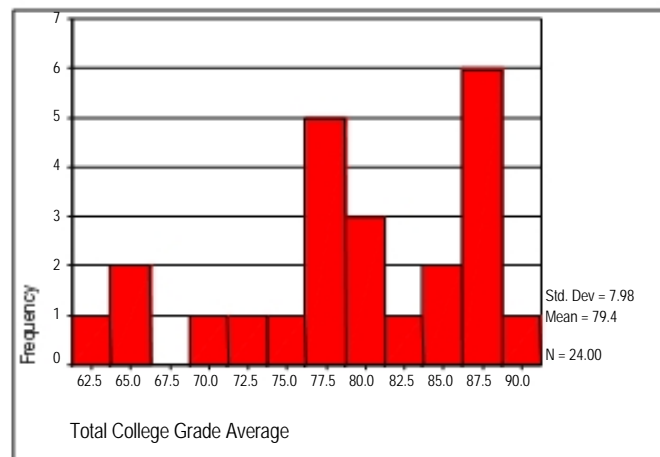
Figure 10
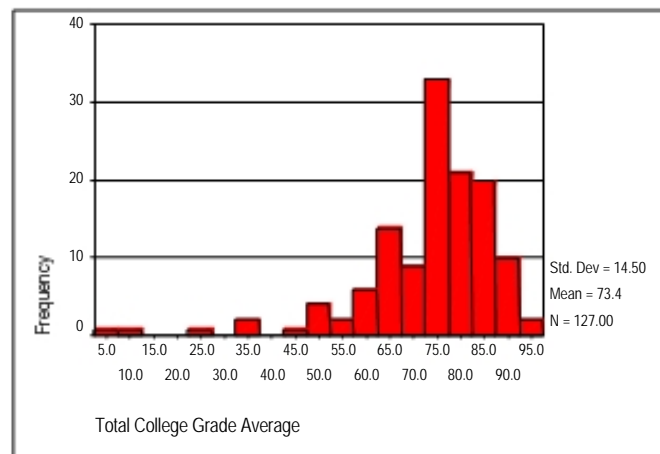Academic performance for Fine Arts students

Figure 11
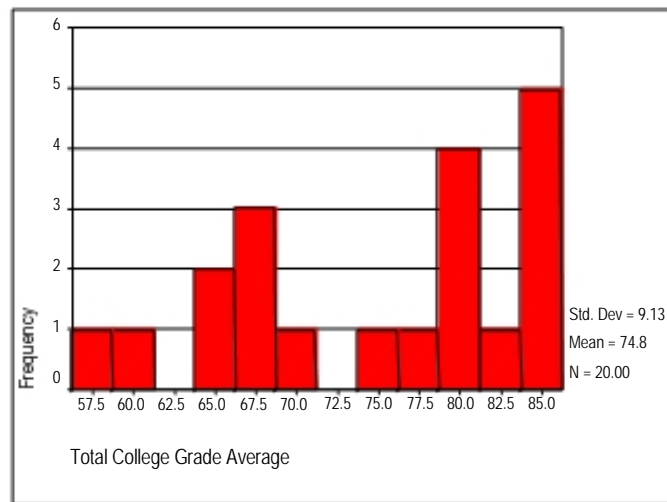Academic performance for Business Administration students

Figure 12
Academic performance for Illustration & Design students

Other factors that affect differential academic performance consist of the intensity between career and pre-university programs, or differences in teacher grading stringency and expectations. This difference was revealed in the results of the focus groups where student perception was that the Fine Arts program was easier, less intense, less restricting and much more accepting of various levels of artistic talent and technique. When comparing students' High School Averages, a similar ratio exists (79.9 / 76.7 / 75.8 for Fine Arts/ Business Administration /Illustration & Design respectively). This is not surprising since, although Illustration & Design is a career program (unlike Fine Arts), its current entrance requirement does not require a minimum High School Average other than the minimum requirement to enter Cegep, namely 65 %. Students typically choose this program because they can pursue their artistic passion without being penalized for a lower academic performance while in High School (due to lack of effort, interest or otherwise). In addition, those who pursue pre-university education (as in Fine Arts) expect to proceed to university where academic performance is an important criterion for admission. Similarly, although Business Administration is a career program, with a specific math entrance requirement, it is understood that to achieve a reasonable position in the industry, one must also obtain a university degree.

When considering academic performance in Core subjects, the pattern of discrepancies was no longer consistent with the previously mentioned ratios since Illustration & Design students outperformed Fine Arts in English (refer to Table 17, page 49).

Table 31
Portfolio score and 570 average by gender

gender		portfolio score	Total College Grade Average	Concentration Average	570 average	510/520 average
male	Mean	6.3593	69.780	73.650	74.621	74.731
	N	55	70	70	61	65
	Std. Deviation	.92964	15.3588	16.7111	17.1262	16.6776
female	Mean	6.4651	77.644	79.678	78.558	81.194
	N	61	101	99	68	86
	Std. Deviation	1.00471	10.6939	11.4209	13.0367	11.4538
Total	Mean	6.4150	74.425	77.181	76.696	78.412
	N	116	171	169	129	151
	Std. Deviation	.96711	13.3438	14.1299	15.1770	14.2591

Once again, when analysing the entire group of participants (Table 31), results showed that females (M = 77.7 %) performed better in Total College Average than males (M = 69.8 %). This difference was also reflected in their Concentration Average (females: M = 79.7 % / males: M = 73.7 %) as well as their Secondary 5 Average (females: M = 78.5 % / males: M = 73.5 %). However, within Illustration & Design specifically, considering that Portfolio Scores did not differ significantly (males: M = 63.6 % / females: M = 64.7 %), the screening procedures should be modified in order to take this into consideration. If the Portfolio Scores and High School Averages were to have equal weight for male and female applicants alike, the Illustration & Design program could risk becoming seriously disproportionate or even result into an all-female program.

This study further confirmed the findings on an earlier study (Trahan, 2005). Although there was a significant correlation between portfolio scores and academic

performance in the Illustration & Design program, the most significant indicator of academic success in any of the programs studied remains the High School Averages.

The third and fourth hypotheses stated in this study were that "students choose Illustration & Design because they are passionate about making a living doing art" and "students who choose Illustration & Design because they are passionate about making a living doing art, will perform better academically in college". The author confirmed in this study that the majority of all Illustration & Design (males = 50 % and females = 60 %) claimed that they chose their field because they loved art or had a passion for it. However, contrary to the researcher's expectations, the fourth hypothesis, mentioned above, was not proven. There was no significant difference in performance in Total College Average and in Concentration Average for participants who chose their program (Illustration & Design or other) because of intrinsic reasons (such as 'passion').

4.1 Discussion of limitations

Problems associated with data collection and sample size have already been noted. Further to that, it was difficult to measure students' desires and intentions. There are certain limitations to analyzing the degree of wanting to be in the program as measured by the reasons claimed by the students in the demographic survey and in the focus groups. It was difficult to assess the Illustration & Design students 'degree of wanting to be in the program', or whether they truly have passion for art or only say so to satisfy the admission evaluators and/or researcher, especially since the latter is also chair of the program. It was also difficult to determine the basis of their career choice. Was it because they tried other fields of study and were not accepted, and if this was their last hope? Or was this truly the only career path they had ever considered? Many other factors which can be examined and compared but could not be assessed within the confines of this particular study may also contribute to success in post-secondary education: 1-

students' background (culture, country of birth, mother tongue, socio-economic class, parent level of schooling); 2- students' prior experience (High School performance, failures or successes in certain academic fields, type of schools attended, extra curricular life,); 3- students' present circumstances (marital status, socio-economic status, living conditions and pressures, cultural factors); 4- student characteristics (motivation, self-efficacy, learning styles); 5- students' perceptions: (of themselves, of the future; of the industry, etc.); 6- and industry demands.

Furthermore, since the students in Illustration & Design have varied backgrounds (for example, they speak different languages, many come from other Canadian provinces or other countries, some live with their parents, others are self-supporting, some support families or have to shoulder other weighty responsibilities), further investigation, by means of surveys and correlational studies, should be carried out in the future. These could help to determine whether the background, language or socio-economic factors have an effect on students' academic achievement in this program. Surveys could also be used to determine if there is significance in the applicants' countries of origin or their culture, as parents from certain cultures tend to direct their children in more academic directions and tend to be prejudiced against the more artistic and expressive careers. This could result in students' failing to get the appropriate support during their studies. If such studies were to demonstrate a significant effect, a wider range of measures, other than the existing admissions procedures, would necessitate consideration.

CHAPTER SIX
CONCLUSIONS

The results of this study helped to determine how to revise the admission criteria for entrance into the Illustration & Design program at Dawson College. Although many students claimed to have a passion for art and/or illustration, this did not translate into a significant difference in their academic performance. Although Zhang (2005) claimed that Type I personality types should perform better academically and demonstrate an 'artistic' penchant, participants of Type I and Type II personalities showed no significant difference in performance in the Illustration & Design program. The only significant predictor of academic performance in the Illustration & Design program, as in any other program, was the High School Grade Averages. Therefore, the screening process for admitting applicants into the Illustration & Design program, and other artistic programs, should include, in addition to their Portfolio Evaluation scores, their academic performance as categorized by their High School Average. Since no significance was found in their Personality Types or Thinking Styles, there is no necessity to include any types of test to assess these, other than for background information.

Further studies should be undertaken to demonstrate the difference in performance between mature students who enter the program from various situations, compared to those who come directly from High School or those who are simply out of sequence with their original program cohort. In addition, it would be interesting to compare Illustration & Design to a larger pool of participants from other non-visual arts career programs to further investigate whether various career students demonstrate tendencies towards different thinking styles depending on the compentencies inherent to their field of studies. One could also compare thinking styles and personality types of students from other 'design' careers such as engineering or industrial or interior design and compare these to Illustration & Design students.

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