# Faculty Do Matter:
# The Role of College Faculty in Student Learning and Engagement

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Abstract

This study uses two national data sets to explore the relationship between faculty practices and student engagement. Our findings suggest that students report higher levels of engagement and learning at institutions where faculty members use active and collaborative learning techniques, engage students in experiences, emphasize higher-order cognitive activities in the classroom, interact with students, challenge students academically, and value enriching educational experiences. In general, faculty at liberal arts colleges are the most likely to engage their students.

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The quality and value of an undergraduate education in the past decade received, and continues to receive, scrutiny by various stakeholders associated with the higher education community. Much of the energy surrounding the undergraduate experience and student learning was placed on the two major responsibilities of faculty, teaching and research (Fairweather, 1996, 2002; Marsh & Hattie, 2002). The regulation of time allocated to these two roles was quickly becoming one of the most salient issues in higher education. Unfortunately, much of the debate about the nature of faculty work was shrouded in myth, opinion, and conjecture (Fairweather, 2002). Myths, such as a faculty member being highly involved in teaching, engages students in the undergraduate experience resulting in greater student learning gains were important to debunk or substantiate. As a result, assessing the impact that faculty behaviors and interactions with students in the classroom have on the undergraduate classroom experience was ripe for examination in the current study. Conducting empirical research that focus on faculty behaviors and interactions with students in the classroom will advance the literature on the role faculty play in student learning.

Barr and Tagg (1995) suggested a paradigm shift to improve the quality of undergraduate education (i.e., from providing instruction to students, to producing student learning) that would create learning centered campuses and maximize students' learning. However, creating a student-centered campus necessitates knowing how students learn, understanding barriers to student learning, and developing classroom techniques that promote learning among college students (Stage, Muller, Kinzie, & Simmons, 1998).

Several national reports have echoed the call for studying the undergraduate experience. An American Imperative turned improving the quality of undergraduate education to a

conversation on how to place student learning at the core of the academy (Wingspread Group on Higher Education, 1993). However, doing so requires a better understanding of variables that contribute, both positively and negatively, to what matters most to learning.

The National Center for Public Policy and Higher Education concluded in Measuring Up 2000 and Measuring Up 2002 that a lack of information permitting systemic or systematic comparisons on the impact of college on students has resulted in little knowledge about student learning. As a result, the authors of Measuring Up 2002 called upon national and state efforts to create more powerful measures of educational performance by assessing student learning (National Center for Public Policy and Higher Education, 2002).

Where the traditional "quality measures" (e.g., selectivity in admissions, the number of PhDs among the faculty, library holdings, financial resources, and institutional prestige from faculty research) used to articulate an undergraduate education were once accepted, they have become increasingly suspect in terms of their validity to measure excellence in undergraduate education (Kuh, 2001; Pascarella, 2001). A 1995 report by the Education Commission of the States, Making Quality Count, criticized these often used "quality" measures, stating that these factors say nothing about how and why students were actively engaged in the learning process, the extent and nature of student interactions with faculty, the focus and intensity of academic experiences, and the overall level of student engagement (Pascarella, 2001).

## Purpose

Despite the call by the Education Commission of the States in Making Quality Count (1995) to create new ways to measure and monitor the quality of undergraduate education, little new knowledge has been generated about indicators of educational practice that predict student engagement (Pascarella, 2001) or the approaches that faculty take to effective educational

practices (Kezar, 1999). Kuh (2001) and Pascarella (2001) posited that a quality undergraduate education was one that engaged students in proven good educational practices (e.g., focus and quality of undergraduate teaching, interactions with faculty and peers, and involvement in coursework) and that added value to student learning. Studying self-reported student engagement behaviors was important and a necessary step in measuring the quality of undergraduate education; yet, it was equally important to understand and evaluate what faculty practices influenced student learning gains (Wingspread Report, 1993). A good deal was known about how faculty spend their time, what instructional methods they used, and satisfaction with teaching (Menges, 2000). Much less was known about how these variables influenced gains in student learning. Therefore, the we use two nationally representative sources of data for undergraduate student engagement, faculty practices, and institutional characteristics to explore indicators of gains in student learning. More specifically, we examine the context created by faculty on campus and its relationship to student engagement, student perceptions of environment, and student self-reported gains. Therefore, this paper addresses the following research questions:

1. Do faculty members create a context for learning through their behaviors and attitudes that relates to student engagement behaviors, student perceptions of environment, and student self-reported gains?
2. Are these faculty behaviors and attitudes related to institutional characteristics?

## Conceptual Framework

Pascarella (2001) argued that assessing effective educational practices that lead to student learning required empirically based evidence linked to the college impact literature and not just by factors that seem as if they should be important. Researchers studying students' interactions

with the college environment relied heavily on models advanced by Tinto (1993) and Astin (1993). These two models suggested that when students are engaged in college experiences, it was more likely that student learning, retention, and a quality undergraduate experience as outcomes occurred. In what has become a widely cited piece on retention, the central premise of Tinto's (1993) model was that students' decisions to persist or withdraw from college depend on their successful academic and social integration within the college. Part of this successful integration was dependent upon the favorable daily interactions between faculty and students.

Astin's (1993) model of inputs-environments-outcomes assessed the impacts that various institutional practices and environmental experiences (e.g., faculty-student contact, pedagogical techniques) have on student outcomes (e.g., student engagement and student learning).

In their landmark publication, Principles of Good Practice for Undergraduate Education, Chickering and Gamson (1987) outlined seven engagement indicators predicted to directly influence the quality of students' learning and their educational experiences. Five of the principles advanced by Chickering and Gamson were directly relevant to the current study: encouraging cooperation among students, encouraging active learning, communicating high expectations, encouraging contact between students and faculty, and using active learning techniques.

In accordance with Chickering and Gamson, several researchers (Astin, 1993; Ewell & Jones, 1996; Fries-Britt, 2000; Pascarella & Terenzini, 1991; Tinto, 1993, 2000) documented the strong association of both formal and informal faculty-student contact to enhanced student learning. These interactions influenced the degree to which students became engaged with faculty and were frequently the best predictors of student persistence (Braxton, Sullivan, & Johnson, 1997; Hurtado & Carter, 1997; Pascarella & Terenzini; Stage & Hossler, 2000).

Furthermore, if educational practices lead to student engagement and student engagement leads to certain outcomes of college (e.g., student learning and retention) then it can be said that educational practices indirectly lead to student outcomes from higher education.

Peter Ewell (1997) argued that if student learning is to be improved, then it is important to study institutional and faculty engagement practices which promote student learning. Much of the most recent research evaluating the quality of undergraduate education has concentrated on self-reported student engagement behaviors (Astin, 1993; Pascarella & Terenzini, 1991).

Astin (1993), Chickering (1969), and Chickering and Resiser (1993) suggested that sources of influence need to be taken into account if one was to derive a valid estimate of the organizational or environmental emphases of the institution attended. Therefore, the organizational emphases of faculty behaviors and institutional characteristics were examined to determine the influence they have on student learning and student engagement.

In addition to the college impact literature, this study draws on theoretical perspectives from a model proposed by Blackburn and Lawrence (1995) and research by Fairweather (1996, 2002). The Blackburn and Lawrence model is an appropriate framework for examining the influence of faculty productivity on educational practices because it is an empirically tested model across academic disciplines and institutions. This model also integrated the research on teaching and research productivity and was grounded in psychological and sociological theory with motivation theories. Using these frameworks enhanced our understanding of how institutional characteristics and faculty inputs (e.g., behaviors, satisfaction, experience, and student contact) influenced student engagement that lead to student learning.

## Data and Analysis

This study uses two national data sets to explore the relationship between faculty practices and student engagement and learning. Combining these databases allows for a comprehensive understanding of the faculty and institutional characteristics that influence student learning and student engagement. The first data source for this study is the National Survey of Student Engagement (NSSE). The NSSE survey is designed to assess the extent to which students are engaged in empirically-derived good educational practices and what they gain from their college experience (Kuh, 2001). Only NSSE students from the 137 schools that surveyed their faculty were included. The sample for this study consists of 20,226 senior students and 22,033 first-year students who completed the NSSE in spring 2003.

The second database came from a parallel study examining the attitudes and behaviors of faculty at institutions participating in NSSE. In the spring of 2003, a survey was administered at 137 colleges and universities. The instrument is designed to measure faculty expectations for student engagement in educational practices that are known to be linked with high levels of learning and development. Additionally, the instrument examines how faculty members structure their classroom and out-of-class work. The final data set included 14,336 faculty members who completed the survey.

We use hierarchical linear modeling (HLM) in a two stage analysis of our data. Because we are interested in the context created by faculty and its relationship to students, we are faced with a decision about unit of analysis. Should they build regression models by aggregating both faculty and student data to the institution level, or should they attach institution-level characteristics (faculty aggregates) to students? If we build our models at the institution level, we will be prone to “ecologically fallacy”, whereby individual differences are masked (King, 1999;

Kreft & deLeeuw, 1998). For example, an analysis based on colleges might reveal that students at smaller colleges are more engaged in effective educational practices than students at large colleges, while an analysis of small colleges might reveal that many students at large colleges are as engaged or more engaged than small college students.

Research where institution-level characteristics are attached to individuals is flawed as well (Ethington, 1997). First, it violates the general assumption of ordinary least squares regression (OLS): Observations are independent of one another. Second, it assumes that individuals within a group are affected identically by group-level characteristics. Finally, the inclusion of group-level variables into an OLS regression equation leads to mis-estimation of standard errors and the wrong number of degrees of freedom, increasing the likelihood of committing a Type I error (i.e., indicating that something is statistically significant when it is not).

Using HLM overcomes the problems associated with unit of analysis by simultaneously modeling both individual and institutional effects. HLM partitions the variance between the institution and the student, resulting in more accurate parameter estimates (Raudenbush & Bryk, 2002). This makes it possible to determine what is an individual-level effect or a group-level effect. Because these effects can be partitioned, each can be modeled with their respective characteristics.

In HLM, we were able to allow the intercept to vary, thereby partitioning the variance between the institution and the student. For our models, we allowed the intercept to vary by institution and model it using institutional characteristics such as average faculty behaviors and attitudes.

In the first stage of our analysis, we employed hierarchical linear modeling (HLM) to explore the context created by faculty and their relationship with student experiences. In other words, we modeled the relationship between average faculty behaviors at an institution and student engagement and learning.

Appendix A displays the items contained in each of the constructs and the alpha reliability of the constructs used in our models. Our dependent variables included several constructs that represent student engagement (e.g., academic challenge, active and collaborative learning, student-faculty interaction), student perceptions of support (e.g., supportive campus environment, interpersonal support, support for academic success, student satisfaction) and student self-reported gains. At the student level, we included controls for age, race, gender, transfer status, on-campus residence, student athlete, greek affiliation, major, full-time, parents' education (See Table 1 for the descriptive statistics of all variables included in our models). At the institution level, we controlled for institutional characteristics such as Carnegie Classification, size, sector, and urbanicity. Because we sought to understand the relationship between student experiences and average faculty behaviors at an institution, we created several faculty constructs and aggregated them by institution.

We modeled institutional averages of six faculty constructs as contextual variables and used them to model the average experiences of students at an institution by including them in our level two model of the random intercept (average student experiences). The six constructs represented course-related interactions with students, out-of-class interactions with students, faculty use of active and collaborative learning techniques, level of academic challenge faculty provided students, level of importance faculty placed on enriching educational experiences, and amount of emphasis faculty place on higher order cognitive activities. We built a model for each

of these including only the aggregated faculty behaviors at level two. We then entered institutional characteristics (urbanicity, sector, size, selectivity, Carnegie Classification) as controls at level two as a second block of variables for all six models. We ran separate models for first-year students and seniors.

After exploring the relationship between the context created by faculty and student engagement, perceptions of support, and gains, we then examined the characteristics of institutions where these faculty behaviors occurred. Because we were interested in understanding the relationships between institutional characteristics and faculty behaviors and attitudes, we again used HLM to model our six faculty variables. We allowed the intercept to vary and modeled institutional averages by entering institutional characteristics at level two. We included the institution-level variables into our models in two blocks. The first block includes Carnegie Classification with Baccalaureate-Liberal Arts Colleges as the reference group. In the second block, we added sector, urbanicity (urban was used as the reference group), and undergraduate headcount or size. At level one, we controled for the following faculty characteristics: age, years teaching, part-time, race, gender, rank, and discipline of academic appointment.

To aid in the interpretation of our model results, we calculated effect sizes for all of our models (Rosenthal & Rosnow, 1991). An effect size is the proportion of a standard deviation change in the dependent variable as a result of a one-unit change in an independent variable. We standardized all of the continuous independent and dependent measures in the models, so the unstandardized coefficients represent effect sizes. The larger the effect size, the more likely the differences between groups represent performance that warrants serious discussion and, perhaps, intervention. Taking the advice of Rosenthal and Rosnow (1991), we considered an effect size of

.10 or less to reflect a trivial difference, between .10 and .30 small, between .30 and .50 moderate, and greater than .50 large.

## Results

### Student-Faculty Interactions

Course-related interactions appear to be positively related with student engagement (See table 2). Not surprisingly, average faculty member reports of course-related interactions with students were significantly positively related to student reports of student-faculty interaction. Additionally, even after including all controls, campuses where faculty report frequent course-related interactions both first-year and senior students were more challenged and engaged in active and collaborative learning activities.

In general, students have more positive perceptions of supportive campuses where faculty members interact frequently with them on issues related to their courses. For first-year students, average faculty reports of frequency of course-related interactions were positively related to a supportive campus environment, interpersonal support, and support for learning. However, after institutional controls are introduced, the effect reduced and became insignificant. Yet, for seniors, even after controls are introduced, course-related interactions were positively related to all three measures of environmental support.

Gains while in college also were positively related to course-related interactions with faculty. On college campuses where faculty frequently interact with students related to courses, both first-year and senior students reported greater gains in personal/social development, general education knowledge, and practical competencies.

Out-of-class interactions appeared to have less of an effect. As expected, students on campuses where faculty frequently interact with students outside of class reported more

interactions with faculty. Faculty out-of-class interactions also were positively related with active and collaborative learning activities, but the effect all but disappears after institutional controls were added.

**Active and Collaborative Learning Techniques**

College campuses where faculty employ active and collaborative learning techniques have students who were more engaged. Table 3 presents the level two coefficients of faculty interactions with students. Active and collaborative learning techniques were positively related with levels academic challenge and student-faculty interactions for both first year and senior students, even after all controls are included in the models.

Students also appeared to feel more supported on campuses where faculty use active and collaborative learning methods. In particular, both first-year students and seniors report higher levels of support for learning in a context where faculty use these techniques.

Our results suggested a positive relationship between college environments where faculty used active and collaborative learning techniques and student gains. First-year students and seniors reported greater gains in personal social development, general education knowledge, and practical competencies on campuses where faculty members engaged them using active and collaborative learning exercises.

**Academic Challenge**

Table 4 displays the results from our models where we used average faculty reports of academic challenge (at level two) to predict student engagement, student perceptions of their environment, and student self-reported gains. Campuses where faculty challenged their students were more likely to engage their students in other ways. For example, average faculty level of academic challenge was positively related to student (both first-year and senior) experiences with

active and collaborative learning. Additionally, first-year students are more likely to interact with faculty on campuses where those faculty offer greater academic challenges.

Faculty reports of academic challenge seemed to have little or no relationship with student perceptions of their environment. Before all controls were entered into the models, students appeared to feel slightly more supported at campuses where faculty challenged them academically. However, all of these effects became insignificant after other institutional characteristics were entered into the model.

Student gains appeared to be positively related to the levels of challenge faculty introduced on a campus. For first-year students, the level of academic challenge was positively related to gains in general education knowledge and practical competencies. Seniors reported greater gains in personal/social development and general education knowledge on campuses where faculty challenged them.

**Emphasis on Higher-Order Cognitive Activities**

Table 5 presents the level-two coefficients of faculty emphasis on higher order thinking activities. Colleges where faculty emphasized higher-order cognitive activities were more likely to engage students in effective educational practices. For first-year students, campus emphasis on higher-cognitive activities was statistically significantly positively related to academic challenge, greater interactions with faculty, and more involvement in active and collaborative learning. Seniors reported higher levels of academic challenge and active and collaborative learning at colleges where faculty utilized higher-order activities in the classroom.

Emphasis on higher-order activities does not significantly relate to perceptions of support. However, both seniors and first-year students reported greater gains in general education

on campuses where faculty emphasized higher-order activities. A modest relationship between these activities and gains in practical competencies exists for seniors.

**Importance Placed on Enriching Educational Activities**

The importance faculty place on co-curricular activities that enhance learning appeared to create a unique learning environment (See table 6). Seniors and first-year students are more engaged on campuses where faculty placed a high level of importance on participation in enriching educational experiences. Level of importance was significantly positively related to academic challenge, student faculty interaction, and active and collaborative learning.

Students, in particular seniors, have more positive perceptions of their environment at colleges where faculty members believed that enriching activities were important. In general, they felt more supported and believed the campus supported their learning. Additionally, satisfaction was positively related to the importance faculty placed on enriching activities.

Level of importance faculty placed on co-curricular activities also was positively related to student self-reported gains. Students on campuses where faculty emphasized these activities reported greater gains in personal/social development, general education, and practical competencies.

**Faculty Behaviors and Attitudes**

Our last set of models attempted to answer the second research question posed in this paper. Table 7 displays the coefficients from our level two models predicting faculty behaviors and attitudes. We observed a pattern when we examined the Block I where only Carnegie Classification is included at level two. For nearly every model, faculty members at liberal arts colleges (LACs) were statistically significantly more likely to engage in the behaviors or believe in their importance. Faculty members at LACs, on average, interacted more with students,

challenged students academically, used active and collaborative learning exercises, and believed enriching educational activities are important. With only one exception, active and collaborative learning, did LACs not score statistically significantly higher than all other institution types. This evidence does suggest that faculty at LACs were the most likely to create an environment that led to student engagement and learning.

Yet when other controls are entered, some of these differences disappear or are reduced. For example, faculty at Doctoral Research Extensive Universities (DRU-EXT) were no longer statistically significantly different than LACs in their frequency of course-related interactions with students. LACs were still significantly more likely than the three other Carnegie types to interact with students on course-related issues. Private colleges also were more likely than public colleges to interact with students about their courses.

Similarly, nearly all of the differences in out-of-class interactions between Carnegie groups were not significant after controls were introduced. Institutional size was negatively related to out-of-class interactions; and faculty at rural campuses were more likely to engage students out-of-class.

Even after other institutional characteristics were introduced, faculty at LACs were more likely to employ active and collaborative pedagogies than faculty at other institution types. Additionally, selectivity was negatively related with faculty use of active and collaborative learning.

Except for Doctoral Research – Intensive Universities (DRU-INT) faculty at LACs were more likely to emphasize higher-order cognitive activities, even after other variables were entered in the models. It was also important to note that urban institutions were the least likely to

emphasize these activities. As with active and collaborative learning, selectivity was negatively related with faculty emphasis on higher-order activities.

After controlling for other institutional characteristics, faculty at LACs appeared to challenge their students at higher levels than any other institution type. Private colleges were more likely than public colleges to have faculty that challenge their students. Our results also suggested that faculty at rural colleges challenged their students less than faculty at suburban/large town colleges.

Finally, faculty at LACS placed a higher level of importance on enriching activities than do faculty at other types of institutions. Private college faculty were also more likely than their public college counterparts in the value of enriching educational experiences.

## Limitations

This study was not without its limitations. We offer three for consideration. First, we are unable to match students with faculty directly. In other words, we cannot know if the students used in this study ever enrolled in a course from any of the faculty surveyed. While this does present some limitations as to what conclusions we can draw, we are able to use the results to understand the learning environment created by faculty on the campuses under study. In fact, we do see relationships that suggest a context created by faculty that differs across campuses.

Second, we recognize that the effect sizes of the coefficients presented are small. While we must be guarded in the conclusions we draw from small effects, we argue that our findings are not without merit for two reasons. First, related to our first limitation, we suspect that we may be underestimating the effects because of the possibility of distal relationships between faculty and students. Second, the pattern of the effect sizes and the magnitude of other effect sizes cannot be overlooked.

Another limitation is related to the validity of self-reports, in particular self-reported gains. As Pascarella (2001) and others point out, gain scores may be confounded by students' entering characteristics. However, Pike (1999) provides some evidence to suggest that gain scores are not significantly related to entering ability. Although the concerns about self-reported data are legitimate, the gains measures are only one of several sets of dependent variables used in this study.

## Discussion and Implications

Our findings suggest that faculty do matter. The educational context created by faculty behaviors and attitudes has a dramatic effect on student learning and engagement. Institutions where faculty engage students in and out of the classroom and place a high priority on enriching educational experiences had students who felt supported and were active participants in their learning.

One of the major criticisms of higher education is that colleges and universities have failed to focus on undergraduate education and student learning in particular. Our results articulate where faculty can make a difference in student learning and the undergraduate experience. Astin (1993) concluded over a decade ago that faculty members play an important link in the development of undergraduate students, and our study supports this notion. However, one of the missing pieces from Astin's study was how the faculty behaviors and attitudes impacted student learning and student engagement.

Knowing where faculty can make a difference will assist them in focusing on the learning aspects of the undergraduate experience. Barr and Tag (1995) advocated for a learning-centered campus, and recognized that focusing on the undergraduate experience would result in a paradigm shift (i.e., from providing instruction to students, to producing student learning). This

paradigm shift should result in a greater value being placed on teaching in the tenure rewards structure. Yet, despite, the call for this paradigm shift, Hattie and Marsh (1996) found that teaching and research responsibilities are far from being equally valued. However, placing an emphasis on a learning-centered campus necessitates a greater focus on teaching and determining which pedagogy produces greater gains in student learning. Our findings suggest that while faculty at liberal arts colleges have indeed created these learning environments, perhaps faculty at other types of colleges and universities have not been as effective at creating student-centered campuses.

In an attempt to understand the role of faculty in creating a student-centered campus, we attempted to bridge the gap in the literature by providing empirical evidence on how instructional methods among other faculty attitudes and behaviors influence gains in students learning. Many lessons can be learned from these findings. First, our study revealed faculty practices (e.g., active learning, higher-order cognitive activities) create an environment that relates to student engagement behaviors, student perceptions of the environment, and student self-reported gains. Focusing on specific practices that predict student engagement increases our understanding of how we can enhance undergraduate education in general, and student engagement and student learning in particular. Recruiting and training faculty committed to these activities will create a collegiate environment that will have a dramatic impact on student learning.

Those responsible for implementing tenure review policies may also find this information helpful when evaluating the teaching components of the tenure review process. In his landmark publication, *Scholarship Reconsidered: Priorities of the Professoriate*, Boyer (1990) advocated for a multidimensional definition of teaching that included engaging and fostering student learning (Shulman & Hutchings, 1998). One of the strengths of colleges and universities is the

variation among them. The higher education community must create a better method of measuring effective pedagogical methods that lead to student learning and disseminate this knowledge.

Additionally, empirical evidence on the pedagogical methods that predict the greatest gains in student learning and engagement will help anyone responsible for teaching. Rhoads (2001) articulated that the "best" universities and colleges of the future will be those that demonstrate the most effective gains in learning and learning skills among their students. Our results suggest that faculty seeking to improve their teaching might hold higher expectations of their students. They also should consider including active and collaborative learning activities in their classroom instruction or emphasize higher-order cognitive activities such as the application of learning or synthesis of ideas. Interactions with students in and out of the classroom also can have a profound effect on student learning.

Our analyses indicate that the importance placed on enriching educational experiences may yield some of the strongest effects on students. This suggests that faculty attitudes and beliefs about the student experience can play a role in creating an environment that fosters student learning. Perhaps the importance placed on enriching experiences is an indirect measure of a campus culture that values a broad range of educational activities (e.g., practica, internships, study abroad). Changing a campus culture can take time, however institutions seeking change might consider attitudes as they hire new faculty.

## Conclusion

In many ways, this study raises more questions than it answers. Further research may include looking at student major environments and the role that disciplinary culture plays. Studies of the interplay of research and teaching on student learning might also prove useful.

Classroom-based studies also would provide further information about the pedagogical techniques used by faculty to engage students in the learning process.

The impact that a faculty member can have on the student experience can be seen in and out of the classroom. We found that faculty behaviors and attitudes affect students profoundly, which suggests that faculty members may play the single-most important role in student learning. Because faculty play a critical component of the collegiate experience, colleges and universities need to find ways (perhaps new ways) to support and reward faculty in their teaching role.

## References

Astin, A. (1993). *What matters in college: Four critical years revisited.* San Francisco: Jossey Bass.

Barr, R.B., & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change, 27*(6), 12-25.

Blackburn, R., & Lawrence, J. (1995). *Faculty at work: Motivation, expectation, satisfaction*. Baltimore: The Johns Hopkins University Press.

Braxton, J.M., Sullivan, A.V., & Johnson Jr, R.M. (1997). Appraising Tinto's theory of college student departure. In J. Smart (Ed.), *Higher Education Research* (pp. 107-164). Agathon Press.

Chickering, A.W. (1969). *Education and identity.* San Francisco: Jossey Bass.

Chickering, A.W., Reisser, L. (1993). *Education and identity* (2nd ed). San Francisco: Jossey Bass.

Chickering, A. W. & Gamson, Z.F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin, 39* (7), 3-7.

Education Commission of the States. (1995). *Making quality count in undergraduate education.* Denver, CO: Education Commission of the States.

Ethington, C. A. (1997). A hierarchical linear modeling approach to studying college effects. In J. Smart (ed.), *Higher Education Handbook of Theory and Research*, Vol. 12, pp. 165–194. Edison, NJ: Agathon.

Ewell, P. (1997). Organizing for learning: A new imperative. *AAHE Bulletin, 50*, 3-6.

Ewell, P. & Jones, D. (1996). *Indicators of "good practice" in undergraduate education: A handbook for development and implementation.* Boulder, CO: National Center for Higher Education Management Systems.

Fairweather, J. (1996). *Faculty work and public trust: Restoring the value of teaching and public service in American academic life*. Boston: Allyn & Bacon.

Fairweather, J. (2002). The mythologies of faculty productivity: Implications for institutional policy and decision making. *The Journal of Higher Education, 73*, 26-48.

*Hattie*, J. & *Marsh*, H. W. (1996). The Relationship between research and teaching: A meta-analysis. *Review of Educational Research, 66*, 507-542.

Hurtado, S. & Carter, (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education, 70,* 324-345.

Kezar, A. (1999). *Higher education trends (1997-1999): Faculty.* Washington, DC: ERIC Clearinghouse on Higher Education.

King, G. (1999). *A Solution to the Ecological Inference Problem: Reconstructing Individual Behavior from Aggregate Data*. Princeton, NJ: Princeton University Press.

Kreft, I., & De Leeuw, J. (1998). *Introducing multilevel modeling*. Thousand Oaks, CA: Sage Publications.

Kuh, G. D. (2001). Assessing what really matters to student learning: Inside the National Survey of Student Engagement. *Change, 33*(3), 10-17, 66.

Marsh, H.W. & Hattie, J. (2002). The relation between research productivity and teaching effectiveness: Complementary, antagonistic, or independent constructs? *The Journal of Higher Education, 73,* 604-641.

The National Center for Public Policy and Higher Education (2000). *Measuring Up 2000: The state-by-state report card for higher education.* Washington, DC: Author.

The National Center for Public Policy and Higher Education (2002). *Measuring Up 2002: The state-by-state report card for higher education.* Washington, DC: Author.

Menges, R. (2000). Shortcomings of research on evaluating and improving teaching in higher education. In K.E. Ryna (Ed.), *Evaluating teaching in higher education: A vision for the future.* (New Directions for Teaching and Learning No. 83) (pp. 5-11). San Francisco: Jossey-Bass.

Pascarella, E. (2001). Identifying excellence in undergraduate education: Are we even close?, *Change, 33* (3), 19-23.

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

Raudenbush, S. W. & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods.* Thousand Oaks, CA: Sage Publications.

Rhoads, F.H.T. (2001). *The creation of the future: The role of the American University*. Ithaca, NY: Cornell University Press.

Rosenthal, R., & Rosnow, R. L. (1991). *Essentials of behavioral research: methods and data analysis* (2nd ed.). New York: McGraw-Hill.

Shulman, L. S., & Hutchings, P. (1998). *About the scholarship of teaching and learning.* Menlo Park, CA: The Carnegie Foundation for the Advancement of Teaching.

Stage, F. K. & Hossler, D. (2000). Where is the student? Linking student behaviors, college choice, and college persistence. In J.M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 170-195). Nashville: Vanderbilt University Press.

Stage, F.K., Muller, P., Kinzie, J., Simmons, A. (1998). *Creating learning centered classrooms: What does learning theory have to say*. Washington, DC: ASHE-ERIC Higher Education Reports.

Tinto, V. (1993). *Rethinking the causes and cures of student attrition.* 2nd. ed. Chicago: University of Chicago Press.

Tinto, V. (2000). Linking learning and leaving: Exploring the role of the college classroom in student departure. In J.M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 81-94). Nashville: Vanderbilt University Press.

Wingspread Group on Higher Education. (1993). *An American imperative: Higher expectations for higher education*. Racine, WI: Johnson Foundation.

Table 1. Descriptive Statistics of Variables Included in Models

| | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|
| **Student Variables** | | | | |
| Athlete | 0.000 | 1.000 | 0.102 | 0.303 |
| African American | 0.000 | 1.000 | 0.060 | 0.238 |
| Native American | 0.000 | 1.000 | 0.007 | 0.082 |
| Asian Pacific American | 0.000 | 1.000 | 0.048 | 0.214 |
| Latino/a | 0.000 | 1.000 | 0.044 | 0.204 |
| Other Race | 0.000 | 1.000 | 0.004 | 0.064 |
| Female | 0.000 | 1.000 | 0.658 | 0.474 |
| Greek | 0.000 | 1.000 | 0.111 | 0.315 |
| Transfer | 0.000 | 1.000 | 0.238 | 0.426 |
| Full-time | 0.000 | 1.000 | 0.899 | 0.301 |
| Live on campus | 0.000 | 1.000 | 0.467 | 0.499 |
| Parental Education | -1.850 | 2.147 | 0.000 | 1.000 |
| Age | -1.024 | 9.420 | 0.000 | 1.000 |
| Major - Realistic | 0.000 | 1.000 | 0.016 | 0.127 |
| Major - Investigative | 0.000 | 1.000 | 0.272 | 0.445 |
| Major - Artistic | 0.000 | 1.000 | 0.081 | 0.273 |
| Major - Social | 0.000 | 1.000 | 0.091 | 0.287 |
| Major - Enterprising | 0.000 | 1.000 | 0.256 | 0.437 |
| Major - Conventional | 0.000 | 1.000 | 0.029 | 0.169 |
| Major - Other | 0.000 | 1.000 | 0.254 | 0.435 |
| **Faculty Variables** | | | | |
| Female | 0.000 | 1.000 | 0.441 | 0.497 |
| African American | 0.000 | 1.000 | 0.025 | 0.155 |
| Native American | 0.000 | 1.000 | 0.005 | 0.071 |
| Asian Pacific American | 0.000 | 1.000 | 0.026 | 0.160 |
| Latino/a | 0.000 | 1.000 | 0.005 | 0.069 |
| Other Race | 0.000 | 1.000 | 0.071 | 0.257 |
| Age | -2.701 | 3.956 | 0.000 | 1.000 |
| Years Teaching | -1.462 | 3.363 | 0.000 | 1.000 |
| Professor | 0.000 | 1.000 | 0.236 | 0.424 |
| Associate Professor | 0.000 | 1.000 | 0.227 | 0.419 |
| Assistant Professor | 0.000 | 1.000 | 0.254 | 0.436 |
| Part-time | 0.000 | 1.000 | 0.147 | 0.354 |
| Discipline - Realistic | 0.000 | 1.000 | 0.002 | 0.041 |
| Discipline - Investigative | 0.000 | 1.000 | 0.198 | 0.399 |
| Discipline - Artistic | 0.000 | 1.000 | 0.116 | 0.320 |
| Discipline - Social | 0.000 | 1.000 | 0.191 | 0.393 |
| Discipline - Enterprising | 0.000 | 1.000 | 0.152 | 0.359 |
| Discipline - Other | 0.000 | 1.000 | 0.341 | 0.330 |
| **Institution-Level Variables** | | | | |
| Doctoral Research - Extensive | 0.000 | 1.000 | 0.066 | 0.249 |
| Doctoral Research - Intensive | 0.000 | 1.000 | 0.102 | 0.304 |
| Master's I and II | 0.000 | 1.000 | 0.453 | 0.500 |
| Baccalaureate - Liberal Arts | 0.000 | 1.000 | 0.168 | 0.375 |
| Baccalaureate - General | 0.000 | 1.000 | 0.175 | 0.382 |
| Other Carnegie | 0.000 | 1.000 | 0.036 | 0.188 |
| Urban | 0.000 | 1.000 | 0.182 | 0.388 |
| Middle | 0.000 | 0.000 | 0.577 | 0.457 |
| Rural | 0.000 | 1.000 | 0.241 | 0.429 |
| Selectivity (Barron's) | -2.117 | 2.808 | 0.000 | 1.000 |
| Size (undergraduate headcount | -0.849 | 4.525 | 0.000 | 1.000 |

Table 2. Level Two Coefficients of Average Institutional Faculty Interactions with Students after Controls[1]

| | Course-Related Interactions | | | | Out-of-Class Interactions | | | |
|---|---|---|---|---|---|---|---|---|
| | First-Year Students | | Seniors | | First-Year Students | | Seniors | |
| Dependent Variables | Block I | Block II | Block I | Block II | Block I | Block II | Block I | Block II |
| **Student Engagement** | | | | | | | | |
| Academic Challenge | 0.11 *** | 0.07 ** | 0.11 *** | 0.05 * | 0.02 | -0.01 | 0.00 | -0.01 |
| Student-Faculty Interactions | 0.16 *** | 0.11 *** | 0.13 *** | 0.09 *** | 0.08 ** | 0.03 | 0.10 *** | 0.07 *** |
| Active and Collaborative | 0.15 *** | 0.11 *** | 0.11 *** | 0.10 *** | 0.07 * | 0.02 | 0.04 * | 0.02 |
| **Student Perceptions of Environment** | | | | | | | | |
| Supportive | 0.08 ** | 0.04 | 0.09 *** | 0.07 ** | 0.01 | 0.01 | 0.06 ** | 0.03 |
| Interpersonal | 0.07 ** | 0.02 | 0.07 *** | 0.04 * | 0.02 | 0.01 | 0.04 * | 0.01 |
| Support for Learning | 0.06 ** | 0.04 + | 0.09 *** | 0.06 * | 0.00 | 0.00 | 0.07 *** | 0.04 + |
| Satisfaction | 0.02 | 0.01 | 0.04 + | 0.04 | -0.02 | -0.01 | 0.01 | 0.00 |
| **Student Self-Reported Gains** | | | | | | | | |
| Personal/Social | 0.07 ** | 0.07 ** | 0.10 *** | 0.09 ** | 0.02 | 0.02 | 0.05 + | 0.01 |
| General Education | 0.08 *** | 0.06 ** | 0.10 *** | 0.07 ** | 0.00 | 0.00 | 0.01 | 0.00 |
| Practical Competencies | 0.04 * | 0.04 + | 0.05 * | 0.05 * | -0.01 | 0.00 | 0.01 | 0.01 |

[1] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education; Level two controls (Block II) - urbanicity, sector, size, selectivity, Carnegie Classification

***p<.001, **p<.01, *<p.05, +p<.10

Table 3. Level Two Coefficients of Faculty Use of Active and Collaborative Learning Techniques after Controls[2]

| | First-Year Students | | Seniors | |
|---|---|---|---|---|
| Dependent Variables | Block I | Block II | Block I | Block II |
| **Student Engagement** | | | | |
| Academic Challenge | 0.07 ** | 0.07 ** | 0.09 *** | 0.11 *** |
| Student-Faculty Interactions | 0.12 *** | 0.08 ** | 0.09 *** | 0.06 * |
| Active and Collaborative | 0.18 *** | 0.16 *** | 0.15 *** | 0.15 *** |
| **Student Perceptions of Environment** | | | | |
| Supportive | 0.06 * | 0.04 | 0.07 ** | 0.05 + |
| Interpersonal | 0.05 * | 0.03 | 0.06 ** | 0.03 |
| Support for Learning | 0.04 + | 0.04 + | 0.07 ** | 0.06 * |
| Satisfaction | 0.02 | 0.02 | 0.01 | 0.05 * |
| **Student Self-Reported Gains** | | | | |
| Personal/Social | 0.07 ** | 0.08 ** | 0.08 ** | 0.09 ** |
| General Education | 0.05 * | 0.05 * | 0.07 ** | 0.08 ** |
| Practical Competencies | 0.04 * | 0.05 * | 0.05 * | 0.08 ** |

[2] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education; Level two controls (Block II) - urbanicity, sector, size, selectivity, Carnegie Classification

***p<.001, **p<.01, *<p.05, +p<.10

Table 4. Level Two Coefficients of Faculty Reports of Academic Challenge of Students after Controls[3]

| | First-Year Students | | Seniors | |
|---|---|---|---|---|
| Dependent Variables | Block I | Block II | Block I | Block II |
| **Student Engagement** | | | | |
| Academic Challenge | 0.15 *** | 0.11 *** | 0.13 *** | 0.11 *** |
| Student-Faculty Interactions | 0.10 *** | 0.05 * | 0.07 ** | 0.02 |
| Active and Collaborative | 0.13 *** | 0.10 *** | 0.07 *** | 0.07 *** |
| **Student Perceptions of Environment** | | | | |
| Supportive | 0.05 * | 0.01 | 0.05 * | 0.00 |
| Interpersonal | 0.04 * | 0.00 | 0.03 | 0.00 |
| Support for Learning | 0.04 * | 0.01 | 0.05 * | 0.01 |
| Satisfaction | 0.01 | 0.00 | 0.04 + | 0.03 |
| **Student Self-Reported Gains** | | | | |
| Personal/Social | 0.05 + | 0.03 | 0.08 ** | 0.06 * |
| General Education | 0.08 *** | 0.05 ** | 0.11 *** | 0.08 *** |
| Practical Competencies | 0.04 * | 0.04 * | 0.03 | 0.04 + |

[3] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education; Level two controls (Block II) - urbanicity, sector, size, selectivity, Carnegie Classification

***p<.001, **p<.01, *<p.05, +p<.10

Table 5. Level Two Coefficients of Faculty Emphasis on Higher-Order Cognitive Activities after Controls[4]

| | First-Year Students | | Seniors | |
|---|---|---|---|---|
| Dependent Variables | Block I | Block II | Block I | Block II |
| **Student Engagement** | | | | |
| Academic Challenge | 0.10 *** | 0.09 *** | 0.08 ** | 0.08 ** |
| Student-Faculty Interactions | 0.07 ** | 0.05 * | 0.04 + | 0.02 |
| Active and Collaborative | 0.10 *** | 0.09 *** | 0.08 *** | 0.07 ** |
| **Student Perceptions of Environment** | | | | |
| Supportive | 0.01 | -0.01 | -0.01 | -0.01 |
| Interpersonal | 0.00 | -0.01 | 0.00 | -0.01 |
| Support for Learning | -0.01 | -0.01 | -0.01 | -0.01 |
| Satisfaction | -0.03 | -0.01 | 0.00 | 0.01 |
| **Student Self-Reported Gains** | | | | |
| Personal/Social | 0.01 | 0.01 | 0.04 | 0.04 |
| General Education | 0.04 * | 0.04 * | 0.05 * | 0.05 ** |
| Practical Competencies | 0.02 | 0.02 | 0.03 + | 0.03 + |

[4] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education; Level two controls (Block II) - urbanicity, sector, size, selectivity, Carnegie Classification

***p<.001, **p<.01, *<p.05, +p<.10

Table 6. Level Two Coefficients of Importance Placed on Enriching Educational Activities[5]

| | First-Year Students | | Seniors | |
|---|---|---|---|---|
| Dependent Variables | Block I | Block II | Block I | Block II |
| **Student Engagement** | | | | |
| Academic Challenge | 0.13 *** | 0.10 *** | 0.11 *** | 0.09 *** |
| Student-Faculty Interactions | 0.14 *** | 0.09 *** | 0.12 *** | 0.08 ** |
| Active and Collaborative | 0.16 *** | 0.14 *** | 0.10 *** | 0.10 *** |
| **Student Perceptions of Environment** | | | | |
| Supportive | 0.08 ** | 0.04 | 0.10 *** | 0.07 ** |
| Interpersonal | 0.06 * | 0.01 | 0.06 *** | 0.03 + |
| Support for Learning | 0.07 ** | 0.05 * | 0.00 | 0.08 ** |
| Satisfaction | 0.03 | 0.02 | 0.08 *** | 0.07 ** |
| **Student Self-Reported Gains** | | | | |
| Personal/Social | 0.09 *** | 0.09 *** | 0.11 *** | 0.09 ** |
| General Education | 0.08 *** | 0.05 * | 0.11 *** | 0.07 *** |
| Practical Competencies | 0.04 * | 0.04 * | 0.04 ** | 0.06 ** |

[5] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education; Level two controls (Block II) - urbanicity, sector, size, selectivity, Carnegie Classification

***p<.001, **p<.01, *<p.05, +p<.10

Table 7. Level Two Coefficients from Models Predicting Faculty Behaviors and Attitudes[6]

| | Faculty Behaviors and Attitudes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Course-Related Interactions | | Out-of-Class Interactions | | Active and Collaborative | | Higher-Order Activities | | Academic Challenge | | Importance of Enriching Activities | |
| Dependent Variables | Block I | Block II | Block I | Block II | Block I | Block II | Block I | Block II | Block I | Block II | Block I | Block II |
| Doctoral Research - Extensive | -0.35 *** | -0.11 | -0.31 *** | -0.06 | -0.35 *** | -0.17 + | -0.17 * | -0.19 * | -0.39 *** | -0.26 * | -0.47 *** | -0.27 * |
| Doctoral Research - Intensive | -0.29 *** | -0.16 + | -0.19 ** | -0.08 | -0.21 *** | -0.15 * | -0.07 | -0.10 | -0.29 *** | -0.22 ** | -0.44 *** | -0.31 *** |
| Masters I and II | -0.21 ** | -0.15 * | -0.12 * | -0.07 | -0.12 * | -0.13 * | -0.09 + | -0.14 ** | -0.29 *** | -0.27 *** | -0.35 *** | -0.28 *** |
| Baccalaureate - General | -0.14 + | -0.15 * | -0.09 | -0.09 + | -0.05 | -0.12 + | -0.11 * | -0.16 * | -0.23 ** | -0.34 ** | -0.36 *** | -0.37 *** |
| Other Carnegie | -0.11 | -0.08 | -0.20 + | -0.18 | -0.12 | -0.15 | 0.16 | 0.08 | -0.32 * | -0.34 * | -0.42 *** | -0.40 *** |
| Private | | 0.15 ** | | 0.00 | | 0.15 | | 0.06 | | 0.12 + | | 0.18 ** |
| Other Urbanicity | | -0.03 | | 0.02 | | -0.02 | | -0.09 + | | -0.06 | | 0.00 |
| Rural | | -0.03 | | 0.08 * | | -0.04 | | -0.17 *** | | -0.12 * | | -0.07 |
| Selectivity | | -0.01 | | -0.01 | | -0.08 ** | | -0.05 * | | -0.02 | | -0.01 |
| Size | | -0.04 | | -0.07 * | | -0.02 | | 0.01 | | -0.02 | | -0.03 |

[6] Level one controls (included in both blocks) - age, years teaching, part-time, race, gender, rank, discipline of appointment
***p<.001, **p<.01, *<p.05, +p<.10

# APPENDIX A

| CONSTRUCTS AND VARIABLES | QUESTION RESPONSE SETS |
|---|---|
| **FACULTY CONSTRUCTS** | |
| **Course-Related Interaction (α=.76)** | |
| Discuss grades or assignments with you | None, 1-24%, 25-49%, 50-74%, 75% or higher |
| Talk about career plans with you | None, 1-24%, 25-49%, 50-74%, 75% or higher |
| Discuss ideas from readings or classes with you outside of class | None, 1-24%, 25-49%, 50-74%, 75% or higher |
| Use e-mail to communicate with you | None, 1-24%, 25-49%, 50-74%, 75% or higher |
| **Out-of-Class Interaction (α=.65)** | |
| Working with students on activities other than course work (committees, organizations, student life activities, orientation, intramurals, etc) | Hours/week: 0,1-4,5-8,13-16,17-20,21-30, more than 30 |
| Other interactions with students outside of the classroom | Hours/week: 0,1-4,5-8,13-16,17-20,21-30, more than 30 |
| Advising undergraduate students | Hours/week: 0,1-4,5-8,13-16,17-20,21-30, more than 30 |
| Working with undergraduates on research | Hours/week: 0,1-4,5-8,13-16,17-20,21-30, more than 30 |
| Supervising internships or other field experiences | Hours/week: 0,1-4,5-8,13-16,17-20,21-30, more than 30 |
| **Active and Collaborative Learning (α=.78)** | |
| Working effectively with others | Very much, quite a bit, some, very little |
| Work with other students on projects during class | Very important, important, somewhat important, not important |
| Work with classmates outside of class to prepare class assignments | Very important, important, somewhat important, not important |
| Tutor or teach other students (paid or voluntary) | Very important, important, somewhat important, not important |
| Discuss ideas or readings from class with others outside of class (other students, faculty members, coworkers, etc.) | Very important, important, somewhat important, not important |
| Ask questions in class or contribute to class discussions | None, 1-24%, 25-49%, 50-74%, 75% or higher |
| Teacher-student shared responsibility (seminar, discussion, etc.) | % of class time: 0, 1-9,10-19,20-29,30-39,40-49,75 or more |
| Student presentations | % of class time: 0, 1-9,10-19,20-29,30-39,40-49,75 or more |
| Small group activities | % of class time: 0, 1-9,10-19,20-29,30-39,40-49,75 or more |
| In-class writing | % of class time: 0, 1-9,10-19,20-29,30-39,40-49,75 or more |
| **Academic Challenge (α=.72)** | |
| Writing clearly and effectively | Very much, quite a bit, some, very little |
| Work on a paper or project that requires integrating ideas or information from various sources | Very important, important, somewhat important, not important |
| Prepare two or more drafts of a paper or assignment before turning it in | Very important, important, somewhat important, not important |
| Work harder than they usually do to meet your standards | None, 1-24%, 25-49%, 50-74%, 75% or higher |
| Mark the box that represents the extent to which your evaluations of student performance (e.g., examinations, portfolio) challenge students in your selected course section to do their best work? | 1 (very little), 2,3,4,5,6,7 (very much) |
| Number of written papers of more than 10 pages | 0,1-4,5-8,9-12,13-16,17-20,21-30, More than 31 |
| Number of assigned textbooks, books, and/or book length packs of course readings | 0,1-4,5-8,9-12,13-16,17-20,21-30, More than 31 |
| Number of homework assignments that take your students more than one hour to complete | 0,1-4,5-8,9-12,13-16,17-20,21-30, More than 31 |
| Number of written papers between 5 and 10 pages | 0,1-4,5-8,9-12,13-16,17-20,21-30, More than 30 |
| In a typical 7-day week, about how many hours do you think your students actually spend preparing for your class (studying, reading, writing, rehearsing, and other activities related to your course) | 0, 1-2,3-4,5-6,7-8,9-10,11-12, More than 12 |
| In a typical 7-day week, about how many hours do you expect your students to spend preparing for your class (studying, reading, writing, rehearsing, and other activities related to your course) | 0, 1-2,3-4,5-6,7-8,9-10,11-12, More than 12 |

| CONSTRUCTS AND VARIABLES | QUESTION RESPONSE SETS |
|---|---|
| **Higher-Order Cognitive Activities (α=.78)** | |
| Thinking critically and analytically | Very much, quite a bit, some, very little |
| Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | Very much, quite a bit, some, very little |
| Solving complex real-world problems | Very much, quite a bit, some, very little |
| Making judgments about the value of information, arguments or methods such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | Very much, quite a bit, some, very little |
| Applying theories or concepts to practical problems or in new situations | Very much, quite a bit, some, very little |
| Analyzing the basic elements of an idea, experience or theory, such as examining a particular case or situation in depth, and considering its components | Very much, quite a bit, some, very little |
| Put together ideas or concepts from different courses when completing assignments or during class discussions | Very important, important, somewhat important, not important |
| **Importance of Enriching Activities[a] (α=.77)** | |
| Community service or volunteer work | Very important, important, somewhat important, not important |
| Participation in a learning community or some other formal program where groups of students take two or more classes together | Very important, important, somewhat important, not important |
| Study abroad | Very important, important, somewhat important, not important |
| Independent study | Very important, important, somewhat important, not important |
| Self-designed major | Very important, important, somewhat important, not important |
| Culminating senior experience | Very important, important, somewhat important, not important |
| Practicum, internship, field experience, co-op experience | Very important, important, somewhat important, not important |
| Work on a research project with you outside of course program requirements | Very important, important, somewhat important, not important |
| Foreign language coursework | Very important, important, somewhat important, not important |
| **STUDENT CONSTRUCTS** | |
| **Student Engagement** | |
| **Level of Academic Challenge (a=.74/.75)** | |
| Hours per week preparing for class (studying, reading, writing, rehearsing, and other activities related to your academic program) | 0, 1-5, 6-10, 11-15, 16-20, 21-25, 26-30, More than 30 |
| Worked harder than you thought you could to meet an instructor's standards or expectations | Very often, often, sometimes, never |
| Number of assigned textbooks, books, or book-length packs of course readings during the current school year | None, 1-4, 5-10, 11-20, more than 20 |
| Number of written papers or reports of 20 pages or more during the current school year | None, 1-4, 5-10, 11-20, more than 20 |
| Number of written papers or reports between 5 and 19 pages during the current school year | None, 1-4, 5-10, 11-20, more than 20 |
| Number of written papers or reports of fewer than 5 pages during the current school year | None, 1-4, 5-10, 11-20, more than 20 |
| Coursework emphasizes: Analyzing the basic elements of an idea, experience, or theory | Very much, quite a bit, some, very little |
| Coursework emphasizes: Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | Very much, quite a bit, some, very little |
| Coursework emphasizes: Making judgments about the value of information, arguments, or methods | Very much, quite a bit, some, very little |
| Coursework emphasizes: Applying theories or concepts to practical problems or in new situations | Very much, quite a bit, some, very little |
| Campus environments emphasize: Spending significant amounts of time studying and on academic work | Very much, quite a bit, some, very little |
| **Active and Collaborative Learning (a=.61/.62)** | |
| Asked questions in class or contributed to class discussions | Very often, often, sometimes, never |
| Made a class presentation | Very often, often, sometimes, never |
| Worked with other students on projects during class | Very often, often, sometimes, never |
| Worked with classmates outside of class to prepare class assignments | Very often, often, sometimes, never |
| Tutored or taught other students (paid or voluntary) | Very often, often, sometimes, never |
| Participated in a community-based project as part of a regular course | Very often, often, sometimes, never |
| Discussed ideas from your readings or classes with others outside of class (students, family members, coworkers, etc.) | Very often, often, sometimes, never |

| CONSTRUCTS AND VARIABLES | QUESTION RESPONSE SETS |
|---|---|
| **Student Faculty Interaction (α=.73-75)** | |
| Discussed grades or assignments with an instructor | Very much, quite a bit, some, very little |
| Discussed ideas from your readings or classes with faculty members outside of class | Very much, quite a bit, some, very little |
| Received prompt feedback from faculty on your academic performance (written or oral) | Very much, quite a bit, some, very little |
| Talked about career plans with a faculty member or advisor | Very much, quite a bit, some, very little |
| **Supportive Campus** | |
| **Supportive Campus Environment (a=.76/.77)** | |
| Campus Environments Emphasize: Providing the support you need to help you succeed academically | Very much, quite a bit, some, very little |
| Campus Environments Emphasize: Helping you cope with your non-academic responsibilities (work, family, etc.) | Very much, quite a bit, some, very little |
| Campus Environments Emphasize: Providing the support you need to thrive socially | Very much, quite a bit, some, very little |
| Quality: Relationships with other students | 1=Unfriendly, unsupportive, sense of alienation; 7=friendly, supportive, sense of belonging |
| Quality: Relationships with faculty members | 1=Unavailable, unhelpful, unsympathetic; 7=Available, helpful, sympathetic |
| Quality: Relationships with administrative personnel and offices | 1=Unhelpful, inconsiderate, rigid 7=Helpful, considerate, flexible |
| **Interpersonal Support (a=.68/.70)** | |
| Campus Environments Emphasize: Providing the support you need to help you succeed academically | Very much, quite a bit, some, very little |
| Campus Environments Emphasize: Helping you cope with your non-academic responsibilities (work, family, etc.) | Very much, quite a bit, some, very little |
| Campus Environments Emphasize: Providing the support you need to thrive socially | Very much, quite a bit, some, very little |
| **Support for Learning (a=.76/.78)** | |
| Quality: Relationships with other students | 1=Unfriendly, unsupportive, sense of alienation; 7=friendly, supportive, sense of belonging |
| Quality: Relationships with faculty members | 1=Unavailable, unhelpful, unsympathetic; 7=Available, helpful, sympathetic |
| Quality: Relationships with administrative personnel and offices | 1=Unhelpful, inconsiderate, rigid 7=Helpful, considerate, flexible |
| **Satisfaction (a=.75/.78)** | |
| How would you evaluate your entire educational experience at this institution? | Excellent, good, fair, poor |
| If you could start over again, would you go to the same institution you are now attending? | Excellent, good, fair, poor |
| **Gains in Learning and Intellectual Development** | |
| **Gains in Personal and Social Development (a=.80/.81)** | |
| Contributed to: Developing a personal code of values and ethics | Very much, quite a bit, some, very little |
| Contributed to: Understanding people of other racial and ethnic backgrounds | Very much, quite a bit, some, very little |
| Contributed to: Understanding yourself | Very much, quite a bit, some, very little |
| Contributed to: Improving the welfare of your community | Very much, quite a bit, some, very little |
| Contributed to: Learning effectively on your own | Very much, quite a bit, some, very little |
| Contributed to: Working effectively with others | Very much, quite a bit, some, very little |
| **Gains in General Education (a=.79/.80)** | |
| Contributed to: Writing clearly and effectively | Very much, quite a bit, some, very little |
| Contributed to: Speaking clearly and effectively | Very much, quite a bit, some, very little |
| Contributed to: Thinking critically and analytically | Very much, quite a bit, some, very little |
| Contributed to: Acquiring broad general education | Very much, quite a bit, some, very little |
| **Gains in Practical Competence (a= .76/.79)** | |
| Contributed to: Acquiring job or work-related knowledge and skills | Very much, quite a bit, some, very little |
| Contributed to: Using computing and information technology | Very much, quite a bit, some, very little |
| Contributed to: Analyzing quantitative problems | Very much, quite a bit, some, very little |
| Contributed to: Solving complex real-world problems | Very much, quite a bit, some, very little |