



IOWA STATE UNIVERSITY

**A Longitudinal Study of
Iowa State University
2000-2003 National Survey of
Student Engagement Data**

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Executive Summary

In Spring 2004, the Vice Provost for Undergraduate Programs at Iowa State University asked the Research Institute for Studies in Education (RISE) to conduct an analysis of ISU longitudinal National Survey of Student Engagement data. One area of inquiry was a desire to examine what factors influence student engagement, gains in educational outcomes, and overall satisfaction at Iowa State University.

The results of this analysis indicate that survey year, class rank, age, gender, ethnicity, parent education, high school rank, ACT composite score, college, campus residence, fraternity/sorority membership, and athlete status influence engagement, satisfaction, and learning. In addition, the results indicate that the most impact factors that influence student engagement, satisfaction, and learning include class rank and college.

When considering rank, senior students scored statistically significantly higher on several variables, including higher-order thinking, academic integration, active and collaborative learning, student interactions with faculty, gains in practical competence, and general education gains. In contrast, freshmen students rated themselves higher in the areas of diversity experiences, quality of academic advising, supportive campus environment, and overall satisfaction.

The analyses also indicate differences in engagement, satisfaction, and learning by college. For several measures, students in specific colleges (e.g., Engineering and Design) reported higher levels of student engagement, perceptions of campus environment, and gains in learning outcomes.

Future analysis efforts might examine additional variables that may influence student engagement. Review of the background characteristics considered in, and the findings of, this study may provide additional insights regarding variables to consider in the future.

Introduction

Since 2000, the National Survey of Student Engagement (NSSE) project has surveyed undergraduates at four-year colleges and universities. The purpose of the project is to provide data to colleges and universities to use for improving undergraduate education. “As a survey, NSSE annually gathers information directly from students about the extent to which they engage in sound educational practices. In this regard, the NSSE project documents and describes key dimensions of quality in undergraduate education. NSSE also aims to improve the college experience. Because the survey results point to things than an institution can do something about – almost immediately – NSSE data create an occasion for talking about and helping campuses focus on what matters to student learning” (2002 Annual Report, p. 8).

In the Spring semesters of 2000-2003, a random sample of Iowa State University (ISU) freshmen and seniors participated in the NSSE by completing a web survey entitled, *The College Student Report*. (View the survey at <www.iub.edu/~nsse>.) On the survey, students indicated how frequently they engage in behaviors that are highly correlated with many important learning and personal development outcomes of college. They also provided opinions about the institution they attend.

The NSSE staff provide institutions with benchmark scores, which are compilations of individual items that represent a common theme—level of academic challenge, active and

collaborative learning, student interaction with faculty, enriching educational experiences, and supportive campus environment. An institution receives a benchmark score for each theme and a comparison of the institution's overall benchmark scores to other institutions. While these benchmarks of effective educational practice provide important information related to the levels of student engagement at ISU compared to other institutions, the NSSE Annual Reports highlight that the variance in student engagement is much greater within individual institutions than between institutions. Therefore, an institution's average benchmark score on the five areas of effective educational practice provide only a limited amount of information regarding student and institutional performance. One implication of this observation is that improvement in the overall quality of undergraduate education can be realized by focusing on factors related to the engagement of individual students at ISU (NSSE 2003 Annual Report).

In Spring 2004, the Vice Provost for Undergraduate Programs at ISU asked the Research Institute for Studies in Education (RISE) to conduct an analysis of the longitudinal NSSE data. This report seeks to examine what factors influence student engagement in educationally purposeful activities, self-reported gains in educational outcomes, and overall satisfaction with the college experience.

Focus of This Report

Based on a national study conducted by Zhao and Kuh (2004), this report examines the following research questions concerning freshmen and senior students at ISU:

1. What variables influence student engagement, satisfaction, and learning outcomes at Iowa State University? Specifically, how are student engagement, satisfaction, and learning affected by survey year, class rank, age, gender, ethnicity, parental education, high school rank, ACT composite score, college, campus residence, fraternity/sorority membership, and athlete status?
2. What is a set of best practice benchmarks (activities) that influence student engagement, satisfaction, and learning outcomes?
3. What trends are seen in the NSSE data over the four years?

Methodology

Sample

Each survey year of NSSE 2000-2003 has a national sample comprised of freshman and senior students who were randomly selected from electronic files provided by participating four-year colleges and universities. This report, however, considers only the Iowa State University sample for each survey year, without comparison to students at other institutions that participated in NSSE.

Table 1 provides information regarding the ISU sample for each survey year. In the spring of each survey year, a random sample was selected and invited to complete *The College Student Report on the Web*. For each survey year, the standard sample size was determined by NSSE project staff based on the number of undergraduates enrolled at the institution. There was one exception to this standard sample size. For the NSSE 2003 administration, ISU participated in a random oversampling of seniors to provide additional information at the college level.

In terms of demographic characteristics, the ISU samples were somewhat unrepresentative in terms of gender and college. Therefore, the sample was weighted to

ensure that freshmen and senior respondents were representative of the ISU population in terms of gender and college for the Spring semester of the relevant survey year. Unless noted otherwise, the results presented in this report represent the weighted sample.

Appendix A and Appendix B provide additional demographic information (e.g., ethnicity, age, parent education, international student status, transfer student status, campus residence, and enrollment) for the Iowa State University 2000-2003 NSSE respondents. Appendix A provides demographic information for freshmen ISU respondents, while Appendix B provides comparable information for senior ISU respondents.

Table 1: Iowa State University NSSE 2000-2003 Sample and Response Rate Information

Survey Year	ISU First-year Students			ISU Senior Students			ISU Overall Response Rate	Participating Doctoral/Research Extensive Institutions Response Rate
	Sampled	Completed Survey	Response Rate	Sampled	Completed Survey	Response Rate		
2000	500	179	35.8%	500	166	33.2%	34.5%	39.0%
2001	900	313	34.8%	900	341	37.9%	36.3%	41.0%
2002	1000	391	39.1%	1000	303	30.3%	34.7%	36.0%
2003	1000	354	35.4%	3678	1466	39.9%	38.9%	39.0%
Total	3400	1237	36.4%	6078	2276	37.4%	37.1%	38.8%

Data

The NSSE instrument measures the degree to which students participate in educational activities that previous research demonstrates are linked to engagement and learning outcomes (e.g., Chickering & Gamson, 1987; Kuh, 2001, 2003). Specifically, NSSE assesses students' experiences in the following areas:

- Involvement in a range of educationally purposeful in-class and out-of-class activities;
- Amount of reading and writing;
- Participation in selected educational programs, such as study abroad, internships, senior capstone courses, as well as learning communities;
- Perceptions of the campus environment including the quality of students' relationships with peers, faculty members, and administrators;
- Student satisfaction with academic advising and their overall collegiate experience (Zhao & Kuh, 2004, p. 120).

The NSSE survey was designed by experts and extensively tested to ensure validity and reliability. The psychometric properties of the instrument are well established (Kuh et al., 2001).

The analysis in this report relies on twelve scales constructed to represent measures of student engagement (six scales: academic effort, higher-order thinking, academic integration,

active and collaborative learning, student interactions with faculty members, and diversity experiences), quality of campus environment (three scales: supportive campus environment, quality of academic advising, satisfaction), and self-reported learning outcomes (three scales: gains in personal and social development; gains in quantitative, analytical, and work-related skills; and gains in general education). These scales replicate the scales constructed by Zhao & Kuh (2004). Appendix C includes more information about the items that contribute to each measure and the internal scale consistencies.

As described in the introduction to this report, the NSSE project staff provide institutions with a mean benchmark score for five themes that represent areas of effective educational practice. It is helpful to note how the twelve scales discussed in this report relate to the benchmarks of effective educational practice. Three of the scales – active and collaborative learning, student interactions with faculty, and supportive campus environment – replicate the benchmarks that have the same name. Two of the scales – academic effort and higher-order thinking – represent subsets of the active and collaborative learning benchmark. Finally, the diversity experiences scale represents a subset of the enriching educational experiences benchmark. All questions were calibrated to be on a 0-3 scale. Then, the factor is the mean score for all questions in the specific factor. This is consistent with the NSSE scaling procedure for the creation of the NSSE Benchmarks.

To analyze the data, additional demographic information (e.g., learning community participation, college, cumulative grade point average) was collected from institutional records.

Data analysis

The analysis was conducted in multiple steps. First, to determine the relationship between students' background characteristics and measures of student engagement, satisfaction, and reported learning outcomes, we conducted a series of multivariate ordinary least squares (OLS) regressions for each of the twelve factors. The variables that were entered into the regression equation included survey year, class rank, traditional age (under 25 or over 25), gender, ethnicity, college, parent education, ACT composite score, high school rank, campus residence, fraternity/sorority membership, and athlete status. Through testing a series of models, these mediators were examined to determine statistically significant main effects for individual variables and interaction effects between variables in relation to the dependent variables (twelve engagement scales from Zhao and Kuh, 2004). In addition to the computation of main effects, partial eta squared statistics were computed to determine the relative effect size of each factor. The effect size reported for the standard univariate approach is a partial eta square value. This statistic ranges from 0 to 1, where a 0 indicates no relationship between the independent variable and the dependent variable, while a 1 indicates the strongest possible relationship.

Results

The purpose of the data analysis was to examine the relationship between student characteristics and engagement in educationally beneficial activities, perceptions of the campus environment, and self-reported gains in learning outcomes. In addition, the analysis considered how the relationship between these factors may differ based on students' reported levels of engagement (i.e., high and low engagement). In the following sections, we describe the results of the analyses in detail. Each of the twelve dependent variables is discussed

individually. At the end of the discussion of individual factors, a combined summary is provided.

Engagement Activities

Academic Effort

Three individual questions were combined to consider students' level of academic effort. These questions include the number of hours spent preparing for class, the frequency of having worked harder than you thought you could to meet instructor's standards, and the extent the institution emphasizes spending significant amounts of time on studying and academic work. To determine the effect of background characteristics on students' ratings of academic effort, a series of OLS regression analyses explored which characteristics had a significant effect on academic effort.

The results of the analysis are presented in Table 2. Items with an asterisk indicate that the characteristic has a significant main effect on academic effort. Next, we conducted post-hoc comparisons to compare mean scores for categories within characteristics that demonstrated a significant main effect. The effect size reported for the standard univariate approach is a partial eta square. This statistic ranges from 0 to 1. A zero indicates no relationship between the independent variable and the dependent variable, while a 1 indicates the strongest possible relationship.

Table 2: Effect of Student Background Characteristics on Academic Effort

Initial Model	Background Characteristic	Main Effect	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2001, 2002, 2003 > 2000	0.004
	Class rank			
	Age	*	over 25 > under 25	0.004
	Gender	*	female > male	0.007
	Ethnicity	*	Multi-racial > White	0.005
	Parent education			
	High school rank			
	ACT composite score	*	slope < 0	0.005
	College ¹	*	2 > 1, 3, 4, 5, 6, 7 4 > 1, 3, 6, 7 5 > 1	0.052
	Campus residence			
	Fraternity/sorority membership			
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Gender	0.015
	College	0.065
	ACT composite score	0.01

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

As seen in Table 2, six variables had a significant main effect on academic effort: survey year, age, gender, ethnicity, ACT composite score, and college. Post-hoc comparisons provide additional details regarding these variables. Regarding survey year, students who completed the survey in the last three years were more likely to report higher levels of academic effort compared to students in the 2000 NSSE sample. In addition, respondents who were over 25, female, or had a lower ACT composite score were more likely to report higher levels of academic effort compared to their counterparts. Multi-racial students reported higher levels of academic effort compared to White students. Lastly, as seen in Table 2, respondents from various individual colleges (e.g., Design and Engineering) reported higher levels of academic effort. A subsequent model that entered only these six variables resulted in three significant main effects: gender, college, and ACT composite score. The partial eta square statistics indicates that there is a modest relationship between these variables and academic effort.

The variable with the largest partial eta square value for both models is college. Figure 1 provides a bar graph of the mean academic effort scores by college for the entire

sample. The post-hoc mean comparisons listed in Table 2 combined with the visual representation of mean academic effort scores by college provide a useful way to see how college is related to mean academic effort scores. In particular, students in the colleges of Design, Engineering, and Family and Consumer Sciences had relatively high academic effort mean scores compared to several other colleges (see Table 2 for specific significant differences).

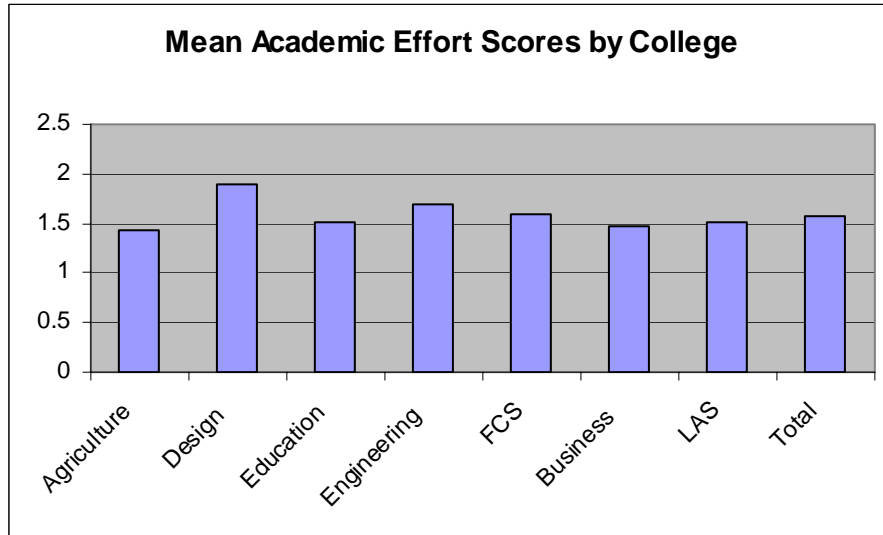


Figure 1: Mean Academic Effort Scores by College

To determine background characteristics associated with levels of low and high academic effort, we repeated the ordinary least squares (OLS) regression analysis with data sets split based upon the median score. Table 3 provides information regarding the background characteristics that had a significant main effect on mean academic effort scores for students with low academic effort mean scores (below the median score) and characteristics that had a significant main effect on mean academic effort score for students with high academic effort mean scores (above the median score). As seen in Table 3, more background characteristics had a significant main effect on academic effort for students with low mean academic effort score compared to students with a high mean academic effort score. However, the partial eta square statistics indicate that the relationship between these characteristics and academic effort is weak. The most notable finding indicated in Table 3 is the difference in the relationship between college and academic effort for students who have low levels of academic effort compared to students who have high levels of academic effort. For students demonstrating high levels of academic effort, college has a stronger relationship with academic effort (partial eta square = .057) compared to students demonstrating lower levels of academic effort (partial eta square = .008).

Table 3: Effect of Student Background Characteristics on Academic Effort (Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year	*	0.012	*	0.005
Class rank	*	0.003	*	0.005
Age				
Gender	*	0.008		
Ethnicity	*	0.004		
Parent education				
High school rank				
ACT composite score	*	0.004		
College	*	0.008	*	0.057
Campus residence	*	0.002		
Fraternity/sorority membership				
Athlete status				

* $p < .05$

Higher-Order Thinking

Four individual questions were combined to consider students' higher-order thinking. These questions include coursework emphasis on analyzing, synthesizing, organizing, making judgments, and applying theories or concepts. To determine the effect of background characteristics on students' ratings of higher-order thinking, a series of OLS regression analyses explored which characteristics had a significant effect.

As seen in Table 4, five variables had a significant effect on higher-order thinking: survey year, class rank, ethnicity, college, and campus residence. Post-hoc comparisons provide additional details regarding these variables. Regarding survey year, students who completed the survey in the last three years were more likely to report higher levels of higher-order thinking compared to students in the 2000 NSSE sample. In addition, respondents who were seniors, and lived off-campus were more likely to report higher levels of higher-order thinking compared to their counterparts. Multi-racial students reported higher levels of higher-order thinking compared to White students. Finally, as seen in Table 4, respondents from various individual colleges reported higher levels of higher-order thinking. A subsequent model that entered only these five variables resulted in four significant main effects: class rank, survey year, college, and ethnicity. The partial eta square statistics indicates that there is a modest relationship between these variables and higher-order thinking.

Table 4: Effect of Student Background Characteristics on Higher-Order Thinking

Initial Model	Background Characteristic	Main Effect	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2001, 2002, 2003 > 2000	0.012
	Class rank	*	senior > freshmen	0.010
	Age			
	Gender			
	Ethnicity	*	Multi-racial > White	0.004
	Parent education			
	High school rank			
	ACT composite score			
	College ¹	*	2 > 1, 3, 6, 7 4 > 1, 3, 6, 7 5 > 1, 6, 7	0.039
	Campus residence	*	off-campus > on-campus	0.003
	Fraternity/sorority membership			
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Class rank	0.007
	Survey year	0.009
	College	0.042
	Ethnicity	0.002

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

The variable with the largest partial eta square value for both models is college. Figure 2 provides a bar graph of the mean higher-order thinking scores by college for the entire sample. The post-hoc mean comparisons listed in Table 4 combined with the visual representation of mean higher-order thinking scores by college provide a useful way to see how this variable is related to mean higher-order thinking scores. In particular, students in the colleges of Design, Engineering, and Family and Consumer Sciences had relatively high higher-order thinking mean scores compared to several other colleges (see Table 4 for specific significant differences).

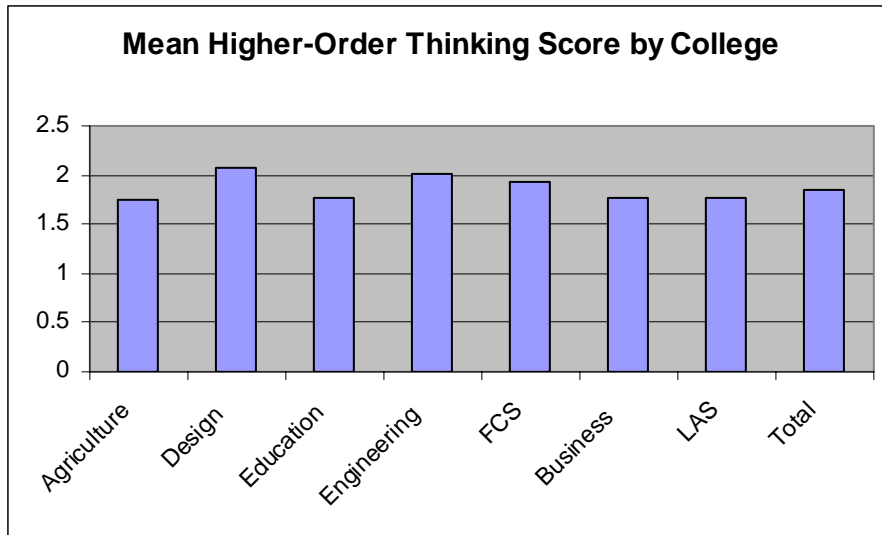


Figure 2. Mean Higher-order Thinking Score by College

To determine background characteristics associated with levels of low and high higher-order thinking, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 5 provides information regarding the background characteristics that had a significant main effect on mean higher-order thinking scores for students with low higher-order thinking mean scores (below the median score) and characteristics that had a significant main effect on mean higher-order thinking score for students with high higher-order thinking mean scores (above the median score).

As seen Table 5, more background characteristics had a significant main effect on higher-order thinking for students with high mean scores compared to students with a low mean, higher-order thinking score. However, the partial eta square statistics indicate that the relationship between these characteristics and higher-order thinking is weak. The most notable finding indicated in Table 5 is that college is the factor that has the strongest relationship with higher-order thinking for both groups (low and high mean higher-order thinking).

Table 5: Effect of Student Background Characteristics on Higher-Order Thinking
(Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year	*	0.008	*	0.006
Class rank			*	0.014
Age				
Gender				
Ethnicity			*	0.005
Parent education				
High school rank				
ACT composite score	*	0.004		
College	*	0.01	*	0.024
Campus residence				
Fraternity/sorority membership			*	0.002
Athlete status				

* $p < .05$

Academic Integration

Three individual questions were combined to consider students' academic integration. These questions include how often students worked on a paper or project that required integrating ideas from various sources, included diverse perspectives in class discussions or writing assignments, and put together ideas or concepts from different courses when completing assignments or during class discussions. To determine the effect of background characteristics on students' ratings of academic integration, a series of OLS regression analyses explored which characteristics had a significant effect. The results from these analyses are presented in Table 6.

Table 6: Effect of Student Background Characteristics on Academic Integration

Initial Model	Background Characteristic	Main Effect	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2002 > 2003	0.007
	Class rank	*	senior > freshmen	0.046
	Age			
	Gender	*	female > male	0.003
	Ethnicity			
	Parent education			
	High school rank			
	ACT composite score			
	College ¹	*	2 > 1, 4, 6, 7 4 > 3, 5 5 > 1, 6,7	0.022
	Campus residence	*	off-campus > on-campus	0.019
	Fraternity/sorority membership			
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Class rank	0.026
	College	0.019

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

As seen in Table 6, five variables had a significant effect on academic integration: survey year, class rank, gender, college, and campus residence. Post-hoc comparisons provide additional details regarding these variables. Regarding survey year, students who completed the survey in 2002 were more likely to report higher levels of academic integration compared to students in the 2003 NSSE sample. In addition, respondents who

were seniors, female, or lived off-campus were more likely to report higher levels of academic integration compared to their counterparts. Lastly, respondents from various individual colleges reported higher levels of academic integration. A subsequent model that entered these five variables resulted in two significant main effects: class rank and college. The partial eta square statistics indicates that there is a modest relationship between these variables and academic integration.

The variable with the largest partial eta square value for both models is class rank, although the value (0.026) is small. It is not surprising that seniors are more likely to indicate higher levels of academic integration compared to freshmen (see Figure 3), due to the increasing integration of course content around students' major as they progress through their degree programs. College also had a significant effect on mean academic integration scores. In particular, students in the colleges of Design and Family and Consumer Sciences had relatively high mean academic integration scores compared to several other colleges (see Table 6 and Figure 4).

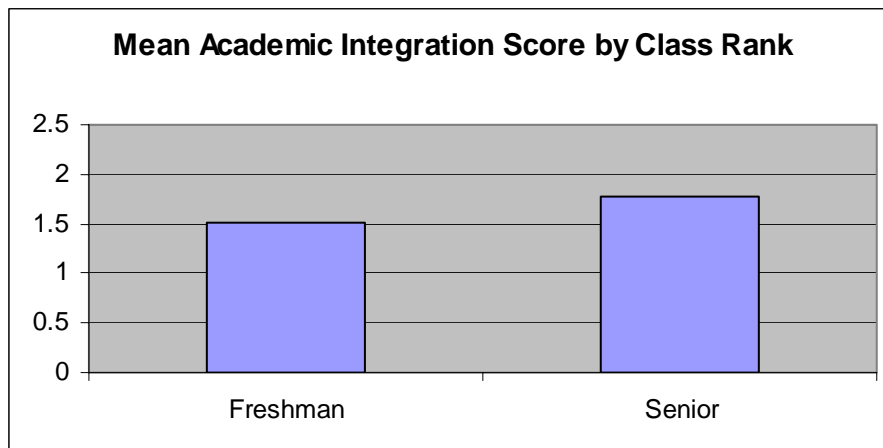


Figure 3. Mean Academic Integration Score by Class

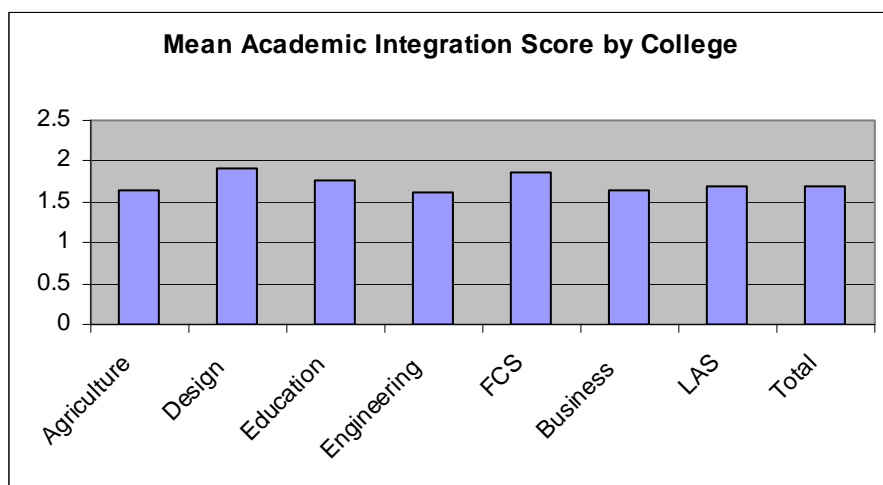


Figure 4. Mean Academic Integration Score by College

To determine background characteristics associated with levels of low and high academic integration, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 7 provides information regarding the background characteristics that had a significant main effect on mean academic integration scores for students with low academic integration mean scores (below the median score) and characteristics that had a significant main effect on mean score for students with high academic integration mean scores (above the median score).

Table 7: Effect of Student Background Characteristics on Academic Integration (Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year				
Class rank	*	0.009	*	0.008
Age				
Gender	*	0.005	*	0.002
Ethnicity			*	0.006
Parent education				
High school rank				
ACT composite score				
College			*	0.015
Campus residence	*	0.005		
Fraternity/sorority membership				
Athlete status				

* $p < .05$

As seen in Table 7, various background characteristics had a significant main effect on academic integration for students with high mean scores compared to students with a low mean higher-order thinking score. However, the partial eta square statistics indicate that the relationship between these characteristics and academic integration is weak. The most notable finding indicated in Table 7 is that college is the factor that has the strongest relationship with academic integration, but has a relationship with academic integration only for students who have a relatively high (above the median) academic integration score.

Active and Collaborative Learning

Seven individual questions were combined to consider students' active and collaborative learning. These questions include the frequency that students have asked questions or contributed to discussions in class, made a class presentation, worked with other students on a project, worked with other students outside of class to prepare an assignment, tutored other students, discussed ideas with others outside of class, and participated in a

community-based project as part of a course. To determine the effect of background characteristics on students' ratings of active and collaborative learning, a series of OLS regression analyses explored which characteristics had a significant effect. The results from these analyses are presented in Table 8.

As seen in Table 8, six variables had a significant effect on active and collaborative learning: survey year, class rank, high school rank, college, campus residence, and fraternity/sorority membership. Post-hoc comparisons provide additional details regarding these variables. Regarding survey year, students who completed the survey in 2000 and 2003 reported higher levels of active and collaborative learning. In addition, respondents who were seniors, had a higher high school rank, lived off-campus, or were members of a fraternity or sorority were more likely to report higher levels of active and collaborative learning compared to their counterparts. Finally, respondents from various individual colleges reported higher levels of active and collaborative learning. A subsequent model that entered these six variables resulted in five significant main effects: class rank, survey year, college, ethnicity, and fraternity/sorority membership. The partial eta square statistics indicates that there is a modest relationship between these variables and active and collaborative learning.

Table 8: Effect of Student Background Characteristics on Active and Collaborative Learning

Initial Model	Background Characteristic	Main Effect	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2000 > 2002 2003 > 2001, 2002	0.010
	Class rank	*	Senior > Freshmen	0.086
	Age			
	Gender			
	Ethnicity			
	Parent education			
	High school rank	*	slope > 0	0.001
	ACT composite score			
	College ¹	*	1, 6 > 7 2 > 1, 4, 6, 7 3, 5 > 1, 6, 7 4 > 6, 7	0.049
	Campus residence	*	off-campus > on-campus	0.035
	Fraternity/sorority membership	*	yes > no	0.004
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Class rank	0.066
	Survey year	0.003
	College	0.043
	Ethnicity	0.003
	Fraternity/Sorority	0.008

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

The variables with the largest partial eta square value for both models are class rank and college. Similar to the findings regarding levels of academic integration, senior students were more likely to indicate higher levels of active and collaborative learning compared to freshmen. Figure 5 provides a bar graph of the mean active and collaborative learning scores by class rank. Analyses of the data also indicate that college has a relationship with levels of active and collaborative learning. The post-hoc mean comparisons listed in Table 8 combined with the visual representation of mean active and collaborative learning scores by college (Figure 6) provide a useful way to see how this variable is related to active and collaborative learning. In particular, students in the colleges of Design, Education, and Family and Consumer Sciences had relatively high mean active and collaborative learning scores compared to several other colleges (see Table 8 for specific significant differences).

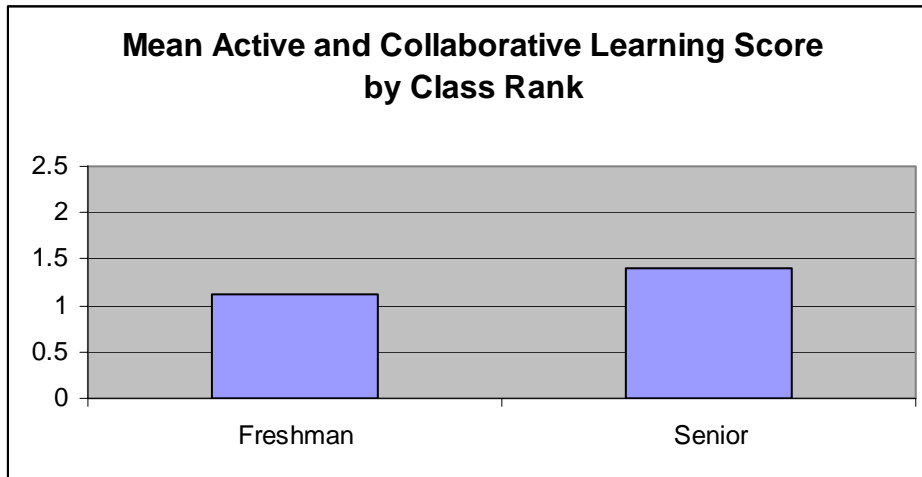


Figure 5. Mean Active and Collaborative Learning Score by Class Rank

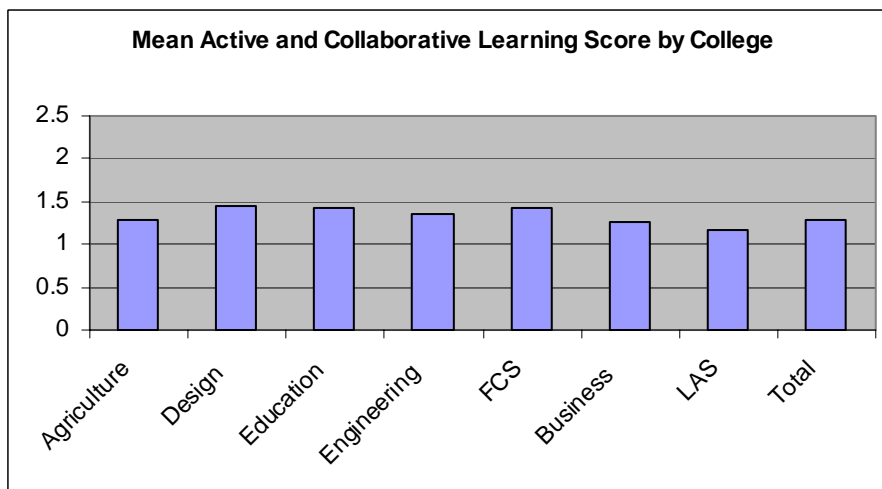


Figure 6. Mean Active and Collaborative Learning Score by College

To determine background characteristics associated with levels of low and high active and collaborative learning, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 9 provides information regarding the background characteristics that had a significant main effect on mean active and collaborative learning scores for students with low mean scores (below the median score) and characteristics that had a significant main effect on mean active and collaborative learning score for students with high active and collaborative learning mean scores (above the median score).

Table 9: Effect of Student Background Characteristics on Active and Collaborative Learning (Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year				
Class rank	*	0.037	*	0.021
Age				
Gender				
Ethnicity				
Parent education				
High school rank	*	0.008		
ACT composite score			*	0.004
College	*	0.011	*	0.024
Campus residence	*	0.007	*	0.009
Fraternity/sorority membership			*	0.004
Athlete status				

* $p < .05$

As seen in Table 9, three background characteristics (class rank, college, and campus residence) had a significant main effect on active and collaborative learning for all students. For students below the median score, high school rank had a significant main effect, while for students above the median score, ACT composite score and fraternity/sorority membership had a significant main effect on active and collaborative learning scores. The partial eta square statistics indicate that class rank and college have the strongest relationship with active and collaborative learning scores.

Student Interactions with Faculty Members

Six individual questions were combined to consider students' interactions with faculty members. These questions include the frequency that students have discussed grades or assignments, talked about career plans, discussed ideas from readings or classes outside of class, worked with faculty members on activities other than coursework, received prompt feedback from faculty on academic performance, and worked on a research project with a faculty member outside of course requirements. To determine the effect of background characteristics on students' ratings of interactions with faculty members, a series of OLS regression analyses explored which characteristics had a significant effect. The results from these analyses are presented in Table 10.

Table 10: Effect of Student Background Characteristics on Interactions with Faculty

Initial Model	Background Characteristic	Main Effect	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2001, 2002, 2003 > 2000	0.012
	Class rank	*	Senior > Freshmen	0.023
	Age		slope > 0	
	Gender			
	Ethnicity	*	multi-racial > white	0.008
	Parent education ¹	*	2 > 0, 1	0.006
	High school rank	*	slope > 0	0.002
	ACT composite score	*	slope > 0	0.002
	College ²	*	2 > 4, 7	0.021
			1, 2, 3, 4, 5, 7 > 6	
	Campus residence	*	off-campus > on-campus	0.008
	Fraternity/sorority membership	*	yes > no	0.004
	Athlete status	*	yes > no	0.001

Significant main effects		Partial eta squared
model	Background Characteristic	squared
	Class rank	0.012
	College	0.030
	Ethnic Group	0.006
	Fraternity/Sorority	0.005
	Parent education	0.005

¹Parent education: 0 = mother's education and father's education less than bachelors, 1 = only one parent's education is less than bachelors, 2 = mother's and father's education greater than bachelors.

²College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

As seen in Table 10, ten variables had a significant effect on student interaction with faculty: survey year, class rank, ethnicity, parent education, high school rank, ACT composite score, college, campus residence, fraternity/sorority membership, and athlete status. Post-hoc comparisons provide additional details regarding these variables. Regarding survey year, students from survey years 2001 through 2003 reported higher levels of interaction with faculty than did students from survey year 2000. In addition, respondents who were seniors, were multi-racial, had parents with higher education levels, had a higher high school rank, had a higher ACT score, lived off-campus, were members of a fraternity or sorority, or were an athlete were more likely to report higher levels of interactions with faculty. Finally, respondents from various individual colleges reported higher levels of interactions with faculty. Compared to several other colleges, the Design College had a

relatively high mean score. A subsequent model that entered these ten variables resulted in five significant main effects: class rank, college, ethnic group, fraternity/sorority membership, and parent education. The partial eta square statistics indicates that there is a modest relationship between these variables and student interactions with faculty.

Figure 7 provides a bar graph of the mean student interaction with faculty scores by college. The post-hoc mean comparisons listed in Table 10 combined with the visual representation of student interactions with faculty scores by college (Figure 7) provide a useful way to see how this variable is related to student interactions with faculty. In particular, students in the College of Design had relatively high mean interaction with faculty scores compared to several other colleges (see Table 10 for specific significant differences).

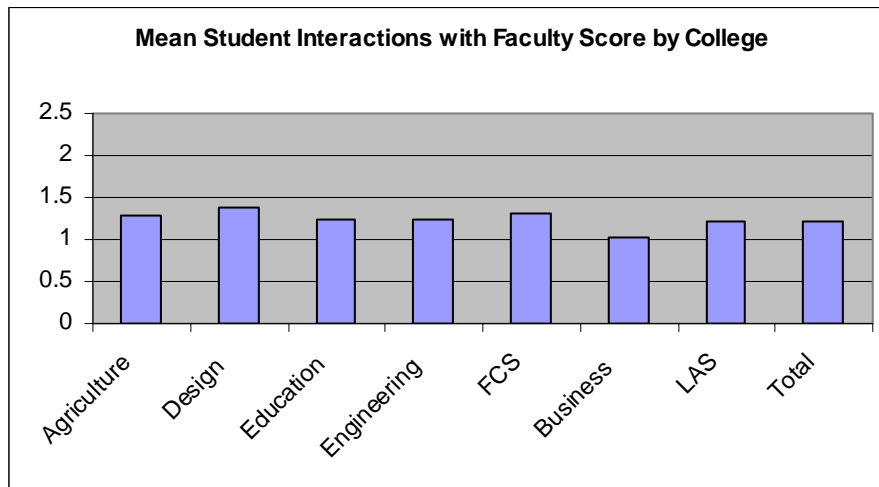


Figure 7: Mean Student Interactions with Faculty Score by College

To determine background characteristics associated with levels of low and high interactions with faculty, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 11 provides information regarding the background characteristics that had a significant main effect on mean student interaction with faculty scores for students with low mean scores (below the median score) and characteristics that had a significant main effect on mean student interactions with faculty score for students with high mean scores (above the median score).

As seen in Table 11, five background characteristics (survey year, class rank, ethnicity, college, and campus residence) had a significant main effect on student interactions with faculty for students with a high mean score. For students below the median score, only fraternity/sorority membership had a significant main effect on student interaction with faculty scores. The partial eta square statistics indicate that these variables have a modest relationship with student interaction with faculty scores.

Table 11: Effect of Student Background Characteristics on Interactions with Faculty
(Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year			*	0.008
Class rank			*	0.012
Age				
Gender				
Ethnicity			*	0.005
Parent education				
High school rank				
ACT composite score				
College			*	0.006
Campus residence			*	0.006
Fraternity/sorority membership	*	0.005		
Athlete status				

* $p < .05$

Diversity Experiences

Three individual questions were combined to consider students' diversity experiences. These questions included the frequency that students have had serious conversations with students of a different race or ethnicity and the frequency that students had serious conversations with students who were different in terms of their religious beliefs, political opinions, or personal values. The third question asked students to what extent the university encouraged contact among students from different economic, social, and racial or ethnic backgrounds. To determine the effect of background characteristics on students' ratings of diversity experiences, a series of OLS regression analyses explored which characteristics had a significant effect. The results from these analyses are presented in Table 12.

Table 12: Effect of Student Background Characteristics on Diversity Experiences

Initial Model	Background Characteristic	Main Effect	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2001 > 2000, 2002, 2003	0.005
	Class rank	*	freshman > senior	0.007
	Age	*	over 25 > under 25	0.004
	Gender			
	Ethnicity	*	Black > White, multi-racial, Hispanic > Asian/PI, White, multi-racial, unknown	0.014
	Parent education ¹	*	2 > 0	0.004
	High school rank			
	ACT composite score			
	College ²	*	2, 4, 6, 7 > 1 2 > 1, 3, 4, 5, 6	0.013
	Campus residence	*	on-campus > off-campus	0.012
	Fraternity/sorority membership			
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Survey Year	0.007
	College	0.010
	Ethnicity	0.016
	Residency	0.011
	Age	0.003

¹Parent education: 0 = mother's education and father's education less than bachelors, 1 = only one parent's education is less than bachelors, 2 = mother's and father's education greater than bachelors.

²College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

As seen in Table 12, seven variables had a significant effect on diversity experiences: survey year, class rank, age, ethnicity, parent education, college, and campus residence. Post-hoc comparisons provide additional details regarding these variables. Students in survey year 2001 reported higher levels of diversity experiences compared with students from other survey years. In addition, respondents who were freshmen, were older (over 25), were Black or Hispanic, had parents with higher education levels, or lived on-campus were more likely to report higher levels of diversity experiences compared to their counterparts. Finally, respondents from the Design College had a relatively high mean score. A subsequent model that entered these seven variables resulted in five significant main effects: survey year,

college, ethnicity, residency, and age. The partial eta square statistics indicates that there is a modest relationship between these variables and diversity experiences.

Figure 8 provides a bar graph of the mean diversity experiences scores by college. The post-hoc mean comparisons listed in Table 12 combined with the visual representation of diversity experiences scores by college provide a useful way to see how this variable is related to diversity experiences. In particular, students in the College of Design had relatively high scores compared to several other colleges.

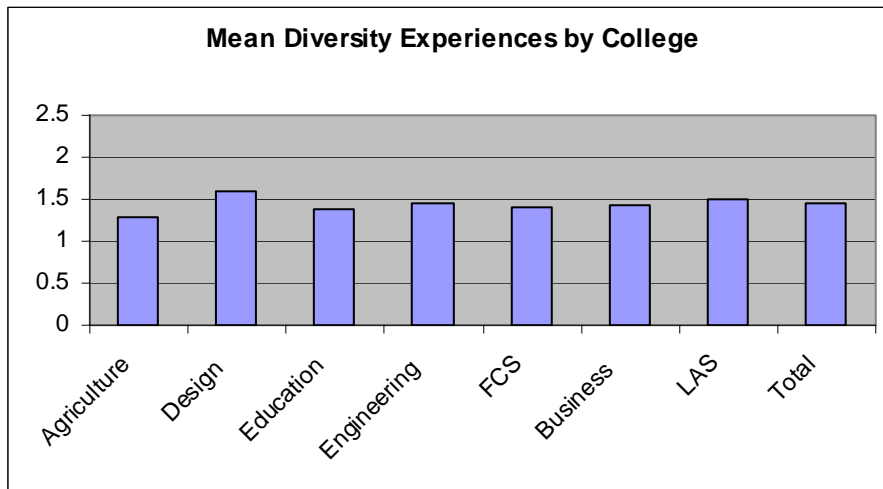


Figure 8. Mean Diversity Experiences by College

To determine background characteristics associated with levels of low and high diversity experiences, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 13 provides information regarding the background characteristics that had a significant main effect on mean diversity experiences scores for students with low mean scores (below the median score) and characteristics that had a significant main effect on mean diversity experiences scores for students with high mean scores (above the median score).

As seen in Table 13, several background characteristics (survey year, class rank, ethnicity, parent education, college, and campus residence) had a significant main effect on diversity experiences scores for students with a high mean score. For students below the median score, only ethnicity and campus residence had a significant main effect on diversity experiences scores. The partial eta square statistics indicate that these variables have a modest relationship with diversity experiences scores.

Table 13: Effect of Student Background Characteristics on Diversity Experiences
(Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year			*	0.005
Class rank			*	0.002
Age				
Gender				
Ethnicity	*	0.002	*	0.023
Parent education			*	0.005
High school rank				
ACT composite score				
College			*	0.013
Campus residence	*	0.002	*	0.004
Fraternity/sorority membership				
Athlete status				

* $p < .05$

Perception of Campus Environment

Quality of Academic Advising

A single question asked students to rate the quality of academic advising they received at their institution. To determine the effect of background characteristics on students' ratings of academic advising, a series of OLS regression analyses explored which characteristics had a significant effect. The results from these analyses are presented in Table 14.

Table 14: Effect of Student Background Characteristics on Quality of Academic Advising

Initial Model	Background Characteristic	Significance	Post-Hoc Comparison	Partial eta squared
	Survey year			
	Class rank	*	freshmen > seniors	0.008
	Age			
	Gender			
	Ethnicity	*	Multi-racial > White	0.001
	Parent education			
	High school rank			
	ACT composite score			
	College ¹	*	1 > 2, 3, 4, 6, 7 4, 5 > 2	0.017
	Campus residence	*	on-campus > off-campus	0.006
	Fraternity/sorority membership			
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Class rank	0.009
	College	0.020
	Ethnicity	0.002

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

As seen in Table 14, four variables had a significant effect on ratings of academic advising quality: class rank, ethnicity, college, and campus residence. Post-hoc comparisons provide additional information regarding these variables. When considering the effect of class rank, freshmen students provided higher ratings of academic advising compared to senior students. While the results indicated that multi-racial students had higher ratings of academic advising compared to White students, it is important to realize that there is a small number of multi-racial students in the longitudinal sample. Regarding campus residence,

students who lived on-campus tended to have higher ratings of academic advising quality. Finally, respondents from the Agriculture College had a relatively high mean score. A subsequent model that entered these four variables resulted in a model with three significant main effects: class rank, college, and ethnicity. The partial eta square statistics indicates that there is a modest relationship between these variables and students' ratings of academic advising quality.

Figure 9 provides a bar graph of the mean quality of academic advising scores by college. The post-hoc mean comparison listed in Table 14 combined with the visual representation of academic advising scores by college provide an understanding of how students' ratings varied by college. As noted earlier, students in the Agriculture College had relatively high scores.

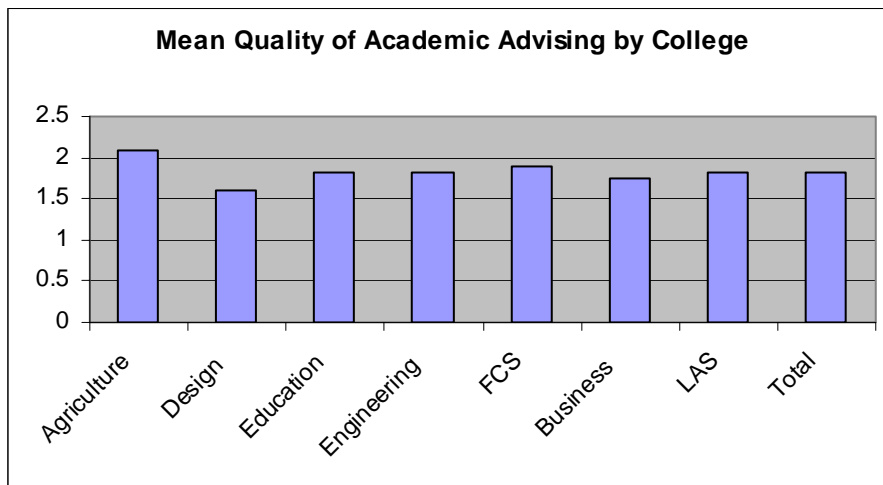


Figure 9. Mean Quality of Academic Advising by College

To determine background characteristics associated with low and high ratings of academic advising quality, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 15 provides information regarding the background characteristics that had a significant main effect on mean academic advising scores for students with low mean scores (below the median) and characteristics that had a significant main effect on academic advising scores for students with high mean scores (above the median).

As seen in Table 15, three background characteristics (survey year, ethnicity, and college) had a significant main effect on academic advising scores for students with a high mean score. For students below the median score, six variables (survey year, class rank, high school rank, ACT composite score, college, and campus residence) had a significant main effect on the quality of academic advising scores. The partial eta square statistics indicate that these variables have a modest relationship with academic advising scores.

Table 15: Effect of Student Background Characteristics on Quality of Academic Advising (Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year	*	0.008	*	0.004
Class rank	*	0.014		
Age				
Gender				
Ethnicity			*	0.003
Parent education				
High school rank	*	0.005		
ACT composite score	*	0.007		
College	*	0.023	*	0.015
Campus residence	*	0.009		
Fraternity/sorority membership				
Athlete status				

* $p < .05$

Supportive Campus Environment

Six individual questions were combined to consider students' perceptions of the campus environment. Three questions included the extent the institution provides academic support, helps students cope with non-academic responsibilities, and provides social support. Another three questions asked students to indicate the quality of their relationships with other students, faculty members, and administrative personnel. To determine the effect of background characteristics on students' ratings of campus environment, a series of OLS regression analyses explored which characteristics had a significant effect on campus environment.

The results of the analysis are presented in Table 16. Items with an asterisk indicate that the characteristic has a significant main effect on campus environment. Next, we conducted post-hoc comparisons to compare mean scores for categories within characteristics that demonstrated a significant main effect.

As seen in Table 16, nine variables had a significant effect on ratings of supportive campus environment: survey year, class rank, gender, ethnicity, ACT composite score, college, campus residence, fraternity/sorority membership, and athlete status. Post-hoc comparisons provide additional information regarding these variables. A close look at the post-hoc comparison column indicates that students who completed the NSSE in the 2000 survey year, senior students, male students, students with higher ACT composite scores, students who lived off-campus, students who were not part of Greek organizations, and non-athletes tended to have lower ratings of supportive campus environment. In comparison to White students, Hispanic students had higher ratings on the supportive campus environment

variable. Finally, students in the College of Education and the College of Family and Consumer Sciences had relatively high ratings of the campus environment. A subsequent model that entered all nine variables resulted in eight significant main effects: class rank, survey year, gender, college, ethnic group, residence, fraternity/sorority, and athlete status.

Table 16: Effect of Student Background Characteristics on Supportive Campus Environment

Initial Model	Background Characteristic	Main Effect	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2001, 2002 > 2000	0.005
	Class rank	*	freshmen > seniors	0.014
	Age			
	Gender	*	female > male	0.004
	Ethnicity	*	Hispanic > White	0.008
	Parent education			
	High school rank			
	ACT composite score	*	slope < 0	0.001
	College ¹	*	4, 6 < 3, 5 7 < 1, 3, 5	0.009
	Campus residence	*	on-campus > off-campus	0.01
	Fraternity/sorority membership	*	yes > no	0.003
	Athlete status	*	yes > no	0.005

Significant main effects model	Background Characteristic	Partial eta squared
	Class rank	0.005
	Survey year	0.006
	Gender	0.002
	College	0.011
	Ethnic group	0.011
	On-campus	0.004
	Fraternity/sorority	0.006
	Athlete	0.004

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

Figure 10 provides a bar graph of the mean supportive campus environment score by college. The post-hoc mean comparisons listed in Table 16 combined with the visual representation in the graph provide a useful way to see how ratings differ by college. In particular, we see that students in the Colleges of Education and FCS tended to have higher scores.

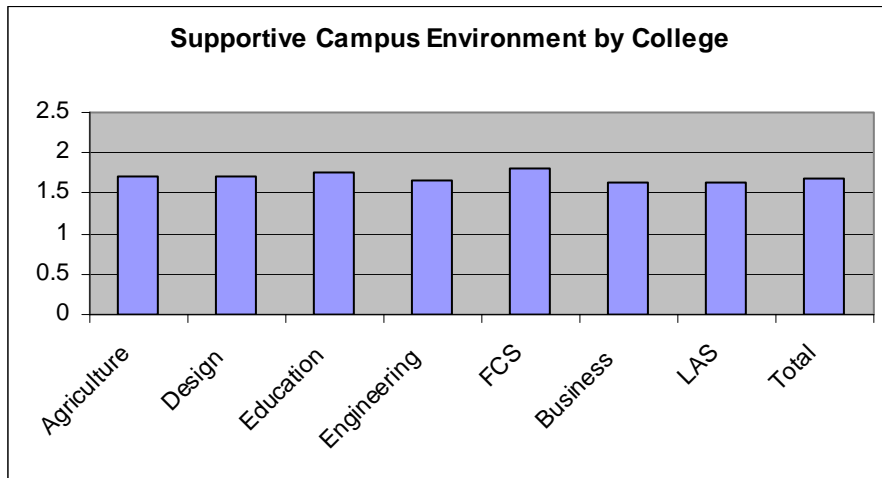


Figure 10. Supportive Campus Environment by College

To determine background characteristics associated with low and high ratings of supportive campus environment, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 17 provides information regarding the background characteristics that had a significant main effect on mean supportive campus environment scores for students with low mean scores (below the median) and characteristics that had a significant main effect on supportive campus environment scores for students with high mean scores (above the median).

As seen in Table 17, six background characteristics (age, gender, high school rank, ACT composite score, college, and campus residence) had a significant main effect on supportive campus environment scores for students with a low mean score. For students above the median score, seven variables (survey year, class rank, gender, ethnicity, ACT composite score, college, and athlete status) had a significant main effect on supportive campus environment scores. The partial eta square statistics indicate that these variables have a modest relationship with supportive campus environment scores.

Table 17: Effect of Student Background Characteristics on Supportive Campus Environment (Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year			*	0.004
Class rank			*	0.004
Age	*	0.005		
Gender	*	0.003	*	0.004
Ethnicity			*	0.015
Parent education				
High school rank	*	0.010		
ACT composite score	*	0.005	*	0.009
College	*	0.007	*	0.008
Campus residence	*	0.007		
Fraternity/sorority membership				
Athlete status			*	0.003

* $p < .05$

Overall Satisfaction

Two individual questions were combined to consider students' overall satisfaction. Students were asked to evaluate their entire educational experience at the institution and to indicate if they would attend the same institution if they could start over again. To determine the effect of background characteristics on students' ratings of overall satisfaction, a series of OLS regression analyses explored which characteristics had a significant effect on satisfaction.

The results of the analysis are presented in Table 18. Items with an asterisk indicate that the characteristic has a significant main effect on overall satisfaction. Next, we conducted post-hoc comparisons to compare mean scores for categories within characteristics that demonstrated a significant main effect.

As seen in Table 18, seven variables had a significant effect on ratings of overall satisfaction: class rank, gender, high school rank, ACT composite score, college, campus residence, and membership in a Greek organization. Post-hoc comparisons provide additional information regarding these variables. A close look at the post-hoc comparison column indicates that freshmen students, male students, students with higher high school ranks and ACT scores, students who live on-campus, and members of Greek organizations tended to report higher levels of overall satisfaction. A subsequent model that entered the seven variables resulted in five significant main effects: gender, college, residency, fraternity/sorority membership, and high school rank.

Table 18: Effect of Student Background Characteristics on Overall Satisfaction

Initial Model	Background Characteristic	Significance	Post-Hoc Comparison	Partial eta squared
	Survey year			
	Class rank	*	freshmen > seniors	0.005
	Age			
	Gender	*	female > male	0.005
	Ethnicity			
	Parent education			
	High school rank	*	slope > 0	0.016
	ACT composite score	*	slope > 0	0.004
	College ¹	*	1 > 7	0.005
	Campus residence	*	on-campus > off-campus	0.006
	Fraternity/sorority membership	*	yes > no	0.005
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Gender	0.002
	College	0.006
	Residency	0.007
	Fraternity/sorority	0.009
	High school rank	0.012

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

Because the discussion of previous variables contained a visual representation of students' ratings by college, Figure 11 provides students' mean score for overall satisfaction by college. It is notable that there is little difference in students' ratings when comparing across colleges.

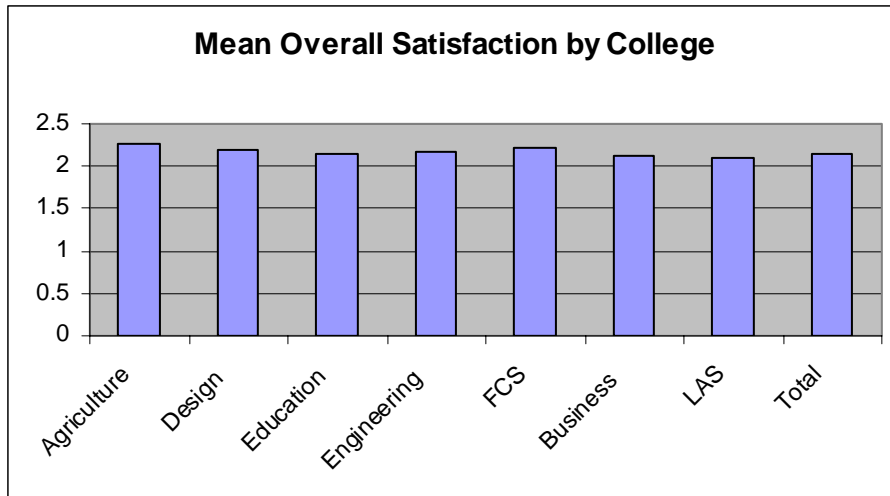


Figure 11. Mean Overall Satisfaction by College

To determine background characteristics associated with low and high ratings of overall satisfaction, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 19 provides information regarding the background characteristics that had a significant main effect on mean overall satisfaction scores for students with low mean scores (below the median) and characteristics that had a significant main effect on overall satisfaction scores for students with high mean scores (above the median).

As seen in Table 19, seven background characteristics (class rank, age, gender, high school rank, ACT composite score, college, and campus residence) had a significant main effect on overall satisfaction scores for students with a low mean score. The partial eta square statistics indicate that these variables have a modest relationship with overall satisfaction scores. For students above the median score, no variables had a significant main effect.

Table 19: Effect of Student Background Characteristics on Overall Satisfaction (Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year				
Class rank	*	0.004		
Age	*	0.003		
Gender	*	0.009		
Ethnicity				
Parent education				
High school rank	*	0.012		
ACT composite score	*	0.004		
College	*	0.007		
Campus residence	*	0.009		
Fraternity/sorority membership				
Athlete status				

* $p < .05$

Gains in Personal and Social Development

Seven questions were combined to consider students' gains in personal and social development. Students were asked to indicate the extent to which their college experience contributed to developing values and ethics, understanding people of other racial and ethnic backgrounds, understanding of self, learning effectively on their own, solving complex problems, voting in elections, and improving the welfare of their community. To determine the effect of background characteristics on students' ratings of personal and social development, a series of OLS regression analyses explored which characteristics had a significant effect on satisfaction.

The results of the analysis are presented in Table 20. Items with an asterisk indicate that the characteristic has a significant main effect on gains in personal and social development. Next, we conducted post-hoc comparisons to compare mean scores for categories within characteristics that demonstrated a significant main effect.

As seen in Table 20, seven variables had a significant effect on ratings of gains in personal and social development: age, gender, ethnicity, ACT composite score, college, campus residence, and fraternity/sorority membership. Post-hoc comparisons provide additional information regarding these variables. A close look at the post-hoc comparison column indicates that students over 25, female students, students with lower ACT scores, students who live off-campus, and students who were members of a Greek organization tended to report higher levels of gains in personal and social development. In addition, White students had higher mean scores in personal and social development compared to multi-racial students. Also, students in the College of Design and the College of Family and Consumer

Sciences tended to have high mean ratings of development. A subsequent model that entered these seven variables resulted in five significant main effects: gender, college, ethnicity, fraternity/sorority, and age group.

Table 20: Effect of Student Background Characteristics on Gains in Personal and Social Development

Initial Model	Background Characteristic	Significance	Post-Hoc Comparison	Partial eta squared
	Survey year			
	Class rank			
	Age	*	under 25 > over 25	0.004
	Gender	*	female > male	0.003
	Ethnicity	*	White, unknown > Multi-racial	0.013
	Parent education			
	High school rank			
	ACT composite score	*	slope < 0	0.013
	College ¹	*	2 > 3, 4, 7 5 > 4, 6	0.007
	Campus residence	*	off-campus > on-campus	0.001
	Fraternity/sorority membership	*	yes > no	0.006
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Gender	0.002
	College	0.005
	Ethnicity	0.017
	Fraternity/sorority	0.007
	Age group	0.003

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

Figure 12 provides a bar graph of the mean gains in personal and social development score by college. The post-hoc mean comparisons listed in Table 20 combined with the visual representation in the graph provide a useful way to see how ratings differ by college. In particular, we see that students in the Colleges of Design and FCS tended to have higher scores.

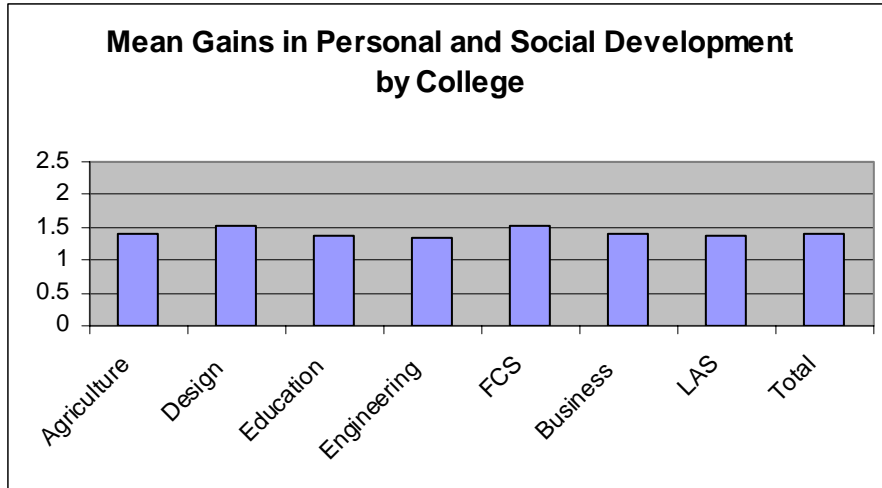


Figure 12. Mean Gains in Personal and Social Development by College

To determine background characteristics associated with low and high ratings of gains in personal and social development, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 21 provides information regarding the background characteristics that had a significant main effect on mean gains in personal and social development scores for students with low mean scores (below the median) and characteristics that had a significant main effect on gain in personal and social development scores for students with high mean scores (above the median).

As seen in Table 21, three background characteristics (survey year, age, and ACT composite score) had a significant main effect on gains in personal and social development scores for students with a low mean score. For students above the median score, eight variables (survey year, class rank, age, ethnicity, high school rank, ACT composite score, campus residence, and fraternity/sorority membership) had a significant main effect. The partial eta square statistics indicate that these variables have a modest relationship with overall gains in personal and social development scores.

Table 21: Effect of Student Background Characteristics on Gains in Personal and Social Development (Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year	*	0.006	*	0.006
Class rank			*	0.003
Age	*	0.003	*	0.004
Gender				
Ethnicity			*	0.021
Parent education				
High school rank			*	0.004
ACT composite score	*	0.003	*	0.016
College				
Campus residence			*	0.005
Fraternity/sorority membership			*	0.004
Athlete status				

* $p < .05$

Learning Outcomes

Gains in Practical Competence

Four questions were combined to consider students' gains in practical competence, including quantitative, analytical, and work-related skills. Students were asked to indicate the extent to which their college experience contributed to analyzing quantitative problems, acquiring job knowledge and skills, using computing and information technology, and working effectively with others. To determine the effect of background characteristics on students' ratings of practical competence, a series of OLS regression analyses explored which characteristics had a significant effect.

The results of the analysis are presented in Table 22. Items with an asterisk indicate that the characteristic has a significant main effect on gains in practical competence. Next, we conducted post-hoc comparisons to compare mean scores for categories within characteristics that demonstrated a significant main effect.

As seen in Table 22, eight variables had a significant effect on ratings of practical competence: survey year, class rank, age, gender, ethnicity, college, campus residence, and fraternity/sorority membership. Post-hoc comparisons provide additional information regarding these variables. A close look at the post-hoc comparison column indicates that students who completed the NSSE in 2003, senior students, male students, students living off-campus, and members of Greek organizations tended to have higher ratings of gains in practical competence. In addition, multi-racial students had higher mean scores compared to White students. Students in the College of Engineering tended to have high mean scores,

while students in the College of Liberal Arts and Sciences tended to have low mean scores of gains in practical competence. A subsequent model that entered these eight variables resulted in four significant main effects: class rank, college, ethnicity, and fraternity/sorority membership.

Table 22: Effect of Student Background Characteristics on Gains in Practical Competence

Initial Model	Background Characteristic	Significance	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2003 > 2001, 2002	0.009
	Class rank	*	senior > freshmen	0.052
	Age	*	slope > 0	
	Gender	*	male > female	0.009
	Ethnicity	*	multi-racial > white, unknown	0.004
	Parent education			
	High school rank			
	ACT composite score			
	College ¹	*	4 > 1, 2, 3, 5, 6, 7 7 < 1, 2, 3, 4, 5, 6	0.071
	Campus residence	*	off-campus > on-campus	0.023
	Fraternity/sorority membership	*	yes > no	0.013
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Class rank	0.052
	College	0.071
	Ethnicity	0.003
	Fraternity/sorority	0.003

¹College: 1 = Agriculture, 2 = Design, 3 = Education, 4 = Engineering, 5 = Family and Consumer Sciences, 6 = Business, 7 = Liberal Arts and Sciences

* $p < .05$

Figure 13 provides a bar graph of the mean gains in practical competence score by college. The post-hoc mean comparisons listed in Table 22 combined with the visual representation in the graph provide a useful way to see how ratings differ by college. As previously stated, we see that students in the College of Engineering had a relatively high mean score, while students in the College of Liberal Arts and Sciences had a relatively low mean score.

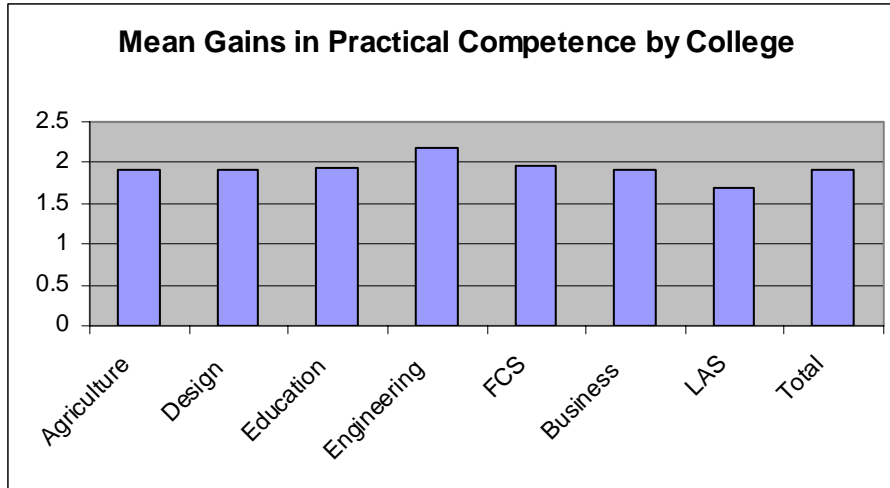


Figure 13. Mean Gains in Practical Competence by College

To determine background characteristics associated with low and high ratings of gains in practical competence, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 23 provides information regarding the background characteristics that had a significant main effect on mean practical competence scores for students with low mean scores (below the median) and characteristics that had a significant main effect on practical competence scores for students with high mean scores (above the median).

As seen in the Table 23, three background characteristics (class rank, high school rank, and college) had a significant main effect on practical competence scores for students with a low mean score. For students above the median score, four variables (class rank, gender, college, and campus residence) had a significant main effect. The partial eta square statistics indicate that these variables have a modest relationship with overall gains in practical competence scores.

Table 23: Effect of Student Background Characteristics on Gains in Practical Competence (Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year				
Class rank	*	0.009	*	0.019
Age				
Gender			*	0.007
Ethnicity				
Parent education				
High school rank	*	0.005		
ACT composite score				
College	*	0.027	*	0.04
Campus residence			*	0.01
Fraternity/sorority membership				
Athlete status				

* $p < .05$

General Education Gains

Four questions were combined to consider students' gains in general education. Students were asked to indicate the extent to which their college experience contributed to writing clearly and effectively, speaking clearly and effectively, acquiring a broad general education, and thinking critically and analytically. To determine the effect of background characteristics on students' ratings of general education gains, a series of OLS regression analyses explored which characteristics had a significant effect.

The results of the analysis are presented in Table 24. Items with an asterisk indicate that the characteristic has a significant main effect on general education gains. Next, we conducted post-hoc comparisons to compare mean scores for categories within characteristics that demonstrated a significant main effect.

As seen in Table 24, seven variables had a significant effect on ratings of general education gains: survey year, class rank, gender, parent education, ACT composite score, campus residence, and fraternity/sorority membership. Post-hoc comparisons provide additional information regarding these variables. A close look at the post-hoc comparison column indicates that students who completed the NSSE in 2003, senior students, female students, students whose parents had less education, students with lower ACT composite scores, off-campus students, and members of Greek organizations tended to have higher ratings of general education gains. A subsequent model that entered these seven variables resulted in four significant main effects: class rank, gender, fraternity/sorority membership, and ACT composite score.

Table 24: Effect of Student Background Characteristics on General Education Gains

Initial Model	Background Characteristic	Significance	Post-Hoc Comparison	Partial eta squared
	Survey year	*	2003 > 2000, 2001, 2002	0.008
	Class rank	*	senior > freshmen	0.033
	Age			
	Gender	*	female > male	0.001
	Ethnicity			
	Parent education ¹	*	0 > 2	0.003
	High school rank			
	ACT composite score	*	slope < 0	0.008
	College			
	Campus residence	*	off-campus > on-campus	0.022
	Fraternity/sorority membership	*	yes > no	0.002
	Athlete status			

Significant main effects model	Background Characteristic	Partial eta squared
	Class rank	0.032
	Gender	0.003
	Fraternity/sorority	0.004
	ACT	0.008

¹Parent education: 0 = mother's education and father's education less than bachelors, 1 = only one parent's education is less than bachelors, 2 = mother's and father's education greater than bachelors.

* $p < .05$

To determine background characteristics associated with low and high ratings of general education gains, we repeated the ordinary least squares (OLS) regression analysis with split data sets based upon the median score. Table 25 provides information regarding the background characteristics that had a significant main effect on mean general education scores for students with low mean scores (below the median) and characteristics that had a significant main effect on general education scores for students with high mean scores (above the median).

As seen in Table 25, three background characteristics (class rank, ACT composite score, and fraternity/sorority membership) had a significant main effect on general education scores for students with a low mean score. For students above the median score, six variables (class rank, age, ethnicity, high school rank, ACT composite score, and campus residence) had a significant main effect. The partial eta square statistics indicate that these variables have a modest relationship with gains in general education scores.

Table 25: Effect of Student Background Characteristics on General Education Gains
(Median Comparison)

Background Characteristic	Below Median Score		Above Median Score	
	Main Effect	Partial eta squared	Main Effect	Partial eta squared
Survey year				
Class rank	*	0.004	*	0.015
Age			*	0.004
Gender				
Ethnicity			*	0.005
Parent education				
High school rank			*	0.002
ACT composite score	*	0.005	*	0.003
College				
Campus residence			*	0.009
Fraternity/sorority membership	*	0.005		
Athlete status				

* $p < .05$

Discussion of Results/Summary

The purpose of this study was to examine what factors influence student engagement, satisfaction, and learning outcomes at Iowa State University. Factors considered in this study include survey year, class rank, age, gender, ethnicity, parental education, high school rank, ACT composite score, college, campus residence, fraternity/sorority membership, and athlete status.

Time

A significant question of this study was to consider if students' reported levels of engagement are consistent over time. In other words, do the data from the 2000 – 2003 NSSE indicate trends over time? Survey year was demonstrated to be a significant main effect on eight of twelve factors. Bonferroni post hoc comparison tests indicated whether the significant main effect is due to differences between pairs of means or some combination of means. When reducing the model to include only items with a significant main effect, survey year had a significant main effect for four variables. For a few factors (i.e., academic effort, higher-order thinking, interactions with faculty, and supportive campus environment), students responding to the NSSE 2000 survey tended to have lower mean scores compared to the other survey years. This finding may be related to the sample for that survey year. When compared to the ISU population of undergraduates in 1999-2000, both freshman and senior samples included a higher percentage of students majoring or planning to major in engineering. An effect for survey year also was demonstrated for other variables. Students in the 2002 NSSE sample had significantly higher scores on academic integration compared to

the 2003 NSSE sample. Students' responses to active and collaborative learning were higher in the NSSE 2000 and 2003 samples compared to the NSSE 2002 sample. Students in the NSSE 2001 sample had higher mean levels of diversity experiences compared to all other years. Students in the NSSE 2003 sample had higher general education gain scores compared to all other survey years. Taken together, these findings suggest that future administration of the NSSE should consider how students' responses may change over time. This strategy seems particularly effective to investigate other variables that may influence engagement. Future analysis of trends over time may consider student responses by classification, to see if there are changes over time for each individual class (freshmen, seniors).

Classification

We also wanted to determine if students' levels of engagement were different when comparing freshmen and senior responses. Senior students scored statistically significantly higher on several variables, including higher-order thinking, academic integration, active and collaborative learning, student interactions with faculty, gains in practical competence, and general education gains. Perhaps as students progress in their academic majors and take advanced courses with smaller class sizes they experience gains in these areas. In contrast, freshmen students rated themselves higher in the areas of diversity experiences, quality of academic advising, supportive campus environment, and overall satisfaction. Freshmen students' ratings of diversity experiences and campus environment may be related to their tendency to live on-campus. Similarly, students are more likely to interact with their advisors early in their academic career. Additional analysis may consider the decline in overall satisfaction during students' tenure at the institution.

Gender

For a majority of the factors where gender had a significant effect on engagement, females indicated statistically significantly higher levels. Specifically, females had higher self-ratings on academic effort, academic integration, supportive campus environment, overall satisfaction, gains in personal and social development, and general education gains. This finding seems particularly noteworthy given the concentration of academic majors in science and engineering. Males reported significantly higher levels of gains in practical competence.

Ethnicity

The results of this study indicate that ethnicity does have an effect on engagement. Post hoc analyses indicated that Multi-racial students had higher levels of engagement compared to White students for academic effort, higher-order thinking, student interactions with faculty, quality of academic advising, gains in personal and social competence, and gains in practical competence. In contrast to these findings, White students reported higher levels of gains in personal and social competence compared to Multi-racial students. The distribution of the sample may limit the implications of these findings due to the small sample size of Multi-racial students ($n = 84$), compared to the number of White students ($n = 3,383$).

Hispanic students had a higher mean score on supportive campus environment compared to White students. Again it is important to note the differences in the sample sizes (Hispanic = 78, White = 3,383).

Students' ratings of their diversity experiences differed by ethnicity. African American students provided significantly higher ratings of their diversity experiences compared to both White and Multi-racial students. Hispanic students reported significantly higher ratings of their diversity experiences compared to Asian, White, and Multi-racial students.

Parent Education

Parents' education had a main effect on students' ratings of interactions with faculty, diversity experiences, and general education gains. Students with two parents who completed a bachelor's degree had higher ratings of interactions with faculty compared to students who had none or one parent who completed a bachelor's degree. Students with two parents who completed a bachelor's degree had higher ratings of diversity experiences compared to students for whom neither parent completed a bachelor's degree. In contrast to these findings, students with no parent who completed a bachelor's degree reported higher levels of general education gains compared to students with two parents who completed a bachelor's degree.

High School Rank and ACT

High school rank had a significant effect on students' ratings of active and collaborative learning, student interactions with faculty, and overall satisfaction. Students with higher high school ranks reported higher levels of collaborative learning, student interactions with faculty, and overall satisfaction.

ACT composite score had a significant effect on several factors. Students with higher composite ACT scores had higher scores on student interactions with faculty and overall satisfaction. In contrast, students with higher ACT scores had lower scores on academic effort, supportive campus environment, gains in personal and social development, and general education gains. While it is encouraging that high-achieving students tend to interact with faculty and are satisfied overall, it may be important to examine why these students demonstrate lower levels of academic effort, gains in personal and social development, gains in general education, and ratings of supportive campus environment.

College

The results of the study indicate that college has a significant effect on many engagement measures. When considering the significant main effects models for each of the twelve factors, college had a significant effect for eleven of twelve variables. College membership did not have a significant main effect on students' ratings of general education gains. Post hoc comparisons indicate that students from the colleges of Design, Engineering, and Family and Consumer Sciences reported higher levels of engagement on several factors. It is also important to note that the partial eta squared statistics indicate that, while college may have a modest relationship to engagement, of the variables considered in this study, college often had the greatest effect on the engagement measures.

Residence

Students' residence had a main effect on multiple factors. It is important to note that residence is highly correlated with classification, so the effect of residence in many cases is related to the effect for classification. Students who lived off-campus reported higher levels

of higher-order thinking, academic integration, active and collaborative learning, student interactions with faculty, gains in personal and social development, gains in practical competence, and general education gains. In contrast, students who lived on-campus reported higher levels of diversity experiences, quality of academic advising, supportive campus environment, and overall satisfaction.

Fraternity and Sorority Membership

For each factor where fraternity or sorority membership had a significant effect, members of Greek organizations reported higher levels of engagement. Members of fraternities and sororities reported higher levels of active and collaborative learning, student interactions with faculty, supportive campus environment, overall satisfaction, gains in personal and social development, gains in practical competence, and general education gains.

Athlete

Athletes reported higher levels of student interactions with faculty and supportive campus environment compared to non-athletes.

Overall

Table 26 offers a combined summary of the analyses of engagement, satisfaction, and learning outcomes. Of the twelve variables, it is notable that a few background characteristics demonstrated a main effect on several of the engagement, satisfaction, and learning outcomes measures. Class rank had a main effect on ten of the twelve variables, with seniors often having higher ratings. Not surprisingly, student age (which is highly correlated with academic classification) also demonstrated a main effect on ten of twelve variables. College had a main effect on eleven of twelve variables. Campus residence also demonstrated a main effect on eleven of twelve variables.

Table 27 provides details regarding the variables that had significant main effects when the number of variables entered into the model was reduced to only include the significant variables from the first analysis. Four background characteristics are notable in this analysis, including class rank (significant for eight of twelve variables), ethnicity (eight), college (eleven), and fraternity/sorority membership (seven). When comparing Table 26 and Table 27, readers will note that campus residence has a significant main effect on fewer factors in the main effects models. This may be related to the fact that class rank is highly correlated with residence.

The shaded areas in each table represent the background characteristics with an eta squared value greater than 0.02 for the relationship with the specified engagement variable. For the remaining significant main effects, the practical significance is limited. In other words, the impact of these background characteristic variables on the variance in the engagement variables is negligible. When considering the factors that most impact student engagement, it is clear that class rank and college represent the strongest factors considered in this study.

Table 26: Initial Model - Effect of Student Background Characteristics on Engagement Factors

Background Characteristic	Academic Effort	Higher Order Thinking	Academic Integration	Active and Collaborative Learning	Interactions with Faculty	Diversity Experiences	Supportive Campus Environment	Quality of Academic Advising	Overall Satisfaction	Gains in Personal Development	Gains in Practical Competence	General Education Gains
Survey year	*	*	*	*	*	*	*				*	*
Class rank		*	*	*	*	*	*	*	*		*	*
Age	*		*	*	*	*	*		*	*	*	*
Gender	*		*				*		*	*	*	*
Ethnicity	*	*			*	*	*	*		*	*	
Parent education					*	*						*
High school rank				*	*				*			
ACT composite score	*				*	*	*		*	*		*
College	*	*	*	*	*	*	*	*	*	*	*	
Campus residence		*	*	*	*	*	*	*	*	*	*	*
Fraternity/sorority membership				*	*		*		*	*	*	*
Athlete status					*		*					

* Indicates statistically significant main effect ($p < .05$)

Eta squared is above 0.02

Table 27: Significant Main Effects Model - Effect of Student Background Characteristics on Engagement Factors

Background Characteristic	Academic Effort	Higher Order Thinking	Academic Integration	Active and Collaborative Learning	Interactions with Faculty	Diversity Experiences	Supportive Campus Environment	Quality of Academic Advising	Overall Satisfaction	Gains in Personal Development	Gains in Practical Competence	General Education Gains
Survey year		*		*		*	*					
Class rank		*	*	*	*		*	*			*	*
Age						*				*		
Gender	*						*		*	*		*
Ethnicity		*		*	*	*	*	*		*	*	
Parent education					*							
High school rank									*			
ACT composite score	*											*
College	*	*	*	*	*	*	*	*	*	*	*	
Campus residence						*	*		*			
Fraternity/sorority membership				*	*		*		*	*	*	*
Athlete status							*					

* Indicates statistically significant main effect ($p < .05$)

Eta squared is above 0.02

Limitations

This research shares many of the limitations outlined by Zhao and Kuh (2004). One limitation relates to the reliability of several scales used in this study. While the twelve factors have a high degree of conceptual consistency and provide a more complete analysis relative to the five NSSE benchmark scores that typically are provided to institutions, some scales have marginal Cronbach alpha coefficients. Specifically, the alpha coefficients associated with Academic Effort and Academic Integration are marginal and should be interpreted with caution.

Because the gain measures used in the NSSE are based on self-reported data, students may report gains in college using different baselines relative to their openness to college (Pascarella, 2001). Therefore, the findings related to gains and satisfaction should keep this in mind.

Future research might consider additional factors that may influence student engagement (e.g., transfer students, international students, part-time students). Review of the background characteristics considered in this study should provide additional insights regarding variables to consider in the future.

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Appendix A. Demographic Information of Freshmen Iowa State University NSSE 2000-2003 Respondents (Unweighted)

Student Characteristics	2000 NSSE		2001 NSSE		2002 NSSE		2003 NSSE	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender								
Male	166	94.3%	152	94.4%	175	81.0%	173	95.6%
Female	176	51.5%	161	51.4%	216	55.2%	181	51.1%
Race/Ethnicity								
White	309	92.8%	276	92.9%	341	91.9%	305	89.7%
Black	6	1.8%	3	1.0%	6	1.6%	11	3.2%
Native American	1	0.3%	0	0.0%	1	0.3%	0	0.0%
Asian	11	3.3%	6	2.0%	12	3.2%	14	4.1%
Latino/a	6	1.8%	12	4.0%	11	3.0%	10	2.9%
Age								
19 or younger	168	49.3%	282	90.1%	385	98.5%	302	85.3%
20-23	138	40.5%	23	7.3%	5	1.3%	46	13.0%
24-29	28	8.2%	6	1.9%	1	0.3%	4	1.1%
30-39	5	1.5%	2	0.6%	0	0.0%	1	0.3%
40-55	2	0.6%	0	0.0%	0	0.0%	1	0.3%
Over 55	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Parent Education								
Neither parent graduated from college			92	44.0%	106	39.1%	131	62.1%
One parent graduated from college			92	44.0%	95	35.1%	92	43.6%
Both parents graduated from college			117	56.0%	176	64.9%	119	56.4%
International Students								
International Students	7	2.0%	6	1.9%	10	2.6%	13	3.7%
US Students	335	98.0%	307	98.1%	381	97.4%	341	96.3%
Transfer Students								
Native Students	317	93.0%	282	92.5%	374	96.9%	319	93.3%
Transfer Students	24	7.0%	23	7.5%	12	3.1%	23	6.7%
Campus Residential Students								
On-campus Students	296	86.8%	247	81.0%	318	82.4%	249	72.8%
Off-campus Students	45	13.2%	58	19.0%	68	17.6%	93	27.2%
Enrollment Status								
Full-time	338	99.1%	301	98.7%	382	99.0%	336	98.2%
Part-time	3	0.9%	4	1.3%	4	1.0%	6	1.8%
College								
Agriculture	37	10.8%	47	15.3%	38	9.7%	31	8.8%
Design	25	7.3%	20	6.5%	33	8.4%	37	10.5%
Education	19	5.6%	16	5.2%	19	4.9%	29	8.2%
Engineering	116	33.9%	83	26.9%	96	24.6%	89	25.1%
Family and Consumer Sciences	7	2.0%	10	3.2%	14	3.6%	14	4.0%
Business	31	9.1%	30	9.7%	42	10.7%	33	9.3%
Liberal Arts and Sciences	107	31.3%	102	33.1%	149	38.1%	121	34.2%

Appendix B. Demographic Information of Senior Iowa State University NSSE 2000-2003 Respondents (Unweighted)

Student Characteristics	2000 NSSE		2001 NSSE		2002 NSSE		2003 NSSE	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender								
Male	168	53%	184	54%	158	52%	738	50%
Female	149	47%	158	46%	145	48%	728	50%
Race/Ethnicity								
White	272	90%	290	92%	263	93%	1236	91%
Black	6	2%	4	1%	3	1%	28	2%
Native American	1	0%	2	1%	1	0%	7	1%
Asian	17	6%	17	5%	13	5%	57	4%
Latino/a	5	2%	2	1%	4	1%	27	2%
Age								
19 or younger	165	52%	9	3%	1	0%	5	0%
20-23	122	39%	257	75%	246	81%	1220	83%
24-29	19	6%	46	13%	36	12%	151	10%
30-39	6	2%	17	5%	14	5%	54	4%
40-55	3	1%	13	4%	6	2%	34	2%
Over 55	0	0%	0	0%	0	0%	2	0%
Parent Education								
Neither parent graduated from college			116	35%	115	39%	573	40%
One parent graduated from college			93	28%	84	28%	394	27%
Both parents graduated from college			122	37%	98	33%	470	33%
International Students								
International Students	29	9%	24	7%	27	9%	96	7%
US Students	288	91%	318	93%	276	91%	1370	93%
Transfer Students								
Native Students	210	66%	216	64%	194	65%	944	66%
Transfer Students	107	34%	119	36%	105	35%	495	34%
Campus Residential Students								
On-campus Students	45	14%	54	16%	48	16%	264	18%
Off-campus Students	272	86%	281	84%	250	84%	1172	82%
Enrollment Status								
Full-time	282	89%	306	91%	289	97%	1365	95%
Part-time	35	11%	29	9%	10	3%	74	5%
College								
Agriculture	44	14%	50	15%	45	15%	184	13%
Design	19	6%	16	5%	13	4%	102	7%
Education	31	10%	20	6%	20	7%	130	9%
Engineering	86	27%	83	24%	76	25%	371	25%
Family and Consumer Sciences	13	4%	21	6%	19	6%	78	5%
Business	50	16%	58	17%	52	17%	239	16%
Liberal Arts and Sciences	74	23%	94	27%	78	26%	362	25%

Appendix C. Survey Items Contributing to Student Engagement Measures

Factor	Cronbach's alpha				
	National NSSE 2002	ISU NSSE 2003	ISU NSSE 2002	ISU NSSE 2001	ISU NSSE 2000
Academic Effort	0.53	0.44	0.43	0.45	0.51
<ul style="list-style-type: none"> · Number of hours spent preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities) · The frequency of having worked harder than you thought you could to meet an instructor's standards or expectations · significant amounts of time studying and on academic work 					
Higher Order Thinking	0.80	0.79	0.81	0.77	0.75
<ul style="list-style-type: none"> · Coursework emphasized: Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth · Coursework emphasized: Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships · Coursework emphasized: Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data · Coursework emphasized: Applying theories or concepts to practical problems or in new situations 					
Academic Integration	0.62	0.60	0.59	-	-
<ul style="list-style-type: none"> · Worked on a paper or project that required integrating ideas or information from various sources · Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments · when completing assignments or during class discussions 					
Active and Collaborative Learning	0.64	0.64	0.63	0.66	0.62
<ul style="list-style-type: none"> · Asked questions in class or contributed to class · Made a class presentation · Worked with other students on projects during class · Worked with classmates outside of class to prepare class assignments · Tutored or taught other students (paid or voluntary) · others outside of class (students, family members, coworkers, etc.) · Participated in a community-based project as part of a regular course 					

Appendix C. Survey Items Contributing to Student Engagement Measures (continued)

Factor	Cronbach's alpha				
	National	ISU	ISU	ISU	ISU
	NSSE	NSSE	NSSE	NSSE	NSSE
	2002	2003	2002	2001	2000
Student Interactions with Faculty Members	0.76	0.71	0.72	0.69	0.74
<ul style="list-style-type: none"> · Discussed grades or assignments with an instructor · Talked about career plans with a faculty member or advisor · Discussed ideas from your readings or classes with faculty members outside of class · Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.) · Received prompt feedback from faculty on your academic performance (written or oral) · Work on a research project with a faculty member outside of course or program requirements 					
Diversity Experiences	0.66	0.63	0.61	0.59	0.56
<ul style="list-style-type: none"> · Had serious conversations with students of a different race or ethnicity than your own · Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values · Emphasize: Encouraging contact among students from different economic, social, and racial or ethnic backgrounds 					
Supportive Campus Environment					
<ul style="list-style-type: none"> · Emphasize: Providing the support you need to help you succeed academically · Emphasize: Helping you cope with your non-academic responsibilities (work, family, etc.) · Emphasize: Providing the support you need to thrive socially · Quality: Your relationships with other students · Quality: Your relationships with faculty members · Quality: Your relationships with administrative personnel and offices 	0.77	0.74	0.77	0.76	0.72
Quality of Academic Advising					
<ul style="list-style-type: none"> · academic advising you have received at your institution? 	-	-	-	-	-

Appendix C. Survey Items Contributing to Student Engagement Measures (continued)

Factor	Cronbach's alpha				
	National	ISU	ISU	ISU	ISU
	NSSE	NSSE	NSSE	NSSE	NSSE
	2002	2003	2002	2001	2000
Gains in Personal and Social Development	0.85	0.84	0.81	0.82	0.76
· Contributed to: Developing a personal code of values and ethics					
· Contributed to: Understanding people of other racial and ethnic backgrounds					
· Contributed to: Understanding yourself					
· Contributed to: Learning effectively on your own					
· Contributed to: Solving complex real-world problems					
· Contributed to: Voting in local, state, or national elections					
· Contributed to: (Your) contributing to the welfare of your community					
Gains in Quantitative, Analytical, and Work-Related Skills	0.73	0.74	0.75	0.71	0.73
· Contributed to: Analyzing quantitative problems					
· Contributed to: Acquiring job or work-related knowledge and skills					
· Contributed to: Using computing and information technology					
· Contributed to: Working effectively with others					
Gains in General Education	0.80	0.80	0.77	0.77	0.78
· Contributed to: Writing clearly and effectively					
· Contributed to: Speaking clearly and effectively					
· Contributed to: Acquiring a broad general education					
· Contributed to: Thinking critically and analytically					
Satisfaction	0.79	0.79	0.76	0.75	0.75
· How would you evaluate your entire educational experience at this institution?					
· If you could start over again, would you go to the same institution you are now attending?					