2002 - 2004 Three-Year Longitudinal Study
College Student Inventory

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The College Student Inventory (CSI) of the Noel-Levitz Retention Management System is a measurement tool that asks students to reflect on academic, personal, and social experiences and perspectives. The University of North Dakota has administered the CSI Form B to incoming freshmen during the summer orientation since 2002 and for the following three consecutive years. The overall number of freshmen who participated in this survey have been: 1,722 in 2002, 1,998 in 2003, and 1,687 in 2004. Freshmen provide their cognitive and affective attrition indicators through the survey. There are three CSI reports produced by Noel-Levitz. The first report is for each individual student, second for each student’s academic advisor, and, the third is an overall institutional report.

CSI contains 100 Likert-type items. Each item uses a Likert scale of 1 to 7 with 1 equaling “Not At All True” and with 7 meaning “Completely True”. Principal component factor extraction with Varimax rotations was used to simplify the resulting factor structures along with maximizing the loadings. In order to be accepted in the rotated matrix, each factor required an eigenvalue greater than one for the determination of the common factors. This process yielded seventeen orthogonal factors. Factor scores were generated for these 17 variables and were converted to a standard score with a mean of 50 and a standard deviation of 10. Student responses to these items are therefore summarized within 17 different scales (Appendix 1). To check the internal consistency and to determine the reliability of the 100 items as a group and each of the subscales, Cronbach’s alpha was calculated. The scales include: 1) Study Habits, 2) Intellectual Interests, 3) Verbal Confidence, 4) Math and Science Confidence, 5) Desire to Finish College, 6) Attitude Toward Educators, 7) Sociability, 8) Family Emotional Support, 9) Opinion Tolerance, 10) Career Closure, 11) Sense of Financial Security, 12) Academic Assistance (receptivity), 13) Personal Counseling (receptivity), 14) Social Enrichment (receptivity), 15) Career Counseling (receptivity), 16) Financial Guidance (receptivity), and 17) Internal Validity.

These 17 factors are then organized generally under three categories: Academic Motivation, General Coping Skills, and Receptivity to Support Services. The CSI also weighs the above scales to construct four compound scales, each designed to summarize any given student’s Academic Motivation: 1) Dropout Proneness, 2) Predicted Academic Difficulty, 3) Educational Stress, and 4) Receptivity to Institutional Help. The focus in this study will be on the first scale: Dropout Proneness. The Dropout Proneness scale is designed to measure a student’s overall inclination to drop out of college before completing a degree. The students included on the list of “Students with High Dropout Proneness” as part of Summary and Planning Report are those with percentile scores on dropout proneness of 65 or higher.

According to the planning report, it appears that our fall 2002 incoming freshmen class (873 male and 849 female) near the national norm on 13 of the 16 scales (not including the Internal Validity) measured by the CSI. Overall, UND entering freshmen are below the national norm for dropout proneness, predicted academic difficulty, educational stress, and receptivity to institutional help. This suggests that our freshmen are less likely to drop out, have academic difficulty or have higher levels of educational stress than average college students are, but are also less likely to be receptive to receiving institutional help. However, below average mean scores have been found in the areas of academic assistance, personal counseling, and career counseling within UND’s entering freshmen. On several of the CSI scales, there appear to be significant differences across gender lines. UND male students fell below national averages on study habits, intellectual interests, desire to finish college, receptivity to academic assistance and career counseling. UND entering freshmen males are also more likely to drop out or experience academic difficulty than their female counterparts.

In addition, Noel-Levitz provided UND a planning report which includes lists of students who fall into the following categories: 1) students with high dropout proneness, 2) who are highly receptive to institutional help, 3) those needing academic assistance, 4) who might benefit from personal counseling, 5) who might benefit from career counseling, 6) who need social enhancement, and 7) who are highly receptive to institutional help of. The overall number of freshmen who participated in this survey (1,722 in 2002, 1,998 in 2003, and 1,687 in 2004), the percentage of freshman identified with high dropout proneness has been increasing every year (17% in 2002, 20% in 2003, and 25% in 2004).

This study first compares the mean GPA of respondents by each academic semester and by college where the respondents enrolled in order to assess the impact of academic advising and subsequent mentoring that occurred during the students’ freshman year. The purpose of this longitudinal study was to assess the usefulness of the high dropout indicator as a preventive tool to enhance enrollment status and academic success in freshmen attending
Among 1,722 respondents who participated in the 2002 CSI, 288 were classified in the Dropout Prone Group and 1,434 were classified in the Not Prone Group. A total of 1,673 respondents (277 on the Dropout Prone Group and 1,396 on the Not Prone Group) registered for the Fall semester of 2002. After one-year studying at UND, the Dropout Prone Group consisting of 239 students had an average cumulative GPA of 2.39 while the Not Prone Group consisting of 1,327 students had an average cumulative GPA of 3.06.

Further, differences in the first-year cumulative GPA between respondents enrolled at different colleges within UND also exist. 2002 CSI respondents enrolled in the College of Nursing achieved a GPA of 3.17, followed by the School of Engineering and Mines (3.11), School of Aerospace Sciences (3.03), College of Arts and Science (2.98), School of Medicine and Health Science (2.97), College of Business and Public Administration (2.94), College of Education and Human Development (2.91), and major undecided (2.56).

A relatively higher retention rate was consistently observed in the Not Prone Group than its counterpart, the Dropout Prone Group, throughout different points of time, and is also reflected in all three surveys. The retention rates of the 2002 CSI respondents after completion of one year at UND are 83% for the Not Prone Group compared to 70% for the Dropout Prone Group. After completion of two years at UND, the retention rates of the 2002 CSI respondents are reduced to 76% for the Not Prone Group, compared to 57% for the Dropout Prone Group. The 2003 CSI respondents show one-year retention rates at UND of 80% for the Not Prone Group, compared to 61% for the Dropout Prone Group.

The data analysis conducted for the three research questions involved an analysis cycle to determine which, if any, of the 16 scales of the CSI distinguish enrollment status and academic success in full-time first-time freshmen attending UND in fall 2002. Three specific research questions generated for this study were as follows:

Research question 1. Is there a significant difference in students who were identified as dropout prone and those who were on the lower risk group on all 16 scales of the CSI?

Research question 2. Is there a significant difference between academically successful students and academically unsuccessful students on all 16 scales of the CSI?

Research question 3. Is there a significant difference between male and female students on all 16 scales of the CSI?

This study examined the useful of the CSI as a needs assessment tool at UND. The data analysis for all research questions included the Hotelling’s $T^2$ multivariate analysis, analysis of variance (ANOVA), and t-test. If significant differences in any of the 16 scales existed as a result of the multivariate analysis, the analysis of variance was performed to test for significant differences in the mean responses of each item that comprise the scale. The remaining test in the analysis involved a t-test to indicate which group responded lower or higher than the other to the particular item. This investigation revealed that the CSI distinguishes differences in students who were dropout prone and those who were lower risks and specific academic groups (GPA $\geq$ 2.0 and GPA <2.0). However, the findings of the study were limited to information included in the enrollment data and student response to the CSI.

TheCSI information helps students reflect on how to maximize their college experience, helps academic advisors equip with specific intervention strategies (Appendix 3) and able to identify students with particular concerns and, gives the Enrollment Management team a snapshot of the first year students as a group. The CSI also permits UND to assess incoming freshmen college preparedness, their individual academic and personal needs, and issues which students face. CSI has shown as a reliable longitudinal research and measurement tool to gather individual information that reflects each freshman’s orientation to college, motivation, receptivity to assistance, and subsequent retention. Students can get immediate intervention in specific problem areas identified by this instrument. Intervention can be extended to all freshmen who may drop out during their first year at college with or without displaying visible warning signs.

The presentation has focused on how the data was analyzed to have the maximum impact on planning. Some of the preliminary results of the statistical analysis and projective modeling gathered from the phase one study were discussed. UND campus has been very focused on the implementation of its strategic plan based largely on the data gathered by the Office of Institutional Research. In summary, this presentation is to demonstrate how institutional researchers can become significant contributors to the accountability of retention management, strategic planning, assessment, or accreditation process at their institutions.