Psychographic Comparison of Acadia Advantage Students with Non Acadia Advantage Students

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A psychographic comparison of Acadia Advantage and non Acadia Advantage students is undertaken. Several attitudinal differences related to locus of control are found. Students in the Acadia Advantage program are found to place a greater emphasis on external locus of control than do non Acadia Advantage students.

INTRODUCTION

Acadia University is the first Canadian University to commit to computer based education throughout all of its programs. This approach has been labeled "Acadia Advantage" (AA) and is being phased in over five academic years. All first year business courses, economics courses, and statistics courses for the entering business class in 96/97 were computer based. All first year courses in all university departments were computer based in the 97/98 academic year and most sections of the second year business courses were converted to Acadia Advantage to accommodate business students who had started with computer based instruction the previous year. The conversation of third year business courses will begin with the 98/99 academic year and fourth year business courses should be available in the AA format by the following year. The other departments on campus are going through similar conversions; most of these lag the business school by one year. In all departments, the number of non AA sections is expected to decrease over time as the pre AA students cycle through the system.

The use of computers in universities has been widely discussed in the education literature. Most authors have dealt with how to implement the technology. This 'how to' literature is too extensive to be reviewed here but has ranged from how to get started using computers in the classroom (Gifford, 1996), to how to design internet based courses (Canzer, 1997), to how to lay out a classroom for computer based instruction (Shneiderman, et al., 1995), to reviews of educational software (Lantos, 1996).

There has been very little critical analysis of the pedagogical use of computer technology. This is not too surprising given that computer based education is in its infancy. Only experience will tell us what role, if any, computer based instruction should play in university level management education. Even though some authors urge expansion:

> . . . greater emphasis needs to be placed on integrating (computer) technology into the management curriculum (Clinebell and Clinebell, 1995, p. 35).

and others urge caution:

> While it is very desirable for people to know how to use computers as tools, it is even more important that they learn how to think, solve problems, make decisions, . . .(Kearsley, 1998, p. 48).

> The desire to use technology as a quick fix in education typically derives from a very superficial understanding of it - often at the administrative level where

> selection and implementation decisions are made (Kearsley, 1998, p. 50).

we do not yet have enough experience to know what the role of computers should be in the classroom. We know almost nothing about the types of students attracted to computer based instruction.

ACADIA ADVANTAGE STUDENTS

Anecdotal comments from Acadia faculty teaching AA classes indicate perceived differences between AA students and previous cohorts of Acadia students. While AA students are seen to be less prepared for university work than students entering the year before, the most striking perceived difference is attitudinal. AA students are thought to accept less responsibility for their own education than their predecessors did. The story of the student who comes to class, folds her arms, leans back in her chair, and says, "Here I am, teach me." is often repeated. The faculty's perception is that AA students are likely to see their learning as the instructors' responsibility, not their own. Students who do not feel responsible for what they learn do not feel responsible for their performance. They do not feel that they should bear the consequences for poor performance and expect something to be done about low marks.

Complaints about students are not limited to those in computer based programs or to Acadia students. Many writers think that business students, in general, are poorly prepared and unmotivated for university work. Lanier et. al (1997), for example, found them deficient in writing, speaking, and mathematical skills and Lantos (1998) calls them Generation X Slackers.

Business students sometimes see themselves as customers being served by university vendors who must supply product attributes which they demand. These product attributes include good grades which are the responsibility of the vendor, not the customer (Sparkman, 1996). Students' belief that the responsibility for their grades does not rest with themselves has been reported not only in the academic press (Decarie, 1989; Marketing Educator, 1997; Muuka, 1998), but in the popular press as well. Wiesenfeld writes in Newsweek (1996, p.16) that :

> . . . some students have developed a disgruntled-consumer approach. If they don't like their grade, they go to the "return" counter to trade it in for something better.

Leo, writing in U.S. News and World Report, (1996, p. 24) paints:

> . . . a devastating portrait of bored and unmotivated students unwilling to read or study but feeling entitled to high grades, partially because they see themselves as consumers 'buying' an education from teachers whose job it is to deliver the product . . .

Clearly, faculty complaints about AA students relate to characteristics which are unique to neither computer based education nor to Acadia University. Nonetheless, a significant difference (at least in the perception of the faculty) occurred between the last non AA entering cohort and the first group of AA students. The difference, if it is there, is one of degree and not of kind and involves the locus of responsibility for student performance.

LOCUS OF RESPONSIBILITY AND LOCUS OF CONTROL

Educators are divided on where the responsibility for students' performance should be placed. Some place it squarely on the students:

> In general, three factors account for a student's success in higher education: innate ability, the basic tools or background to handle the material, and motivation (Marketing Educator, 1997, p. 4).

while others believe that responsibility is shared between students and instructors (Miller 1996 and Lantos 1998):

> . . . responsibility for students' . . . performance outputs is shared between us and the students (Lantos, 1998, p. 3).

Where students place the locus of responsibility is related to the psychological construct of locus of control. The degree to which persons believe that their actions determine their outcomes is relatively stable. Individuals who entertain a persuasive belief that their actions determine their outcomes are defined as internals while externals believe that they have little control over what happens to them. They see their outcomes as controlled by factors residing in the external environment. Factors such as innate ability, prior preparation, and effort are internal to the individual while task difficulty and luck are external. Locus of control relates to individual responsibility through attribution. Individuals with an internal locus of control are predisposed to attribute their own successes and failures to themselves whereas individuals with an external locus of control are more likely to make attributions to external factors beyond their own control. Individuals with higher internal attributions for success and failure are more likely to have high achievement motivation resulting in higher perceived personal responsibility for success (Harvey, 1976; Ickes and Layden, 1978: Weiner et al., 1972).

The anecdotal evidence suggests that Acadia Advantage students take less responsibility for their academic performance than did previous Acadia students. This implies that they have a greater perceived external locus of control for academic performance. The purpose of this study is to test this hypothesis.

H1: AA students will score higher than non AA students on external locus of control.

METHODOLOGY

Locus of control was measured with a six factor constant sum scale. Subjects were asked to divide 100 points so that the division reflected how important each factor was to success in a business course. "My instructor" was initially included as an "external" factor but was dropped from the data set when it was realized that non AA students had the ability to select their courses and instructors whereas AA students did not. This left three internal and two external factors as follows:

Internal Factors	External Factors
How hard I work	Difficulty of the subject
My natural ability	Luck
Prior courses and education	

Responses were forced to sum to 100 in order to correct for the dropped factor. For each subject, each factor was multiplied by the sum of the five retained factors divided into 100.

Four Likert items were added to the questionnaire to measure other reported differences between AA and non AA business students. All were scored on a five point scale from Strongly Disagree to Strongly Agree with higher numbers indicating greater agreement for all four items. AA students were seen to have an almost blind faith in the computer. They seemed to believe that they did not have to fully understand a problem because the computer could solve it for them. The following item was used;

> Computers make it possible to solve business problems I don't fully understand.

AA students also reported having a strong performance to 'right answers' coming from unassailable authorities. This preference was measured with;

> The best way to find the answer to a question is to ask an expert.

Finally, AA students were reported to be less comfortable with indeterminate and complex situations than students from pre-AA cohorts. This was measured with;

> Most complex business problems have simple solutions.

and

> There is usually more than one right answer to a question.

AA students compared to non AA students were expected to have greater external locus of control and stronger agreement with the first three Likert items. Non AA students were expected to have stronger agreement with the fourth Likert item.

H2: AA students will be more likely than non AA students to believe that they can solve problems they do not completely understand using computers.

H3: AA students will be more likely than non AA students to believe that asking an expert is the best way to find the answer to a question.

H4: AA students will be more likely than non AA students to believe that most complex business problems have simple solutions.

H4: AA students will be less likely than non AA students to believe that there is usually more than one right answer to a question.

Self administered questionnaires were completed during business classes the last two weeks of the 1998 winter term. Two hundred forty five students responded. Of these, five were not useable so that two hundred forty useable responses were obtained, 155 from AA students and 85 from non AA students (see Table 1).

--- Insert Table 1 about here ---

RESULTS

AA students had significantly (alpha = .05) higher scores on external locus of control than did non AA business students (see Table 2). Their average combined score on the two external factors (difficulty and luck) was 27.9 compared to 24.8 for non AA students.

--- Insert Table 2 about here ---

The difference is significant (p = .03) and in the hypothesized direction. AA students were significantly different from non AA students on two of the five individual factors, subject difficulty (p = .003) and natural ability (p = .033). AA students allocated 21.3 points on average to the external factor subject difficulty compared to 17.2 points from non AA students. Non AA students placed more importance on the internal factor natural ability, 20.8 versus 18.3. Non AA students also scored higher on one additional internal factor, prior preparation, 18.1 versus 16.2 for AA students. The difference was not significant but the p value was small, .067. Hypothesis 1, that AA students will attach more importance to external factors for success in business courses, was supported.

AA students were significantly (p = .008) more likely to believe that computers could solve problems which were not completely understood. AA students averaged 2.94 on a one to five Likert scale while non AA students averaged 2.61. Hypothesis 2 was therefore supported. AA students were also more likely to believe that the best way to find an answer was to ask an expert. Their average score was 3.05 compared to 2.70 for non AA students. This difference is significant (p = .006) and in the hypothesized direction. Hypothesis 3 is thus supported. Hypothesis 4 is not supported by the data. The difference is not in the hypothesized direction and the t statistic is only .685. Hypothesis 5 is supported. AA students were significantly (p = .00002) less likely than non AA students to believe that there was usually more than one right answer to a question. Their average Likert score was 3.56 compared to 4.12 for non AA students.

DISCUSSION AND LIMITATIONS

The major limitation of this study is that it is almost completely confounded. Almost all AA business students are first and second year and almost all non-AA business students are in their third and fourth years. Although confounding was built into the AA conversion process itself and was thus unavoidable, it did introduce two extraneous effects into the data. The first is maturation, third and fourth year students may differ from first and second year students because of the two year difference in age and in university experience. The second possible effect is a trend effect. Leo (1996) and others noted a progressive change in the attitudes of entering university students between the mid 1980's and the mid 1990's. If the trend is continuing, differences should be expected between cohorts with or without changes in teaching technology.

Even though the confounding problem is inescapable, it does not invalidate the data for several reasons. The first is that the differences are too large to be explained by simple one or two year trend extrapolations. In addition, some of the constructs being measured, and particularly locus of control, are stable over time. The final and perhaps most compelling reason is that the differences between AA students and previous incoming classes at Acadia University were first noted by the teaching faculty. The faculty would have made comparisons with earlier entering classes, in other words AA students were compared to students at similar stages of maturity and education. Anything which could have been explained by a continuation of a trend would not have been worthy of note. Clearly, there was something markedly different about these students, at least in the perception of those who taught them.

This study validates the faculty's subjective perception of AA students compared with previous cohorts at Acadia University because the hypotheses which were generated from faculty observation were supported in four out of five cases. Not surprisingly, AA students had more faith in computers and were willing to accept computers' answers to questions they did not themselves understand. They also believed that the world was more definite, a world where questions have single answers and those answers are best obtained by asking an expert. AA students have significantly higher external locus of control. Although the difference is not large in an absolute sense (27.9 - 24.8 or 3.1 out of 100) it is probably important. Bear in mind that universities draw from high internal locus of control populations and that AA students scored 12.5% higher (3.1/24.8) than non-AA students on external locus of control.

AA students are different, but, why? Is there something about the technology which attracts more external students wanting a simpler world where experts or machines do their thinking for them? Did the technology itself change the students? Our measurements were made at the end of one or two years of computer based education. Faculty observation and psychological theory strongly suggest that the students were different at the beginning of the process but we can not rule out the possibility that they were also changed by the AA experience itself. The initial differences between AA and non-AA students may be due to prosaic causes having little direct relevance to the teaching technology itself. For example, the introduction of AA was accompanied by a significant increase in tuition. This would have to have changed the population the incoming class was drawn from. There is some disagreement between faculty and administrators, but some believe the decreased number of applications was produced by AA and resulted in the lowering of entry standards. Thus it is possible that the differences between AA and non-AA students reflect nothing more sophisticated than lower levels of preparation and motivation out of high school or conversely the results of drawing from a more affluent population.

This study answers the question "Are AA students different?" Yes they are. Additional research is needed to answer the question "Why?" More information is needed on class standings out of high school, family income distribution, and other factors. It would also be useful to collect data from students who have selected computer based education but have not yet experienced it. These data could then be compared to data obtained one, two, or three years into the process to separate differences which may be due to the teaching methods themselves from sampling differences. We are at the beginning of a new and potentially powerful teaching technology. It is important to understand both what types of students it attracts and what effects it has on those students.

Table 1

	AA Students	Non-AA Students	Total
Male	59	39	98
Female	81	45	126
Gender Question Not answered	16	0	16
Total	156	84	240

Table 2

	AA Students	Non-AA Students	t* Statistic
Locus of Control:			
Over All External	27.9	24.8	1.84+
Subject Difficulty	21.3	17.2	2.81+
Luck	6.6	7.6	1.09
Over All Internal	72.1	75.2	
How Hard I Work	37.6	36.3	.64
Ability	18.3	20.8	1.85+
Prior Preparation	16.2	18.1	1.50
More than one right answer	3.56	4.12	4.78+
Complex problems have simple solutions	2.88	2.96	.69
Ask an expert	3.05	2.70	2.71+
Computers can solve	2.94	2.61	2.39+

* t Critical one-tail = 1.65

+ Significant at .05

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