Expanding Students' Voice in Assessment through Senior Survey Research

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Abstract

Based on a trend study of 970 graduating seniors, this paper presents a model for designing senior survey research studies to achieve optimum impact on assessment and policy development. The paper demonstrates how the link between research and policy was achieved through the conceptual organization, design and statistical analyses of the study. Confirming findings from previous research, this study identified some unique predictors of the two major dependent variables. The perception of having gained in-depth knowledge of a field was the strongest predictor of overall satisfaction, while satisfaction with the campus social life was the strongest predictor of the likelihood of choosing the same college again.

Introduction

Purpose. This paper presents a model for designing senior survey research studies to achieve optimum impact on assessment and policy development. Based on a completed senior survey trend study, the paper explains how the link between research and policy was achieved by conceptually organizing the study in relation to the institution's mission, the goals of the undergraduate curriculum and the structure of undergraduate programs; by addressing policy relevant questions in the analyses; and by developing strategic policy recommendations to capitalize on the college's strengths and enhance areas in need of improvement.

Major research questions addressed in the study include the following:

- To what extent do graduating seniors think college enhanced their abilities?
- How satisfied are graduating seniors with college academic experiences and student life?

- How does assessment of college impact and satisfaction vary by gender and citizenship?
- What are the significant predictors of graduating seniors' overall satisfaction?
- What are the significant predictors of seniors' re-evaluation of their college choice?

Review of the Literature

Literature on the assessment of undergraduate education provides the foundation and context for the present study. Relevant themes from this literature include: designing assessment to measure college impact; incorporating students' voice in assessment; using self-reported data to assess gain; understanding differences in assessment by student characteristics; and identifying predictors of overall satisfaction and re-evaluation of college choice.

Designing assessment to measure college impact. One of the critical principles of good practice in assessment is that programs have clear, explicitly stated purposes (AAHE, l992). As Banta, Lund, Black, and Oblander (l996) observe, an institutional mission statement is not sufficient as a basis for a comprehensive assessment program. The mission and values must be translated into specific and realistic goals for each academic program and student service to represent the direction in which faculty and administrators wish to see students grow and develop. In agreement with this view, Ratcliff (l995) recommends replacing outlines of course content with specific cognitive goals as a way to influence how faculty organize learning and promote student growth.

Evaluating college in terms of student growth is a basic premise of college impact theories. Such theories assume that a primary purpose of a college education is to enhance student growth, and that higher education

institutions should be measured in terms of their impact on students. Tam (2002) elaborates on the implications of this theoretical perspective.

> This college impact approach to gauge the effects of the college on student outcomes is consistent with the view that higher education can literally transform one's self-image, equip the individual with more skills, build on the basis of the knowledge that the individual had before arrival and change attitudes and assumptions. (p. 217)

Based on empirical evidence of the impact of college on students, Pascarella and Terenzini (l995) claim that college facilitates a broad range of desirable changes that do not occur to the same extent to similar individuals who don't attend college. Terenzini, Springer, Pascarella and Nora (l995) report that academic and non-academic experiences both separately and jointly affect student learning, thus providing evidence that college's effects are holistic.

Incorporating students' voice in assessment Given the potential influence of college on students' development, it seems logical to consider students' perception of college impact and to include their voice in assessment studies. Ewell (1983) proposed that by using student satisfaction assessment results to shape institutional reform, institutions are validating the importance of the students' "voice." Supporting this view, Lingrell (1992) observed that because the ultimate beneficiary of assessment is the student it only seems appropriate to ask the student what he or she thinks.

However, Twombly (l992) noted that the meaning students attach to the curriculum is a sadly neglected area of study. More recently, Keller-Wolff, Eason, and Hinds (2000) also reported that despite the comprehensive studies of curriculum and its affect on students, the student perspective is largely absent from the literature. The consequences of this omission are significant.

In her discussion on "Moving Assessment Forward: Enabling Conditions and Stumbling Blocks," Banta (l997) observed that insufficient involvement of students in assessment can contribute to its downfall. Further, Barr and Tagg (l995) claim that the lack of student voice in assessing the impact of curriculum is inconsistent with higher education's shift from a paradigm that emphasizes teaching to one that emphasizes learning.

Proposing a way to change the situation, Lingrell (1992) identified the senior survey as an ideal vehicle for incorporating students' voice. He suggested that senior survey assessment information could be used to: recognize outstanding programs and teaching; improve admissions, instruction, and retention; and prepare for

accreditation review. In this way, annual senior surveys may serve as a catalyst toward institutional reform. Nelson and Johnson (l997) provide examples illustrating how senior surveys may serve as vehicles for achieving program improvement in various areas, including the curriculum, career services and student advising. Cheng's (2001) research provides an excellent example of how an externally developed senior survey may be used to construct a model for assessing student collegiate experience and producing outcome measures in an institution's assessment effort.

Gardner and Van der Veer (l998) identify the senior year as a unique time to elicit student feedback. Drawing on anthropological terminology, the authors describe seniors as being in a 'liminal' state in which they can reflect on the experiences they are about to leave and anticipate the world of work or graduate school they are about to enter. By virtue of this transitional state, seniors can provide more complex and insightful perspectives than might be gained from students during or after their college years. Further, the authors contend that surveys may generate valuable information about program effectiveness.

Two major assessment topics typically addressed in a senior survey include student perceptions of what they have learned and gained through their college experience and student satisfaction with programs and services. With regard to perceived learning and benefit gained from college, Pascarella and Terenzini (l991) claim that the breadth of change is the most striking phenomenon in how college affects students, not only in factual knowledge but also in terms of general cognitive and intellectual skills and value, attitudinal, psychosocial, and moral dimensions. More recently, Pascarella and Terenzini (l998) also argue that the demographic, institutional, and economic changes that have occurred during the last three decades require a fundamental change both in how we think about what it means to go to college and in what methodologies we use to assess college impact.

In addition to addressing perceived growth, senior surveys also typically elicit student satisfaction with their experience. This assessment topic is important both to the health of the institution and to student success. Shreiner and Juillerat (1997) recommend that higher education institutions give serious consideration to students' satisfaction results as a way to recognize the institutional strengths as well as areas in need of improvement. Such assessments can assist institutions in establishing annual benchmarking of their student population; tracking the impact of new initiatives on student satisfaction; and identifying current strengths for recruitment activities. Further, these assessments can provide regular feedback to an institution's internal and external constituents on the effectiveness of all campus programs and services. Highlighting the importance of

student satisfaction to student success, Walker-Marshall and Hudson (l999) reported that satisfied students were more likely to be successful and students with high levels of satisfaction in their freshman year were more likely to persist in college.

Using self-reported data in assessment   . Using senior survey data as a vehicle for assessment raises an important methodological issue, i.e., the assumption that self-reported data is a valid measure of college impact. For some time, researchers have debated the validity of this assumption.

Several early studies yielded evidence of a positive, significant relationship between self-reported data and tested knowledge. For example, Berdie (l971)   found moderate to strong correlations between what students said they knew and what they actually knew as measured by an achievement test. His findings supported the conclusion that asking people whether they possess information may be a satisfactory method for testing their knowledge, particularly with respect to knowledge of authors and public figures. Similarly, Baird (l976) discovered substantial and significant correlations between self-ratings of writing, reading, mathematical and scientific ability and scores on various graduate and professional school admission tests. In his discussion on student outcomes research, Pace (l985) claimed that college students are generally accurate reporters and their judgments of what they have gained are consistent both with external evidence, when it exists, and with what we might expect based on their activities and interest.

Also offering evidence to support the validity of self-reported data, Anaya (l999) found that comparable results were obtained when using student reported cognitive growth with college GPA and standardized test scores, and therefore concluded that self-reported gains are valid measures that can be used as proxies for more direct measures of learning. Hill, Perry and Stein (l998) assert that self-reported data, in combination with other assessment techniques, can provide useful and important information at a relatively low cost on a broad spectrum of topics. They also maintain that surveys which focus on students' self-perception of their educational experiences can provide insightful measurements and help to gauge whether skills taught have been internalized by the students. Expressing a similar view, Glynn and Rajendran (l993) claim that student perceptions provide for a r icher, m ore in clusive o utcomes assessment process. They present their perceptual-based study of a marketing curriculum to illustrate how incorporating students' perceptions of the relevance of the curricular material into the outcomes assessment process can provide valuable insight into curricular strengths and weaknesses.

However, Pike (l995) offers some qualification regarding the relationship between self reports and traditional achievement measures. Based on his multitrait-multimethod analyses of self reports and test scores, he concludes that using self reports as general indicators of achievement can be justified, but substituting self reports for test scores cannot be justified. Pike (l999) cites another limitation of self-reported data. He asserts that "halo error" may be an important component in students' ratings of their learning and development and that "halo error" may obscure relationships between college experiences and educational outcomes. Pascarella (2001) contends that self-reported gains in growth do not permit the same level of internal validity as does assessing gains with a pretest-posttest design. He proposes introducing a control variable, a measure of students' openness or receptivity to e ducational e xperiences w hen t hey e nter c ollege. Pascarella suggests that self-reported data may then represent a convenient alternative to more expensive and time-consuming standardized tests as a method for estimating the impact of college on students.

Understanding differences in assessment by student characteristics. Previous research suggests that gender and citizenship may account for significant differences in students' college experience. With respect to gender, Hearn (l985) found that faculty availability and stimulating course work were more critical for women than men as determinants of graduating seniors' overall evaluation of the academic program. Tatro (l995) identified gender effects on student evaluation of faculty, with females giving higher ratings than males. Lee, Keough and Sexton (2002) discovered that, compared with women, men were more likely to negatively appraise the campus climate and social connectedness was more related to lower stress levels among men.

With regard to citizenship, Delaney (2002) reported that international students attributed more importance to artistic and intellectual goals. They were more interested in achieving in a performing art and in creating artistic work and put more emphasis on a general education as a reason for attending college. In terms of activities and interests, international students spent more time talking with teachers outside of class and studying or doing homework, while domestic students spent more time socializing with friends and engaging in exercise and sports. Other research highlights the importance of language proficiency to international students' adjustment to U.S. campuses. Bunz (1997) describes the change in language as the most important adjustment for international students from Western European countries attending American universities. Echoing similar findings, Zimmerman (l995) and Nicholson (2001) identified a deficiency in language proficiency as an impediment to international students' adjustment to American culture.

Identifying predictors of overall satisfaction and re-evaluation of college choice. Understanding what factors influence overall satisfaction is crucial to promoting continuous improvement both at the institutional and student level. Examining a variety of factors, Browne, Kaldenberg, Browne, and Brown (l998) found that global satisfaction with college tended to be driven by the student's assessment of the quality of the course work and other curriculum related factors, while another set of factors, involving interaction with personnel and how students were treated, was more predictive of whether or not a student would recommend a college   to a friend. Franklin (l994) identified satisfaction with one's major; perceived g rowth i n p ersonal d evelopment; e nhanced analytical p roblem s olving s kills; a nd s atisfaction w ith individual components of the educational experience as predictors of overall satisfaction. Franklin and Knight (l995) discovered that students use the following criteria to determine their satisfaction with higher education: finding pride and inner satisfaction with accomplishments; a flexible curriculum; a university with status and prestige; a university degree that leads to career opportunities; the encouragement of student involvement; a caring faculty; an opportunity for independence; a student-oriented university administration; and a university experience that provides an opportunity for growth and development. Elliott and Healy (2001) found that performance gaps - differences between importance and satisfaction - on student centeredness, campus climate and instructional effectiveness were strong and significant predictors of students' overall satisfaction.

Lamport's (l993) review of the literature highlights the importance of student-faculty interaction to students' overall satisfaction with college. This body of research indicates that interaction provides opportunities for personal encounters and for sharing work and ideas that yield satisfying experiences for students and faculty. More recently, Kuh and Hu (2001) confirmed that both substantive and out-of-class contacts with faculty positively influenced what students get from their college experience, their views of the college environment, and their satisfaction. Their research, with over 5,000 students from 126 colleges and universities, also revealed that the positive effects of student-faculty contact on satisfaction and gain were mediated through the effects that students expend in other activities. Students who were better prepared academically tended to interact more frequently with faculty.

The present study incorporates many of the variables identified in the literature in order to better understand what factors impact students' growth and what experiences affect their overall satisfaction. The study represents an effort to utilize senior survey research as part of an assessment program.

Methodology

Data Source. Findings in this study are based on analyses of senior survey results for the graduating classes at a private, selective business college in the Northeast. The college enrolls approximately 1,700 undergraduate students from most of the 50 states, many U.S. territories, and some 70 other countries. Approximately 39 percent of the undergraduate population are female and about 20 percent are international students.

The data include responses from l997, l998, l999 and 2001 graduating seniors, because a similar survey was used during these years. The total number of cases is 970, representing a response rate of 67 percent. Annual response rates ranged from 64 percent in l999 to 71 percent in 2001. Data were collected by mail from l997 through l999 and by mail and on-line in 2001.

Research Model. The study involves the application of a statistical and evaluation model designed to expand students' voice in assessment and achieve optimum impact on policy through effective use of senior survey research. This model involves the following steps:

- Review the institutional mission.
- Identify the goals of the undergraduate academic program.
- Define the major components of the undergraduate student life experience.
- Develop a means to evaluate academic goal achievement and satisfaction with student life.
- Design a statistical analysis plan to address planning and policy issues.
- Translate the results into recommendations for planning and policy development.

The following discussion describes how this model was applied in the present study.

1. Review the institutional mission. A college mission statement reflects the institution's vision and values. It serves as a focal point for curricular and program planning and therefore provides a useful reference in an assessment study. The study College's mission is to be an internationally recognized leader in management education. Through its programs and practices, the College educates innovative leaders capable of anticipating, initiating, and managing change. In a climate of entrepreneurial spirit, creative and analytical thinking, global p erspectives, c ontinuous l earning a nd s ocial responsibility, m en a nd w omen o f d ifferent c ultures, origins, and life stages learn together to define the opportunities of the future. The goals articulated in this mission statement are reflected in the undergraduate curriculum, and several were operationally defined in the

senior survey. Graduating seniors were asked to evaluate to what extent their education enhanced their ability to lead, be an effective team member, develop awareness of social problems, formulate creative ideas, acquire new skills and knowledge, and think analytically.

2. Identify the goals of the undergraduate academic program. Undergraduate program publications were used as the source for identifying the major goals of the academic program. The following five major competencies of the undergraduate curriculum defined the goals: leadership/teamwork/creativity, rhetoric, numeracy and technology, ethics and social responsibility, and international/multi-cultural perspectives. Specific questionnaire items were generated to represent these competencies. Additional items were created to address more general, intellectual and personal growth goals of a college education.

3. Define the major components of the undergraduate student life experience. College publications were used to identify the major components of undergraduate student life, including the academic program, residential life, campus life, personal development opportunities, student services and other college resources.

4. Develop a means to evaluate academic goal achievement and satisfaction with student life. A customized senior survey was designed for this study. The major section focused on students' evaluation of their education with respect to goals accomplished and level of satisfaction experienced. Specific questionnaire items were created in each of these major areas. For example, academic experience items included the quality of course instruction, faculty attitude and availability, academic advising, and availability of courses. Additional questions solicited information about students' participation in college experiences, their career values, educational and career plans, and selected demographic and academic background information. The majority of items were common to a consortium senior survey, thus providing a basis for comparison with peer institutions.

5. Design a statistical analysis plan to address planning and policy issues. The analyses followed a systematic plan, focusing first on univariate results in summary form. Next, bivariate analyses were conducted to identify relationships between individual student characteristics and assessment and satisfaction. Analysis of variance was employed to answer the following questions: How have graduating seniors' evaluation and levels of satisfaction changed over time? Are there significant differences in evaluation and satisfaction between male and female and between domestic and international students? Multiple regression was used to predict overall satisfaction and to simulate how improvements in one area might increase overall satisfaction. Logistic regression was utilized to predict the probability of choosing the same institution and to assess how changes

in one area would affect students' decision to choose the same college again.

6. Translate the results of the study into recommendations for planning and policy development. To ensure an impact on policy, results from this study were translated into 12 strategic policy recommendations. Five recommendations proposed initiatives that might be developed to address areas of weakness and seven recommendations suggested ways positive results might be used to exploit the institution's strengths.

Results

Significant Differences in Assessment by Year.
Data presented in Table 1 reflect graduating seniors' assessment of the College's influence on their competencies and intellectual and personal growth. Several of the means show slight to moderate decreases. In addition, the differences between some means are statistically significant. Three of the decreases may be the result of changes in wording in the 2001 survey: from team membership to cooperativeness; from use quantitative tools to math ability; and from oral communication to public speaking. Other statistically significant differences may be because of the large number of cases. Therefore, the analysis focuses primarily on overall results.

The overall data, summarized in the total column, reveal that graduating seniors think their college education had a very positive influence on their leadership/ teamwork/creativity competency; the three total mean ratings exceed 3.0. Next in order, graduating seniors consistently report the highest ratings on the rhetoric competency, particularly oral communication, while they report lower ratings on both the ethics and social responsibility and international/multi-cultural perspective competencies. Within the numeracy and technology competency, students consistently rate their education very highly on the ability to use computers, while they report lower ratings for the effect of their education on their quantitative skills and ability to understand the process of science.

Results presented in Table 1 also show that seniors consistently evaluate their college education very positively regarding its effect on their intellectual growth. From l997 through 2001, they report mean ratings close to 3.30 or higher for the impact of their education on their ability to acquire new skills and knowledge; gain in-depth knowledge; and think analytically and logically. The increased ratings for acquiring new skills and knowledge and decreased ratings for gaining in-depth knowledge of a field are consistent with a change in emphasis from the old to the new curriculum. The new curriculum replaced majors w ith a n i ntegrated a pproach t o l earning a nd intensified focus on developing students' capacity for

continuous learning. The Class of 2001 was the first class to experience the new curriculum. With regard to personal growth, students perceive a moderately positive effect on the ability to understand themselves, but very little effect on their ability to appreciate the arts.

Table 1
Annual Assessment of the College's Influence on Student Competencies

Competencies	1997	1998	1999	2001	Total	F Ratio
A. Curriculum Competencies						
Leadership/Teamwork/Creativity						
Lead and Supervise	3.35	3.47	3.35	3.33	3.37	1.64
Team Member/Cooperativeness+	3.56	3.48	3.40	3.11	3.37	19.21***
Formulate Creative Ideas	3.19	3.22	3.05	2.95	3.10	6.24***
Numeracy and Technology						
Use Computers	3.53	3.55	3.48	3.52	3.52	.36
Use Quantative Tools/Math Ability+	2.90	3.18	2.99	2.53	2.89	27.41***
Understanding the Process of Science	-	1.75	1.68	2.06	1.84	17.69***
Rhetoric						
Oral Communication/Public Speaking+	3.44	3.44	3.30	3.24	3.35	5.13**
Write Effectively	3.10	3.07	2.91	2.98	3.01	2.69*
Ethics and Social Responsibility						
Identify moral and ethical issues	2.71	2.60	2.48	2.63	2.61	2.75*
Develop awareness of social problems	-	2.38	2.26	2.34	2.33	1.04
International/Multi-Cultural Perspective						
Relate well to people of diff. races	2.96	3.02	2.76	-	2.92	5.02**
Read or speak a foreign language	1.49	1.56	1.46	1.65	1.55	1.92
B. Intellectual and Personal Growth						
Intellectual Growth						
Acquire new skills and knowledge	3.37	3.32	3.28	3.62	3.41	13.78***
Gain in-depth knowledge of a field	3.41	3.39	3.30	3.26	3.34	2.43
Think analytically and logically	3.46	3.43	3.29	3.25	3.35	5.25***
Personal Growth						
Understand myself	3.19	3.16	3.07	2.94	3.08	4.70**
Appreciate the arts	1.98	1.90	1.82	2.12	1.96	5.38***

Notes: These mean ratings are based on the following scale: 1 'not at all', 2 'a little', 3 'moderately', and 4 'greatly'.

+ The second item was used in the 2001 survey.

 * p < .05 ** p < .01 *** < .001

Figure 1 graphically summarizes graduating seniors' assessment of the impact of undergraduate education on students' competencies and growth. Based on relative gaps in the total mean ratings for the four years, competencies are classified in three categories indicating the perception of a strong, moderate, or weak effect. As shown, the perceived effect is strong for the effect of undergraduate education on the ability to use computers, and on enhanced ability to acquire new skills and knowledge, think analytically, lead and supervise, be an effective team member, speak in public, and gain in-depth knowledge of a field. In marked contrast, the

perceived effect is weak for the effect of undergraduate education on understanding of ethics, awareness of social problems, ability to appreciate the arts, and read or speak a foreign language.

Several of the competencies rated highly by students - including the ability to lead and supervise, be an effective team member, acquire new skills and knowledge, and think analytically and logically - relate to the College's mission to prepare innovative leaders with a commitment to continuous learning.

Figure 1
Overall Assessment of College Impact on Student Competencies
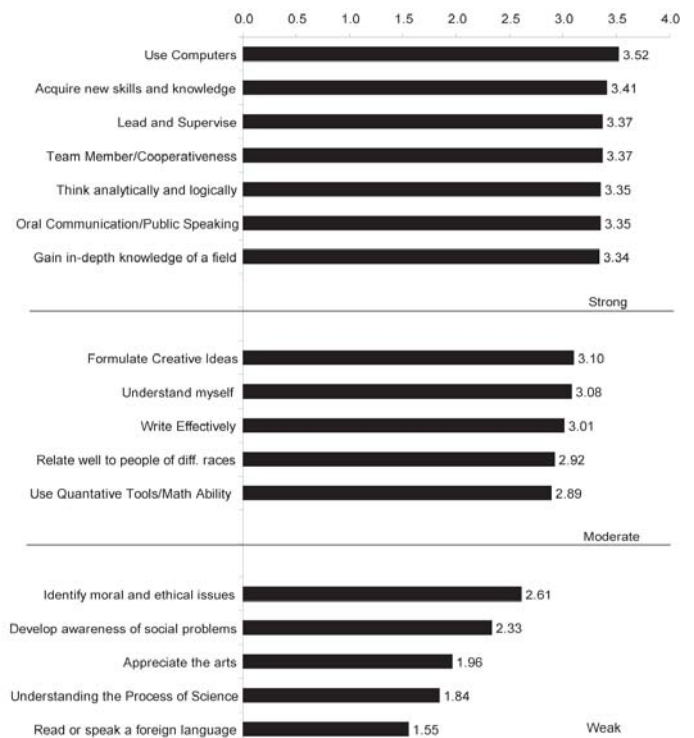
Significant Differences in Assessment by Gender and Citizenship. Two-way analyses of variance were conducted to examine the relationship between gender and citizenship and graduating seniors' assessment of the impact of their education. Results from these analyses, identifying main and interaction effects, are presented in Table 2.

As shown, female graduating seniors reported significantly higher ratings for the effect of their education on four competencies and areas of growth. The largest difference occurs with respect to 'understanding myself.' Female seniors report a mean of 3.21, compared with 2.98 for the males. While both males and females report high ratings for the effect of their education on leadership and oral communication, female ratings are significantly

Table 2
Significant Differences by Gender and Citizenship in
Assessment of College Impact

Mean Ratings				
Gender Differences	**Female**	**Male**	**Difference**	**F ratio**
Lead and Supervise	3.46	3.30	.16	3.86*
Oral Communication/Public Speaking +	3.42	3.28	.14	3.95*
Read or Speak a Foreign Language	1.64	1.46	.18	4.49*
Understand Myself	3.21	2.98	.23	5.60*

Mean Ratings				
Differences by Citizenship	**International**	**U.S. Citizen**	**Difference**	**F ratio**
Read or Speak a Foreign Language	2.17	1.42	.75	86.72***
Write Effectively	3.17	2.99	.18	5.93*
Appreciate the Arts	2.17	1.93	.24	9.10**
Acquire New Skills and Knowledge	3.53	3.38	.15	5.94*

Mean Ratings			
Interaction by Gender * Citizenship	**Female**	**Male**	**F ratio**
Formulate Creative Ideas			7.97**
International	2.98	3.28	
U.S.Citizen	3.14	3.03	
Gain In-depth Knowledge			4.45*
International	3.22	3.45	
U.S.Citizen	3.36	3.31	

Notes: These mean ratings are based on the following scale: 1 'not at all', 2 'a little', 3 'moderately', and 4 'greatly'

+ The second item was used in the 2001 survey.

* p < .05 ** p < .01 *** p < .001

higher than those of males on these competencies. In comparison, although both mean ratings are relatively low, females report a higher mean for the effect of their education on their ability to learn to read and speak a foreign language.

As documented in Table 2, the perceived effect of undergraduate education on certain competencies also varies by citizenship. As shown, international students reported significantly higher ratings than domestic students for the effect of their college education on four abilities. The largest difference involves a higher rating for enhancing the ability to read or speak a foreign language. International students also report significantly higher ratings for the impact of college on their abilities to write effectively, appreciate the arts, and acquire new skills and knowledge.

Analyses of variance identified interaction effects between gender and citizenship on two variables: the ability to formulate creative ideas and to gain in-depth knowledge. In both instances, female international students reported the lowest mean and male international students reported the highest mean rating.

Significant Differences in Satisfaction by Year [1]**.** The senior survey explored not only how much students thought they learned but also how satisfied they were with numerous facets of the academic program and student life during the four-year period. Analyses of variance identified several statistically significant differences by year. In some instances the data show a fluctuating pattern, while in other cases the data indicate a definite trend. Results are presented in Table 3 (page 8).

As shown, in the academic area, satisfaction ratings are consistently high for the quality of business courses and for faculty availability and faculty attitude. In contrast, satisfaction ratings are lower for humanities, science and math and social science courses; this difference may be attributed to student lack of interest in these areas. The notable increase in satisfaction with academic advising may be related to the implementation of a new advising program during this time. Through the Learning Plan Program, students met with a faculty member and an outside mentor a number of times during the semester in their junior year to develop an academic, co-curricular and career plan.

Significant differences by year were found in four areas of student life: residential life, campus life, personal development opportunities, and resources and student services. With respect to residential life, trend data reveal that satisfaction improved for campus safety, while satisfaction declined regarding housing and food services. The decline in student satisfaction with housing may be related to higher than expected yields in the number of enrolled students and the consequent overcrowding and use of converted space for housing. The decrease in satisfaction with food services may indicate dissatisfaction with the meal plan rather than the food. Issues raised by the students include the price of the meal plan and restrictions on using certain cafeterias. Subsequently, adjustments were made in response to student concerns.

The most remarkable trend in the area of campus life was the significant increase from 1997 to 1998 in high satisfaction ratings for the campus student center, following the construction of a new building. Further, the mean ratings remained consistently high after the opening of the new center. In contrast, satisfaction ratings decreased significantly from 2.77 to 2.54 for the inclusion of student voice in policies. Two factors may account for this trend. During this time period, the College gave less attention to including students on college committees. Second, student government leaders expended most of

Table 3
Seniors' Satisfaction with Academic Experiences and Student Life

	1997	1998	1999	2001	Total	F Ratio
Academic Experiences						
Business Courses	3.69	3.66	3.64	3.73	3.68	1.19
Science and Math Courses	2.97	3.01	2.85	2.87	2.92	3.18*
Humanities and Arts Courses	2.87	2.99	2.96	2.87	2.92	1.80
Social Sciences Courses	2.88	2.94	2.81	2.77	2.85	3.22*
Faculty Availability	3.48	3.51	3.51	3.54	3.51	.48
Faculty Attitude	3.42	3.47	3.43	3.38	3.42	.77
Independent Study	3.26	3.19	3.16	3.35	3.23	1.96
Academic Advising	2.80	3.02	2.97	3.05	2.97	5.16**
Availability of Courses	2.92	2.84	2.91	2.75	2.85	2.84*
Residential Life						
Campus Safety	-	3.00	3.01	3.37	3.14	23.63***
Housing	-	3.14	3.13	2.96	3.07	5.54**
Food Services	3.10	3.01	3.13	2.90	3.02	5.19***
Campus Life						
Campus Student Center	2.35	3.30	3.21	3.26	3.09	85.21***
Climate for Minorities	2.78	2.90	2.81	3.02	2.88	4.41**
Ethnic/Racial Diversity	-	3.05	2.91	3.04	3.00	2.41
Social Life on Campus	2.49	2.51	2.44	2.43	2.47	1.08
Student Government	2.75	2.73	2.75	2.68	2.73	.50
Student Voice in Policies	2.77	2.74	2.56	2.54	2.65	7.22***
Personal Development Opportunities						
Recreation/Athletics	3.19	3.18	3.12	3.06	3.13	1.74
Extra-Curricular Programs	-	3.22	3.31	2.93	3.13	21.45***
Religious/Spiritual Life	-	2.88	3.04	2.71	2.86	10.51***
Career Planning	2.96	2.95	3.02	2.84	2.94	2.60
Resources and Student Services						
Classroom Facilities	3.56	3.61	3.58	3.52	3.56	1.02
Library Resources	3.10	3.17	3.16	3.27	3.18	2.79*
Computer Services	3.18	3.32	3.45	3.11	3.25	11.32***
Financial Aid Services	2.67	2.79	2.89	2.96	2.84	5.89***
Health Services	3.04	2.87	3.06	3.16	3.04	7.16***
Counseling Services	2.86	3.00	2.89	2.96	2.93	1.12

Note: These mean ratings are based on the following scale: 2 'very or generally dissatisfied', 3 'generally satisfied', and 4 'very satisfied'.

* $p < .05$ ** $p < .01$

*** $p < .001$

their efforts on social activities, such as sponsoring parties. Therefore, students felt they had little voice in the development of college policy.

Significant differences in satisfaction ratings over time were also found with two personal development opportunities, extra-curricular programs and religious/spiritual life. A review of the data reveals moderate and somewhat fluctuating levels of satisfaction with extra-curricular programs and the college's religious/spiritual life.

In t he a rea o f r esources a nd s tudent s ervices, satisfaction ratings were consistently positive for computer services, and mostly positive for health services. Ratings increased for financial aid services. This may be the result of a change in policy from allowing a gap in meeting student need to meeting students' full need. Several factors may have contributed to the consistently positive and increasing ratings for library resources, including the highly qualified and dedicated library staff and specific developments related to customer service. In the mid l990's, as part of a Total Quality Management effort, the library staff implemented the following initiatives to better serve students: a single service point; a process for students to sign up for appointments for reference consultations; and an enhanced liaison program, with each librarian assigned to a division and a functional group. With the establishment of a new integrated undergraduate curriculum in 1996, considerable effort was expended on developing a systematic library instruction program for undergraduates starting in the freshman year. Also during this time period more library resources became available electronically and campus-wide, and the collection budget was increased $100,000 in 1997 to recognize the need for electronic resources.

Figure 2 d isplays g raduating s eniors' o verall m ean satisfaction ratings with various aspects of the academic program, including courses, faculty attitude, and the availability of courses. These ratings represent the average for the four years of the study. As shown, these data document the highest level of satisfaction with the

Figure 2
Graduating Seniors' Satisfaction with
Academic Experiences
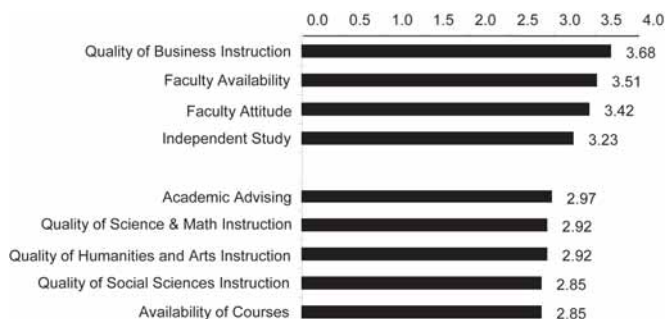
quality of business course instruction (3.68), followed by faculty availability (3.51), faculty attitude (3.42), and independent study (3.23). As indicated by the relative gap in mean ratings, satisfaction is lower with respect to other aspects of the academic program, including academic advising (2.97) and availability of courses (2.85).

Figure 3 displays graduating seniors' overall satisfaction with various aspects of student life. These data reflect a high level of satisfaction with campus resources, particularly classroom facilities (3.56), computer services (3.25), and library resources (3.18). Results also indicate moderate s atisfaction w ith m any s tudent s ervices, including housing, health and food services. In contrast, the data reflect much lower satisfaction with many aspects of campus life, including student government (2.73), student voice in policies (2.65), and campus social life (2.47).

Figure 3
Graduating Seniors' Satisfaction with
Student Life
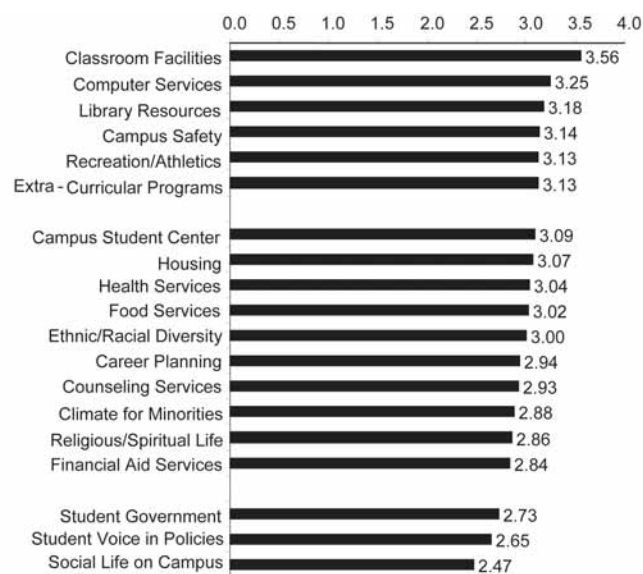
Note : These mean ratings are based on the following scale: 2 'very or generally dissatisfied', 3 'generally satisfied' and 4 'very satisfied'.

Significant Differences in Satisfaction by Gender and Citizenship. Two-way analyses of variance were also c onducted t o e xamine t he r elationship b etween gender and citizenship and graduating seniors' satisfaction with aspects of their undergraduate experience. Results from these analyses are presented in Table 4 (page 10).

As shown in Table 4, two-way analyses of variance identified several statistically significant differences by gender and citizenship in seniors' satisfaction with aspects of their undergraduate experience. Four differences were found by gender, and all the female ratings on these items are higher than the male ratings. The largest

Table 4
Significant Differences by Gender and
Citizenship in Seniors' Satisfaction with College

Mean Ratings				
Undergraduate Experience	**Female**	**Male**	**Difference**	**F ratio**
Quality of Humanities and Arts Courses	3.09	2.85	.24	4.91*
Campus Student Center	3.37	3.18	.19	7.95**
Financial Aid Services	2.93	2.74	.19	4.19*
Social Life on Campus	2.56	2.39	.17	4.01*
Undergraduate Experience	**International**	**U.S. Citizen**	**Difference**	**F ratio**
Ethnic/Racial Diversity	3.25	2.94	.31	8.49**
Climate for Minorities	3.11	2.85	.26	6.43*
Academic Advising	3.20	2.97	.23	5.80*
Faculty Attitude	3.57	3.39	.18	4.36*
Food Services	2.84	3.03	-.19	6.30*
Recreation/Athletics	2.90	3.10	-.20	4.12*
Student Health Services	3.20	2.99	.21	3.90*
Financial Aid Services	3.04	2.80	.24	4.81*

Note: These mean ratings are based on the following scale: 2 'very or generally dissatisfied', 3 'generally satisfied', and 4 'very satisfied'.

* p < .05 ** p < .01 *** p < .001

difference reflects a higher level of satisfaction among females for the quality of humanities and arts courses. Females are also more satisfied than males with the campus student center, financial aid services, and campus social life.

Analyses of variance also revealed that international and domestic students differ significantly in their level of satisfaction with certain aspects of their undergraduate experience. As shown in Table 4, international students report significantly higher levels of satisfaction with two facets of their academic experience – academic advising and faculty attitude and with several aspects of campus life and student services, including ethnic/racial diversity, the climate for minorities, health and financial aid services. In contrast, U.S. citizens report higher levels of satisfaction with food services and recreation/athletics programs.

Predicting Overall Satisfaction. Multiple regression was employed to answer the question: What are the significant pr edictors of gr aduating seniors' overa ll satisfaction? Based on previous research and bivariate analyses in the present study, selected demographic, assessment and satisfaction variables were chosen as potential independent variables. V ariables identified in previous studies include students' assessment of the quality of the coursework (Kaldenberg, Browne, & Brown, l998); satisfaction with one's major, perceived growth in personal development and enhanced analytical problem solving skills (Franklin, l994); a degree that leads to career opportunities and a university experience that provides an opportunity for growth and development (Franklin & Knight, l995); and student-faculty interaction

(Lamport, l993; Kuh & Hu, 2001). Several variables measuring these same constructs were selected as predictors in this study if they met the statistical criterion, i.e., a correlation coefficient $\geq$ .20, at the .001 level of significance. Gender and citizenship were also included based on the institution's policy interest in these variables.

Prior to conducting the regression, two analyses were performed to investigate the extent of multicollinearity among the independent variables. Correlational analyses revealed relatively small correlations among the independent variables. Fifty percent of the coefficients were less than .20 and only one coefficient exceeded .40. Tolerance statistics were also computed for each of the independent variables. The tolerance statistic represents the proportion of a variable's variance not accounted for by other independent variables in the equation.[2] The tolerance coefficients in this study ranged from .64 to .98, indicating that these variables are substantially unique.

Regression results are displayed in Table 5. As shown, the two demographic variables - gender and citizenship - do not significantly predict overall satisfaction. In contrast, all of the seven assessment and satisfaction variables do significantly predict overall satisfaction. As indicated by the coefficients, the strongest predictor of students' overall satisfaction is perceived gain in in-depth knowledge of a field (b=.212). Next in order are satisfaction with the quality of business courses (b=.139) and satisfaction with faculty attitude (b=.107). In addition to satisfaction with career services (b=.065), other significant predictors involve general goals of a college education, i.e., to enhance students' ability to acquire new skills and knowledge (b=.097); understand moral/ethical issues (b=.093); and think analytically (b=.077). The R^2 of .25 indicates that the model explains 25 percent of the variance in students' overall satisfaction.

Results from the regression were employed to simulate

Table 5
Multiple Regression Results:
Predicting Graduates' Overall Satisfaction

Variables	Beta Coefficient	t Ratio	R²	F Ratio
Demographic Variables				
Gender	.056	1.802		
Citizenship	.003	0.107		
Assessment and Satisfaction Variables				
Gained in-depth knowledge	.212	5.815***		
Satisfaction with business courses	.139	3.965***		
Satisfaction with faculty attitude	.107	3.208***		
Enhanced ability to acquire new knowledge	.097	2.652**		
Enhanced understanding of ethical issues	.093	2.764**		
Enhanced ability to think analytically	.077	2.006*		
Satisfaction with career services	.065	2.002*		
			.250	29.423***

* p < .05; ** p < .01; *** p < .001

how improvements in specific areas would affect overall satisfaction. The simulation was conducted to demonstrate to administrators what effect improvements in certain areas would have on students' overall satisfaction. Because most of the original predictor mean ratings in this data set were high, the means for three independent variables were increased to 3.50. Mean ratings were increased from 3.32 to 3.50 for gained in-depth knowledge, from 2.59 to 3.50 for enhanced understanding of moral and ethical issues, and from 2.93 to 3.50 for satisfaction with career services. The value 3.50 represents the midpoint between 3   'moderately' and 4 'greatly' for the first two variables and 3.50 represents the midpoint between 3 'generally satisfied' and 4 'very satisfied' for the third variable, satisfaction with career services.

Simulation results are presented in Table 6. The table presents two sets of means, original and revised, for the independent variables and the resulting increase in the dependent variable.

The original means are based on the actual data. Each unweighted mean is multiplied by the unstandardized B coefficient to produce the weighted mean. For example, the 3.32 for gained in-depth knowledge is multiplied by the B coefficient of .203 to produce a weighted mean of .674. The weighted means, with the intercept, are used to compute the regression equation, resulting in a mean of 3.18 for overall satisfaction.

The revised column means (shown underlined) represent the simulated increases from 3.32 to 3.50 for gaining in-depth knowledge, from 2.59 to 3.50 for enhanced understanding of moral and ethical issues, and from 2.93 to 3.50 for satisfaction with career services. The revised unweighted mean of 3.50 for gaining in-depth knowledge is multiplied by the unstandardized B

coefficient of .203 to produce a weighted mean of .711. Similarly, the revised unweighted mean of 3.50 for enhanced understanding of moral and ethical issues is multiplied by the B coefficient of .076 to produce a weighted mean of .266. As shown, increasing the means for gaining in-depth knowledge, enhanced understanding of ethical issues and satisfaction with career services increases the overall mean satisfaction rating from 3.18 to 3.33.

Predicting Choice of Same Institution.   Logistic regression was employed to test a model predicting the probability of graduating seniors' choosing the same institution again. The model includes nine variables representing demographic characteristics, academic achievement, perceived assessment of college impact and s atisfaction w ith various a spects of t he c ollege experience. These variables were chosen based on the literature as well as on results from bivariate analyses in the present study. Table 7 presents statistical results from this analysis, including the coefficient estimates with their standard errors, Wald statistics, p-values and odds ratios. In addition, the table provides statistics assessing the model fit.

As shown in Table 7, eight of the nine variables included in the model were significant predictors of choosing the same college. The parameter estimates provide a measure of the effect of a one unit change in the predictor variable on the outcome or dependent variable. For example, a one unit change in students' rating for enhanced ability to develop creative ideas increases the log odds of choosing the same institution by .57, or in terms of the odds ratio by a factor of 1.77.

These logistic regression results reveal that the two strongest predictors of students' re-evaluation of their college choice are satisfaction with campus social life and satisfaction with the quality of business courses. The odds ratio of 3.14 for satisfaction with campus life indicates that a person who is very satisfied with campus life has odds of choosing the same institution that are 3.14 times higher than a person who is satisfied. Similarly, a person who is very satisfied with the quality of business courses has odds of choosing the same institution that are 2.48 times higher than a person who is satisfied. Other significant parameter estimates include a positive assessment of enhanced ability for creative ideas (B=.57),

Table 6
Simulation Results: Effect of Selected Increases in Assessment and Satisfaction on Overall Satisfaction

Variables	Unstandardized B Coefficient	Original Unweighted	Original Weighted	Revised Unweighted	Revised Weighted
Constant	.298				
Gender	.079	1.45	.115	1.45	.115
U.S. Citizenship Status	.006	1.84	.011	1.84	.011
Gained in-depth knowledge	.203	3.32	.674	**3.50**	.711
Satisfaction with business courses	.184	3.67	.676	3.67	.676
Satisfaction with faculty attitude	.126	3.42	.431	3.42	.431
Enhanced ability to acquire new knowledge	.099	3.39	.336	3.39	.336
Enhanced understanding of ethical issues	.076	2.59	.197	**3.50**	.266
Enhanced ability to think analytically	.078	3.34	.261	3.34	.261
Satisfaction with career services	.063	2.93	.185	**3.50**	.221
Dependent Variable					
Overall Satisfaction			3.18		3.33

having gained in-depth knowledge (B=.48), satisfaction with the availability of courses (B=.37), satisfaction with campus safety (B=.48), and high average grades in college (B=.28).

Table 7
Logistic Regression Results: Predicting Whether or Not Students Would Choose the Same Institution

Variables	Parameter Estimate	Standard Error	Wald Chi-Square	Odds Ratio
Intercept	-12.760			
Gender	0.465	.204	5.173*	1.592
U.S. Citizenship Status	0.447	.270	2.737	1.564
Average grade in college	0.282	.092	9.463**	1.325
Enhanced ability for creative ideas	0.569	.132	18.418***	1.766
Gain in-depth knowledge	0.475	.146	10.548***	1.609
Satisfaction with campus social life	1.146	.199	33.108***	3.145
Satisfaction with business courses	0.908	.206	19.416***	2.479
Satisfaction with availability of courses	0.365	.147	6.145*	1.441
Satisfaction with campus safety	0.478	.143	11.141***	1.612
* p < .05; ** p < .01; *** p < .001				
Chi-square:	211.571, 9 df***	Correct Classification Rate:		74.4
Nagelkerke R-Square:	.393	Sensitivity:		73.8
Cutoff (prior probability):	.60	Specificity:		74.7
Hosmer-Lemeshow goodness-of-fit statistic: 7.618 with 8 df (p < .472)				

The Delta-P statistic can also be computed to determine the incremental effect of a unit change in the independent variable on the dependent variable. The formula for Delta-P is [Odds Ratio/(1 + Odds Ratio)] - P_o , where P_o = the original probability. Using results from this logistic regression, one can calculate the effect of a unit change in satisfaction with social life on the likelihood of choosing the same institution again as follows: Delta-P = [3.145/(1+3.145)] - .72 = .7587-.72 = .0387. In other words, for every unit change in satisfaction with social life, there is a 3.87 percent change in the likelihood of choosing the same institution again. For further discussion on logistic regression, see the publication by Pampel (2000), cited in the reference list.

This model accurately predicted 74 percent of the cases, 74 percent among those who would choose the same institution again and 75 percent among those who would not choose the same institution. With regard to the overall model, the Nagelkerke R^2 is .39. The Nagelkerke R^2 is a pseudo R^2 , comparable to R^2 in multiple regression. The non-significant Hosmer and Lemeshow goodness-of-fit statistic indicates that the expected and observed values are close, suggesting that the model is a good fit.

Coefficients from logistic regression

were used to simulate the effect of an increase in student satisfaction with campus social life on the likelihood of choosing the same institution again. This simulation was also conducted to demonstrate what impact a change in one area might have on the likelihood of students' choosing the same institution again. The mean for satisfaction with campus social life was increased from 2.47 to 3.50, which is considered a high level of satisfaction.

Results are presented in Table 8. The table presents two sets of means, original and revised, for the independent variables and the resulting probability in the dependent variable. The original means are based on the actual data. Each unweighted mean is multiplied by the unstandardized B coefficient to produce the weighted mean. For example, the 2.47 mean for satisfaction with campus social life is multiplied by the B coefficient of 1.146 to produce a weighted mean of 2.828. The weighted means, with the intercept, are used to compute the regression equation, resulting in the probability of .85 in the dependent variable. This finding indicates that seniors with average scores on these independent variables have a probability of .85 of choosing the same institution again.

The revised column mean (shown underlined) represents the simulated increase in satisfaction with social life from 2.47 to 3.50. The revised unweighted mean of 3.50 is multiplied by the unstandardized B coefficient of 1.146 to produce a weighted mean of 4.011. As shown, the effect of increasing the student satisfaction rating with social life from 2.47 to 3.50 increases the probability of choosing the same college again from .85 to .95. This result means that seniors with average scores on these variables, including a 3.50 for satisfaction for social life, have a probability of .95 of choosing the same institution again.

Table 8
Simulation Results: Effect of Improvement in Satisfaction with Campus Social Life on Decision to Choose the Same Institution

		Means			
		Original		Revised	
Variables	Unstandardized B Coefficient	Unweighted	Weighted	Unweighted	Weighted
Constant	-12.76				
Gender	0.465	1.45	0.674	1.45	0.674
U.S. Citizenship Status	0.447	1.84	0.822	1.84	0.822
Average grade in college	0.282	3.37	0.950	3.37	0.950
Enhanced ability for creative ideas	0.569	3.10	1.764	3.10	1.764
Gain in-depth knowledge	0.475	3.34	1.587	3.34	1.587
Satisfaction with campus social life	1.146	2.47	2.828	**3.50**	4.011
Satisfaction with business courses	0.908	3.68	3.343	3.68	3.343
Satisfaction with availability of courses	0.365	2.85	1.040	2.85	1.040
Satisfaction with campus safety	0.478	3.14	1.503	3.14	1.503
Dependent Variable					
Probability of choosing same college			.85		.95

Strategic Policy Recommendations
for the Primary Institution

Based on the research findings, the study concluded with a set of strategic policy recommendations designed to further enhance the College's strengths and identify areas for improvement, particularly in the academic program and student life areas. Illustrative recommendations follow.

Strengths

1. Publicize students' exceptionally high level of satisfaction with the faculty and the quality of their business courses.

2. Promote the College's extraordinary success in preparing students to compete in a technologically sophisticated business environment.

3. Continue to offer high quality computer services and invest in state of the art library resources and classroom facilities.

4. Sustain and promote the College's success in developing students' leadership, public speaking and teamwork abilities.

5. Sustain and publicize the College's strength in preparing students to meet the complex and changing demands in their future careers.

6. Continue the efforts to enhance financial aid services.

7. In recruiting efforts designed to attract women, publicize the undergraduate program's success in developing women's leadership, teamwork and public speaking abilities.

Areas for Improvement

8. Investigate the reasons and craft strategies to change students' low level of satisfaction with the social life on campus.

9. Investigate the reasons for decreasing satisfaction with student voice in policies.

10. Evaluate and enhance the effectiveness of the curriculum in developing students' human potential - particularly in terms of appreciating the arts, relating with diverse groups of people, and having a sense of ethics and social responsibility.

11. Strengthen the emphasis on writing in the curriculum.

12. Review and possibly renew the undergraduate curriculum's emphasis on enhancing students' ability to think creatively.

Discussion

The primary focus of this study was on perceived effectiveness and satisfaction. However, the data can also be used in combination with results from other studies to investigate possible relationships between perceived effectiveness and importance. Research on the goals of entering freshmen at the study institution indicate a relationship between graduating seniors' assessment of their education and their priority goals. Cooperative Institutional Research Program (CIRP) survey results have consistently shown that entering freshmen place a high priority on being successful in business, becoming an authority in their field, and becoming a community leader (Delaney, 1997 – 2001). In this study, graduating seniors rated their education highly for developing abilities particularly pertinent to these goals: leadership, team membership, formulating creative ideas, using computers, and public speaking.

Compared with their peers, entering freshmen at the study institution place a very high priority on preparing to advance their career and obtain a good job in business, and they rate themselves very highly on drive to achieve (Delaney, 1997 – 2001). Graduating seniors' very positive evaluation of the college's impact on their ability to acquire new skills, gain in-depth knowledge and think analytically and logically suggests that the College is enabling students to accomplish their goals for achievement and career advancement.

Results from the freshman and senior studies also reflect a similarity between low priority goals and the lower evaluation of certain competencies. Entering freshmen have consistently expressed little interest in personal and social goals, such as developing a meaningful philosophy of life, influencing social values and promoting racial understanding (Delaney, 1997 – 2001). Similarly, graduating seniors report lower ratings for the effect of their education on a related set of competencies – self-understanding, ethics and social responsibility and international/multi-cultural perspectives.

Results from this study revealed significant differences in assessment and satisfaction by student characteristics, particularly gender and citizenship. While the primary focus and specific findings may vary, previous studies have also identified gender differences in students' evaluation of their college experience. For example, Tatro (l995) found that females rated faculty higher than did males. In this study, females reported higher ratings for the effect of their education on their competencies and growth; this would suggest a stronger influence by faculty. Lee et al. (2002) discovered that males were more critical of the campus climate. Similarly, males in this study reported a lower rating on campus social life.

With respect to differences by citizenship, Zimmerman (l995), Bunz (l997), and Nicholson (2001) identified language as a significant factor in international students' adjustment to American culture, suggesting that learning to read and speak a foreign language is critically important to international students. Delaney (2002) found that international students attributed more importance to artistic and intellectual goals and they placed a higher priority on gaining a general education as a reason for going to college. In this study international students reported

significantly higher ratings than domestic students for the effect of their education on their ability to read or speak a foreign language; write effectively; appreciate the arts; and acquire new skills and knowledge.

Delaney's (2002) study of entering freshmen revealed that international students reported spending significantly more time talking with teachers outside of class, studying and doing homework, while domestic students spent more time socializing with friends and engaging in exercise and sports. In this study, international students also reported significantly higher satisfaction ratings for academic advising and faculty attitude, while domestic students reported a significantly higher rating for recreation and athletics. Graduating seniors' significantly different ratings may reflect the relative importance international and domestic students attribute to academic and social experiences.

Results from this research replicate several previous findings regarding factors that influence students' overall satisfaction with the college experience. For example, this study identified satisfaction with the quality of business courses; satisfaction with faculty attitude; and the perception of enhanced ability to think analytically as significant predictors of students' overall satisfaction. Similarly, previous studies identified students' assessment of the quality of courses (Browne et al., l998); enhanced analytical problem solving skills (Franklin, l994); interaction with faculty (Lamport, l993; Kuh and Hu, 2001); and the perception of a caring faculty (Franklin & Knight, l995) as determinants of students' overall satisfaction with the college experience.

This study also identified a different set of predictors for the two major dependent variables: overall satisfaction and the likelihood of choosing the same college again. Two of the significant predictors of the likelihood of choosing the same college again were satisfaction with campus life and satisfaction with campus safety. These variables relate primarily to the quality of one's personal life and interpersonal relationships. Similarly, Browne et al. (l998) found that factors involving interaction with personnel and how students were treated were more predictive of whether a student would recommend a college to a friend while assessment of the quality of the academic program was more predictive of overall satisfaction.

These findings enhance our understanding of factors that can potentially influence students' overall satisfaction and re-evaluation of their college choice. Such information may then serve as a guide for developing targeted strategies to improve the college's performance on individual criteria that will impact students' overall satisfaction and regard for the college.

This study demonstrates the relevance and value of a statistical, evaluation model using a senior survey as a vehicle for focusing on the students' voice in assessment

(Lingrell, l992; Ewell, l983). This research also illustrates how students' voices can contribute effectively to assessment. By expressing different levels of satisfaction and perceived growth, students identify potential program strengths and areas in need of improvement. While researchers differ with regard to the value of self-reported data (Pascarella, 2001; Pike, l999; and Anaya, l999), the author presents this study as evidence that self-reported data, in combination with other assessment techniques, can provide useful and important information at a relatively low cost and can enrich the outcomes assessment process (Hill et al., l998; Glynn & Rajendran, l993).

Major components of this model include linking the study design to the institution's mission, the goals and structure of the program; developing a structured analysis plan to address policy issues; and translating results into recommendations for planning and policy development. Further, the study illustrates how statistical procedures can be used to simulate the effect of a specific improvement in one area on overall satisfaction. Information derived from such analyses can then guide decisions regarding the allocation of efforts and resources in those areas that will effect the greatest impact on overall student satisfaction, which is crucial to the health of the institution and to student success.

References

American Association for Higher Education (AAHE). *Principles of Good Practice for Assessing Student Learning.* Washington, D.C.: American Association for Higher Education, l992.

Anaya, G. (1999). College impact on student learning: comparing the use of self-reported gains, standardized test scores, and college grades. *Research in Higher Education, 40*(5), 499-526.

Baird, L. L. (1976). Biographical and educational correlates of graduate and professional school admissions test scores. *Educational and Psychological Measurement, 36(2), 415-420.*

Banta, T. W. (1997). Moving assessment forward: Enabling conditions and stumbling blocks. In P.J. Gray & T.W. Banta (Eds.), The campus-level impact of assessment: Progress, problems, and possibilities. *New Directions for Higher Education*, No. 100 (pp.79-91). San Francisco: Jossey-Bass.

Banta, T. W., Lund, J. P., Black, K. E., & Oblander, F. W. (1996). *Assessment in practice: Putting principles to work on college campuses* San Francisco: Jossey-Bass Publishers.

Barr, R. B. & Tagg, J. (l995). From teaching to learning – A new paradigm for undergraduate education. *Change*, *27*(6), 12-25.

Berdie, R. F. (1971). Self-claimed and tested knowledge. *Educational and Psychological Measurement, 31*(3), 629-636.

Browne, B. A., Kaldenberg, D. O., Browne, W. G., & Brown, D. J. (1998). Student as customer: Factors affecting satisfaction assessments of institutional quality. *Journal of Marketing for Higher Education, 8*(3), 1-14.

Bunz, U. K. (April, 1997). *Too far to go home for the weekend – a German student in the United States of America: An undergraduate woman student's experience* Paper presented at the Annual Meeting of the Southern States Communication Association, Savannah, Georgia. (ERIC Document Reproduction Service No. ED 410 599)

Cheng, D. X. (2001). Assessing student collegiate experience: Where do we begin? *Assessment & Evaluation in Higher Education, 26*(6), 525-538.

Delaney, A.M. (1997–2001). *Report on the cooperative institutional research program (CIRP) survey of first-time full-time freshmen*. Wellesley, Massachusetts: Babson College, Office of Institutional Research.

Delaney, A.M. (2002). Enhancing support for student diversity through research. *Tertiary Education and Management, 8* (2), 145-166.

Elliott, K.M., & Healy, M.A. (2001). Key factors influencing student satisfaction related to recruitment and retention. *Journal of Marketing for Higher Education,10* (4), 1-11.

Ewell, P. T. (1983). *Information on student outcomes: How to get it and how to use it.* Boulder, Colorado: National Center for Higher Education Management Systems (NCHEMS).

Franklin, K. K. (1994). *Multivariate correlation analysis of a student satisfaction survey*. Tennessee: East Tennessee State University. (ERIC Document Reproduction Service No. ED388695)

Franklin, K. K., & Knight, W. H. (1995, November). *Using focus groups to explore student opinion*. Paper presented at the Annual Meeting of the Mid-South Educational Research Association Conference, Biloxi, Mississippi. (ERIC Document Reproduction Service No. ED388200)

Gardner, J.N., Van der Veer, G. (l998). *The senior year experience*. *Facilitating integration, reflection, closure and transition*. San Francisco: Jossey-Bass Publishers.

Glynn, K. A., & Rajendran, K. N. (1993). Perceptual-based student outcomes assessment process in the marketing curriculum. *Journal of Education for Business, 69*(1), 11-17.

Hearn, J. (l985). Determinants of college students' overall evaluations of their academic programs. *Research in Higher Education, 23*(4), 413-437.

Hill, N. T., Perry, S. E., & Stein, D. M. (1998). Using accounting student surveys in an outcomes assessment program. *Issues in Accounting Education, 13*(1), 65-78.

Keller-Wolff, C., Eason, B., & Hinds, M. (2000, April). *From the students' perspective: The effect of college courses*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA. (ERIC Document Reproduction Service No. ED443376)

Kuh, G. D., & Hu, S. (2001). The effects of student-faculty interaction in the 1990s. *Review of Higher Education, 24*(3), 309-332.

Lamport, M. A. (1993). Student-faculty informal interaction and the effect on college student outcomes: A review of the literature. *Adolescence, 28*(112), 971-990.

Lee, R.M., Keough, K. A. & Sexton, J. D. (2002). Social connectedness, social appraisal, and perceived stress in college women and men. *Journal of Counseling and Development, 80*, 355-361.

Lingrell, Scot A. (1992). *Student outcomes assessment: The senior survey* (Report No. HE 025 950). Bowling Green, OH: Bowling Green State University. (ERIC Document Reproduction Service No. ED351897)

Nelson, E. S., & Johnson, K. A. (1997). A senior exit survey and its implications for advising and related services. *Teaching of Psychology, 24*(2), 101-105.

Nicholson, M. W. (2001). *Adaptation of Asian students to American culture* (Research Report). South Bend, Indiana: Indiana University. (ERIC Document Reproduction Service No. ED 453 751)

Pace, C. R. (l985). Perspectives and problems in student outcomes research. In P.T. Ewell (Ed.), Assessing educational outcomes. *New Directions for Institutional Research, No. 47* (pp. 7-18), San Francisco: Jossey-Bass.

Pampel, F.C. (2000). Logistic regression: A primer. *Sage University Papers: Quantitative Applications in the Social Sciences, 07-132*. Thousand Oaks, CA: Sage Publications.

Pascarella, E. T. (2001). Using student self-reported gains to estimate college impact: A cautionary tale. *Journal of College Student Development, 42*(5), 488-492.

Pascarella, E. T. & Terenzini, P. T. (1991). *How college affects students*: *Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.

Pascarella, E. T. & Terenzini, P. T. (1995). The impact of college on students: Myths, rational myths, and some other things that may not be true. *NACADA Journal, 15*(2), 26-33.

Pascarella, E. T. & Terenzini, P. T. (1998). Studying college students in the 21st century: Meeting new challenges. *Review of Higher Education, 21*(2), 151-165.

Pike, G. R. (1995, May).*Limitations of using students' self reports of academic development as proxies for traditional achievement measures*. Paper presented at the Annual Forum of the Association for Institutional Research. (ERIC Document Reproduction Service No. ED386992)

Pike, G.R. (l999). The constant error of the halo in educational outcomes research. *Research in Higher Education, 40*(1), 61-86.

Ratcliff, J. L. (1995).*Realizing the potential: Improving*

postsecondary teaching, learning, and assessment . University Park, PA: The Pennsylvania State University, National Center on Postsecondary Teaching, Learning, and Assessment.

Schreiner, L., & Juillerat, S. (1997). *National Student Satisfaction Report, 1997* (Report No. HE 031 453). Iowa City, IA: USA Group Noel-Levi tz. (ERIC Document Reproduction Service   No. ED421931)

Tabachnick, B. B. & Fidell, L. S. (2001).   *Using multivariate statistics* (4th ed.). Boston: Allyn and Bacon.

Tam, M. (2002). University impact on student growth: A quality measure? *Journal of Higher   E d u c a t i o n Policy and Management, 24*(2), 211-218.

Tatro, C. N. (1995).   Gender effects on student evaluations of faculty. *Journal of Research and Development in Education, 28*(3), 169-173.

Terenzini, P.T., Springer, L., Pascarella E.T., & Nora, A. (l995). Academic and out-of-class influences on students' intellectual orientations. *The Review of Higher Education, 19*(2), 23-44.

Twombly, S. B. (l992). Student perspectives on general education in a research university: An   e x p l o r a t o r y study. *The Journal of General Education, 41* , 238-272. Walker-Marshall, A., & Hudson, C. M. (1999, June). *Student satisfaction and student success in   t h e university system of Georgia* . Paper presented at the Annual Forum of the Association for Institutional Research, Seattle, WA. (ERIC Document Reproduction Service No. ED433778)

Zimmermann, S. (1995). Perceptions of intercultural communication competence and international student adaptation to an American campus.   *Communication Education, 44* (4), 321-335.

Endnotes

[1] Satisfaction ratings are based on the following scale: 1 'very dissatisfied', 2 'generally dissatisfied', 3 'generally satisfied', and 4 'very satisfied'. Due to the small numbers, the 'very dissatisfied' and the 'generally dissatisfied' were combined into one category.

[2] The tolerance statistic is calculated as 1 minus R^2 for an independent variable when it is predicted by the other independent variables already included in the analysis. It is a measure of the uniqueness of the predictor variables. Default tolerance levels range between .01 and .001 before variables are excluded. For further discussion on this topic, see Tabachnick and Fidell (2001, p. 84).

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