

Research Brief

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Improving Undergraduate Education at IUPUI: Trends in Performance on the National Survey of Student Engagement

2002–2006

Background

The National Survey of Student Engagement (NSSE), launched in the spring of 2000, assesses undergraduates' engagement in educationally purposeful activities, as well as what these students gain from their college experiences (Kuh, 2001). Based on decades of research on undergraduate teaching and learning, the NSSE has been administered on almost 1000 college campuses, providing a rich source of information about effective practices in undergraduate education nation-wide.

IUPUI administered the NSSE survey to random samples of first-year students and seniors in 2002, 2004, and 2006. Summary reports comparing the responses of IUPUI students to students at urban peer institutions and other doctoral/research universities are available at <http://planning.iupui.edu/95.html>. But while such comparisons to peer institutions are informative, they do not tell an institution whether it is improving or not. After three administrations of the survey over a four-year period, IUPUI has accumulated sufficient data to begin to examine improvement trends. This report represents our first attempt at such an examination. The results indicate that IUPUI has made important gains in many key areas, particularly for first-year students. Little progress has been made in other areas, however. The lack of progress in these areas can and should be used to set priorities for improving undergraduate education at IUPUI.

NSSE Participants

The NSSE survey was administered to samples of first-year students and seniors enrolled at IUPUI in 2002, 2004, and 2006. For each survey administration, base samples of 500 first-year students and 500 seniors were selected and invited to participate in the survey. Additional students were selected to ensure sufficient numbers of students in some of the smaller academic units. After an initial mailing and multiple follow-up messages, slightly more than 30% of the students in the samples responded to the survey. Although these response rates are somewhat lower than the ideal, respondents tended to be quite similar to nonrespondents in terms of ethnicity and entering ability levels. Females and full-time students were slightly over-represented in the sample. Most important, follow-up telephone surveys of nonrespondents found that respondents and nonrespondents did not differ significantly in their levels of engagement or in the gains they made during college (Kuh, 2001). A total of 555 first-year students and 781 seniors were included in the analyses.

Areas of Success

A variety of standards can be used to identify examples of improvement in undergraduate education. Recently, Alex McCormick of the Carnegie Foundation for the Advancement of Teaching proposed a relatively simple criterion for NSSE; he suggested that improvement in undergraduate education could be represented by consistent increases in NSSE scores over three time points (e.g., 2004 scores would be higher than scores in 2002, while scores in 2006 would be higher than scores in 2004). In addition, the difference between scores for the final administration and the first administration should be at least 3 scale-score points. This second requirement seems relatively minor, given that scale scores range from 0 to 100, but a 3-point difference is between two-thirds and three-quarters of a standard deviation in institutional scores.

Table 1 shows the scores for the NSSE scalelets—i.e., clusters of 3-5 questions focused on a specific type of engagement—and gain measures. For first-year students, consistent and substantial progress has been made in five areas: Active Learning (3.2 points), Course Interaction (4.7 points), Information Technology (15.5 points), Support for Student Success (7.2 points), and Gains in Practical Skills (11.0 points). For seniors, substantial progress is found in three areas: Information Technology (8.1 points), Support for Student Success (4.3 points), and Gains in Practical Skills (3.3 points). Because comparable scores on the Varied Experiences scalelet are not available for 2002, it is not possible to claim significant improvement. The substantial increase in scores on this scalelet from 2004 to 2006, however, suggests that this area may be counted a success in the future.

Table 1: NSSE Scalelet Scores 2002–2006

NSSE Scalelet	First-year			Seniors		
	2002	2004	2006	2002	2004	2006
Course Challenge	58.4	59.9	59.8	58.1	59.4	58.4
Writing Experiences	46.1	43.2	44.9	46.2	45.9	46.4
Higher-Order Thinking	57.7	58.6	59.1	65.2	66.1	64.2
Active Learning	36.8	38.9	42.0	49.1	48.7	50.6
Collaborative Learning	39.5	41.3	42.4	47.7	46.8	48.4
Course Interaction	40.0	42.5	44.7	50.8	50.0	49.4
Out-of-Class Interaction	24.7	18.2	20.7	24.3	22.9	26.2
Varied Experiences*		14.1	18.0		20.6	28.8
Information Technology	55.6	70.5	71.1	69.5	75.8	77.6
Diversity Experiences	48.2	47.9	50.2	50.0	53.6	51.3
Support for Student Success	39.1	44.2	46.3	35.3	38.0	39.6
Interpersonal Environment	65.7	69.5	65.5	68.1	70.7	66.4
Personal & Social Skills	43.1	42.9	46.3	52.3	47.4	49.2
Practical Skills	48.1	56.6	59.1	65.7	66.1	69.0
General Education	60.9	66.9	65.6	70.7	71.5	72.7

* Scores for the 2002 Varied Experiences scalelet are not comparable to scores in 2004 and 2006.

Opportunities for Improvement

Although IUPUI has made substantial gains in many areas, this trend analysis suggests several opportunities for improvement. For example, neither first-year students' nor seniors' scores on the three scalelets related to Academic Challenge increased significantly since 2002. Likewise, scores for the Collaborative Learning, Out-of-Class Interaction, Diversity Experiences, and Interpersonal Environment scalelets have not shown sizable gains since 2002. Reported gains in Personal and Social Skills, as well as in General Education outcomes, also have not improved appreciably since 2002.

One approach to using NSSE results to guide improvement is to identify academic units that excel in a particular area and to identify the best practices employed by those units. At IUPUI, several schools achieved scalelet scores of more than one standard deviation above the institutional average. Academic units interested in improving in a given area should consider meeting with representatives of those schools to determine what is being done to engage students and promote student learning. In the areas measured by the NSSE Academic Challenge benchmark, seniors in three schools (Education, Nursing, and Social Work) report high levels of engagement related to course challenge, writing experiences, and higher-order thinking. Students in these schools also report involvement in collaborative learning, as do students in the Schools of Engineering and Physical Education and Tourism Management (PETM).

Students in the Schools of Engineering and Technology and PETM also score well above the campus average on the Out-of-Class Interaction scalelet, as do seniors in the Schools of Informatics and Science. Seniors in the Schools of Liberal Arts and Social Work, along with seniors in the Herron School of Art and Design, report substantially higher than average experiences with diverse groups, while students in the PETM have the most positive perceptions of the interpersonal environment on campus. Seniors in Education, PETM, SPEA, and Social Work report significantly greater than average gains in personal and social skills, whereas seniors in Liberal Arts, Business, PETM, and Science report substantially greater than average gains in general education outcomes.

As is typically the case, no academic unit scored uniformly high or uniformly low on all of the NSSE scales. Each unit brings its own strengths to undergraduate education, and all units can learn from one another to engage students more widely and deeply in the educationally purposeful activities measured by NSSE.

What NSSE Measures

NSSE examines engagement in five areas, termed “benchmarks”: Academic Challenge, Active and Collaborative Learning, Student-Faculty Interaction, Enriching Educational Experiences, and Supportive Campus Environment. The Academic Challenge benchmark focuses on activities that demonstrate institutional emphasis on the importance of academic effort and high expectations for student performance, particularly in the areas of writing and higher-order thinking. Active and Collaborative Learning items ask students to report on the extent to which they are required to think about and apply what they are learning and to work with other students to solve problems and master difficult material. Student-Faculty Interaction items ask students about how often they interact with faculty inside and outside the classroom. The Enriching Educational Experiences benchmark covers a wide range of educationally purposeful learning activities inside and outside the classroom, such as learning communities, internships, and study abroad. It also includes students’ reports of their diversity and technology experiences. The final benchmark, Supportive Campus Environment, focuses on students’ perceptions of institutional commitment to student success and the quality of their interactions with peers, faculty, and administrators (Kuh et al., 2001).

Although the institutional benchmarks are very helpful in providing an overview of student engagement, they tend to be too broad to suggest specific improvement strategies. Scalelets, clusters of 3-5 questions focused on a specific type of engagement, provide a more useful framework for evaluating an institution’s progress in improving undergraduate education (Pike, 2006a, 2006b). These scalelets draw items from the NSSE benchmarks and add other questions to provide focused, but dependable, measures of student engagement. Three scalelets, Course Challenge, Writing Experiences, and Higher-Order Thinking, are derived from the Academic Challenge benchmark. Two scalelets, Active Learning and Collaborative Learning, are formed from the Active and Collaborative Learning benchmarks, while Course Interaction and Out-of-Class Interaction draw from the Student-Faculty Interaction benchmark. Varied Experiences, Information Technology, and Diversity Experiences are the scalelets representing Enriching Educational Experiences. The Support for Student Success and the Interpersonal Environment scalelets are drawn from the Supportive Campus Environment benchmark. The NSSE survey also asks students to report on the gains they have made during college. The gain questions can be grouped into three clusters of outcomes: (1) gains in personal and social skills, (2) gains in practical skills, and gains in general education outcomes. These outcome measures have been used in research on commuter college students (see Kuh, Gonyea, & Palmer, 2001). A list of the questions included in the scalelets and gain questions is attached.

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Attachment A.

Questions Comprising the NSSE Scalelets

Course Challenge

- How often have you ... worked harder than you thought you could to meet an instructor's standards or expectations?
- How often have you ... come to class without completing readings or assignments? {Reverse Scored}
- To what extent have ... your examinations during the current school year challenged you to do your best work?
- How many hours a week do you spend ... preparing for class (studying, reading, writing, rehearsing, and other activities related to your academic program)?
- To what extent does your institution emphasize ... spending significant amounts of time studying and on academic work?

Writing

- How often have you ... prepared two or more drafts of a paper or assignment before turning it in?
- How often have you ... worked on a paper or project that required integrating ideas or information from various sources?
- During the current school year ... number of written papers or reports of 20 pages or more?
- During the current school year ... number of written papers or reports between 5 and 19 pages?
- During the current school year ... number of written papers or reports of fewer than 5 pages?

Higher-Order Thinking Skills

- During the current school year, to what extent has your coursework emphasized ... memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form? {Reverse Scored}
- During the current school year, to what extent has your coursework emphasized ... analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components?
- During the current school year, to what extent has your coursework emphasized ... synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships?
- During the current school year, to what extent has your coursework emphasized ... 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?
- During the current school year, to what extent has your coursework emphasized ... Applying theories or concepts to practical problems or in new situations?

Active Learning

- How often have you ... asked questions in class or contributed to class discussions?
- How often have you ... made a class presentation?
- How often have you ... participated in a community-based project as part of a regular course?

Collaborative Learning

- How often have you ... worked with other students on projects during class?
- How often have you ... worked with classmates outside of class to prepare class assignments?
- How often have you ... tutored or taught other students (paid or voluntary)?
- How often have you ... discussed ideas from your readings or classes with others outside of class (students, family members, coworkers, etc.)?

Course Interaction

- How often have you ... discussed grades or assignments with an instructor?
- How often have you ... discussed ideas from your readings or classes with faculty members outside of class?
- How often have you ... received prompt feedback from faculty on your academic performance (written or oral)?

Out-of-Class Interaction

- How often have you ... talked about career plans with a faculty member or advisor?
- How often have you ... worked with faculty members on activities other than coursework (committees, orientation, student-life activities, etc.)?
- Have you, or do you plan to, ... work on a research project with a faculty member outside of course or program requirements?

Varied Experiences

- Have you, or do you plan to, ... participate in a practicum, internship, field experiences, co-op experience, or clinical assignment?
- Have you, or do you plan to, ... participate in community service or volunteer work?
- Have you, or do you plan to, ... participate in a learning community or some other formal program where groups of students take two or more classes together?
- Have you, or do you plan to, ... take foreign-language coursework?
- Have you, or do you plan to, ... study abroad?
- Have you, or do you plan to, ... participate in an independent study or self-designed major?
- Have you, or do you plan to, ... participate in a culminating senior experiences (comprehensive exam, capstone course, thesis, project, etc.)?
- How many hours a week do you spend ... participating in co-curricular activities (organizations, campus publications, student government, social fraternity or sorority, intercollegiate or intramural sports, etc.)?
- To what extent does your institution emphasize ... attending campus events and activities (special speakers, cultural performances, athletic events, etc.)?

Information Technology

- How often have you ... used an electronic medium (list-serv, chat group, Internet, etc.) to discuss or complete an assignment?
- How often have you ... used e-mail to communicate with an instructor?
- To what extent does your institution emphasize ... using computers in academic work?

Diversity

- How often have you ... had serious conversations with students of a different race or ethnicity than your own?
- How often have you ... had serious conversations with students who differ from you in terms of their religious beliefs, political opinions, or personal values?
- To what extent does your institution emphasize ... encouraging contact among students from different economic, social, and racial or ethnic backgrounds?

Support for Student Success

- To what extent does your institution emphasize ... providing the support you need to help you succeed academically?
- To what extent does your institution emphasize ... helping you cope with your non-academic responsibilities (work, family, etc.)?
- To what extent does your institution emphasize ... providing the support you need to thrive socially?

Interpersonal Environment

- Quality of your relationships with ... other students?
- Quality of your relationships with ... faculty members?
- Quality of your relationships with ... administrative personnel and offices?

Gains in Personal and Social Skills

- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... developing a personal code of values and ethics?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... understanding people of other racial and ethnic backgrounds?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... understanding yourself?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... contributing to the welfare of your community?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... voting in local, state, or national elections?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... learning effectively on your own?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... working effectively with others?

Gains in Practical Skills

- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... using computing and information technology?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... analyzing quantitative problems?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... acquiring job or work-related knowledge and skills?

Gains in General Education

- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... writing clearly and effectively?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... speaking clearly and effectively?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... thinking critically and analytically?
- To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in ... acquiring a broad general education?