

Psychometric Properties of NSSE

How and why was the survey developed?

The National Survey of Student Engagement (NSSE) was designed to assess the extent to which students are engaged in empirically-derived effective educational practices and what they gain from their college experience. A large, growing body of research on college student development shows that the time and energy students devote to educationally purposeful activities contributes to their learning and personal development. The NSSE survey reports student behaviors that are highly correlated with many desirable learning and personal development outcomes of college education.

What does the instrument cover?

NSSE asks students to report the frequency of participating in activities that represent good educational practice. The survey also covers students' perceptions of the college environment associated with achievement and satisfaction. In addition, students are asked to estimate their educational and personal growth since starting college. Finally, students provide information about their background, including age, gender, race or ethnicity, living situation, educational status, and major.

Can we trust student self-reported data?

The validity and credibility of self-reports have been examined extensively. Self-reported data is likely to be valid under five general conditions: (1) when the information requested is known to the respondents; (2) the questions are phrased clearly and unambiguously; (3) the questions refer to recent activities; (4) the respondents think the questions merit a serious and thoughtful response; and (5) answering the questions does not threaten, embarrass, or violate the privacy of respondents or encourage respondents to respond in socially desirable ways. NSSE was intentionally designed to satisfy all these conditions.

Does the instrument yield valid information?

The NSSE design team worked diligently to ensure that survey items were clearly worded, well-defined, and had high content and construct validity. Logical relationships exist between the items that are consistent with the results of objective measures and other research. The responses to survey items are approximately normally distributed and the patterns of responses to differ-

ent clusters of items discriminate among students both within and across major fields and institutions.

Overall, the pattern of responses from first-year students and seniors suggest the items are measuring what they are supposed to measure. For example, as one would expect, seniors are, on average, more engaged in their educational pursuits compared with first-year students. They also score higher on most college activities items and report that their coursework places more emphasis on higher order intellectual skills, such as analysis and synthesis as contrasted with memorization. Using NSSE 2005 data, we found only two items that first-year respondents score higher than seniors. The first item is about preparing two or more drafts of a paper or assignment before turning it in. Seniors reported re-writing papers and assignments less frequently than first-year students. A possible explanation is that first-year students are more likely to take classes that require multiple drafts of papers, or because seniors have become better writers during college and need fewer drafts to produce acceptable written work. The second item is related to interactions with peers of different religious beliefs, political opinions, or personal values. For this item, first-year students have a slightly higher score than seniors. A possible explanation is that first-year students are more likely than seniors to live in campus housing which puts them in close proximity to peers from different backgrounds; thus, first-year students are more likely to interact with other students compared with seniors, many of who move to off-campus housing. Overall, the items on the survey appear to be measuring what they are intended to measure and discriminate among students in expected ways.


Are students' responses to the survey reliable?

Student responses to the survey are reliable to the extent that they are consistent and reproducible. Research analysts at NSSE examined the reliability of student responses through student-level test-retest analysis and institution-level stability analysis.

Student-level test-retest analysis

Assuming little variation in student behavior between the test and retest, we would expect consistent or reliable responses to the survey items. In 2002, we conducted a test-retest analysis using 1,226 respondents who completed the same form of the paper survey twice over a period of several months. For the students' responses on the items related to three of the benchmarks (i.e., level of academic challenge, active and collaborative learning, and enriching educational experiences), the reliability coefficients were 0.74. Student responses for the items related to student interaction with faculty members and to supportive campus environment had reliability coefficients of 0.75 and 0.78, respectively. In 2005, we conducted the study again using 1,536 respondents who completed the paper or Web survey twice within a period of several months. The results were similar to the earlier study with the reliability coefficients ranging from 0.69 (level of academic challenge) to 0.74 (enriching educational experiences). The following table shows the test-retest analysis results from 2002 and 2005 NSSE survey administration. These findings suggest little variation in student responses from one testing period to the next.

Benchmarks	Test-retest Correlations	
	2002	2005
Level of Academic Challenge	0.74	0.69
Active and Collaborative Learning	0.74	0.72
Student-Faculty Interaction	0.75	0.70
Enriching Educational Experiences	0.74	0.74
Supportive Campus Environment	0.78	0.70
N	1226	1536



Institution-level stability analysis

Assuming no major shifts in an institution's policies, we would expect an institution to have relatively stable or reliable benchmark scores from one year to the next. In 2003, we conducted a stability analysis to measure the strength of the associations between benchmark scores for 214 institutions that participated in the 2002 and 2003 administrations of the survey. The benchmark scores were calculated using unweighted student responses to survey items that were similar for the two years. Values of the Spearman's rho correlations for these benchmark scores ranged from 0.81 (student-faculty interaction) to 0.88 (level of academic challenge) for first-year students, and from 0.83 (active and collaborative

learning) to 0.93 (enriching educational experiences) for seniors. We conducted this study again using the 2004 and 2005 NSSE survey data from 236 institutions that participated in both the 2004 and 2005 NSSE survey administrations. The results of the study showed the Spearman's rho correlations ranged from 0.78 (student-faculty interaction) to 0.89 (enriching educational experiences) for first-year students, and from 0.78 (active and collaborative learning) to 0.92 (enriching educational experiences) for seniors. These findings suggest that institution-level NSSE data are relatively stable from year to year.

Do non-respondents differ from respondents?

To determine whether respondents and non-respondents differed in their engagement in selected effective educational practices, the Indiana University Center for Survey Research conducted telephone interviews with 553 non-respondents from 21 different colleges and universities that participated in the NSSE 2001 survey administration. The same study was conducted again in the NSSE 2005 survey administration with 1,400 non-respondents from 24 different colleges and universities. In addition, we also conducted a nonresponse study by comparing NSSE 2005 benchmark scores of early and late respondents. Although differences were found between respondents and non-respondents, no consistent trend was found to support the existence of non-response bias. Generally speaking, undergraduate students who do not complete the NSSE survey when invited to do so may actually be slightly more engaged than respondents. This is counter to what many observers believe, that non-respondents have a less educationally productive experience and, as a result, do not respond to surveys. The findings suggest that the opposite may be true, that non-respondents are busier in many dimensions of their lives and do not take time to complete surveys. The results of the non-response and early-late respondent study show no significant sign of non-response bias in NSSE.

Do students respond differently to the different mode of administration (paper vs. Web)?

Using ordinary least squares (OLS) we analyzed NSSE 2000 data to ascertain whether students who completed the survey on the Web responded differently than those who responded via a traditional paper format. We controlled a variety of student and institutional characteristics that may be associated with either engagement or mode. Responses to Web and paper surveys showed small, but consistent, differences that tended to favor the Web mode where differences existed. Items related to computing and information technology exhibited some of the largest effects favoring the Web, which is not surprising, given that many students who receive a paper survey chose to complete it using the Web option,

suggesting a prediction for using technology. On the other hand, students who answered paper surveys spent more time preparing for class and did more reading and writing. These findings, combined with previous analysis, especially for items unrelated to computing and information technology, are generally consistent with the results from single institution studies.

How does student engagement relate to self-reported student outcomes?

The NSSE survey includes a number of self-reported student outcome measures such as educational and personal

growth, grade point average, and satisfaction. An exploratory factor analysis based on all randomly sampled students who responded to the NSSE 2005 educational and personal growth items in Question No. 11 yielded three factors: personal and social development, practical competence, and general education. NSSE also uses a satisfaction scale comprised of answers to Question No.12 that asks students to evaluate their entire educational experience and Question No.13 that asks whether students would attend the same institution again if they could start over. The following table shows the correla-

<i>NSSE Benchmarks</i>	<i>Practical Competence</i>		<i>General Education</i>		<i>Personal Social</i>		<i>Grades</i>		<i>Satisfaction</i>	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
<i>Level of Academic Challenge</i>	.42	.37	.49	.47	.43	.41	.16	.13	.28	.27
<i>Active & Collaborative Learning</i>	.34	.34	.35	.34	.39	.38	.15	.15	.24	.23
<i>Student Faculty Interaction</i>	.35	.31	.36	.35	.42	.40	.08	.16	.24	.28
<i>Enriching Educational Experiences</i>	.27	.21	.28	.30	.36	.36	.10	.14	.21	.22
<i>Supportive Campus Environment</i>	.47	.46	.51	.51	.58	.59	.10	.13	.55	.58



Note: All correlations are significant at the $p < .01$ level.

tions between NSSE benchmarks of effective educational practices and these self-reported outcomes based upon NSSE 2005 data.

Where can we find additional psychometric information on NSSE?

NSSE has a growing portfolio of psychometric tests and analyses that it conducts on a regular basis. A more comprehensive summary of this work can be found at the NSSE Web site at www.nsse.iub.edu/html/NSSE_Psychometric_Portfolio.cfm.



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