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Introduction

The University conducts surveys which yield useful data on student satisfaction, activities, and learning experiences, and this data has been used to improve the undergraduate experience. But these data tell us nothing about how U.Va. compares to other colleges and universities. The U.S. News and World Report college ranking provides comparisons with other colleges and universities, and U.Va. has historically performed very well, ranking number two in 2001 among public universities and twenty-first overall. Such rankings typically are based on student entrance exam scores, library holdings, alumni giving, faculty-student ratios and the like. This kind of information has more to do with the assets of a school -- including its pool of applicants -- than how well it is teaching its students, or what those students are learning. From the point of view of college faculty and administrators interested in institutional improvement, the rankings are more notable for what they do not provide:

- information about what students actually do in college, and what they are learning;

- information that can be used to improve the educational experience of students;

- an answer to the fundamental question: are our educational practices and curriculum producing desirable learning outcomes?

The National Survey of Student Engagement (NSSE) is designed to address these issues. One unique aspect of NSSE is that it asks students about what they actually do in college, unlike traditional opinion surveys. These activities are linked to educational practices that are known to promote student engagement, which is defined as "the extent to which students participate in
proven educational processes that contribute to educational outcomes... such as critical thinking, problem solving, effective communication, and responsible citizenship," according to The NSSE 2000 Report: National Benchmarks of Effective Educational Practice. In addition, by providing the University with comparative data from other institutions and establishing meaningful national benchmarks, NSSE helps the University to identify strengths and weaknesses and to identify educational practices which could be improved.

The University of Virginia participated in the first NSSE, conducted in the spring of 2000, and is participating again in spring 2002. This article reviews the results from the first study. Results from the 2002 survey will be released in the Spring of 2003.

**The Design of NSSE 2000**

NSSE was designed by a team of national assessment experts and administered by Indiana University's Center for Survey Research. The survey's first national administration took place in the spring of 2000. A sample of first-year and fourth-year students at participating colleges and universities were sent surveys. Copies of the survey instrument and the complete NSSE 2000 Report are available on-line at NSSE's website. For more information about the administration of NSSE, go to Methodology. In addition to the standard questions, NSSE allowed participating institutions to form consortia, which were permitted to include 20 questions of their own. U.Va. participated in a consortium with 15 other universities in the Association of American Universities Data Exchange (AAUDE). Click here for a list of the AAUDE institutions, questions and frequencies.

**Four Sets of Data Reviewed**

We have examined four sets of data compiled from NSSE to determine how the University fared. The first set of data includes the University's mean scores and frequencies on individual questions. These results can be helpful in keeping the magnitude of comparative differences in index measures in perspective, which are measured in percentiles. In other words, percentiles do not reveal the absolute level measured by either an index or an individual question --only how an institution compared to the whole. Looking at individual question results also provides more detail to what is shown by the summary measures and benchmarks. Click here to see the individual question mean scores. Individual question means were tested for statistical differences, comparing the University to both AAUDE and the national sample. However, because of the large number of respondents, many comparisons were statistically significant. Therefore, the statistical differences were also measured in terms of their substantive effect by dividing the mean difference by the standard deviation of the mean of the comparison group, producing an "effect size" measure between 0.2 and 0.9 (0.2 to 0.5 can be considered a small effect; 0.5 to 0.8 moderate; above 0.8 large). All of the University's individual question "effect size" comparisons, both positive and negative, were between .28 and .58. This means that the magnitude of the differences between U.Va. students and AAUDE and students in the national sample was no greater than small to moderate. This is an important point to keep in mind when considering abstract index scores in percentile terms.
The second set of data we examine is the AAUDE consortium questions. None of these questions were used in the creation of the benchmarks, or the Institutional Engagement Index. However, some of the AAUDE questions addressed issues not part of the NSSE but which the University has considered important in its assessment efforts. Most of these are satisfaction questions, e.g., satisfaction with academic advising. Click here to see the AAUDE consortium question frequencies.

The third set of data is an index created by NSSE called the "Institutional Engagement Index." This index consists of three measures: the actual score on the five benchmark indices; a predicted score, based on an ordinary least squares regression model using data from the Integrated Postsecondary Education Data System (IPEDS); and a residual, the result of subtracting the predicted score from the actual score. The resulting residual, either positive or negative, might be considered a measure of "educational effectiveness." The following IPEDS variables, if available, were used in the regression equation used to calculate the predicted score: whether the institution was public or private, admissions selectivity (from Barron's 1999), undergraduate enrollment, urbanicity, percentage full-time and part-time, sex, racial/ethnic composition, educational and general expenses per student from 1995-96 IPEDS, endowment or assets (land, buildings, and equipment) per student from 1995-96 IPEDS, student-reported major field, student-reported age, percentage of students who completed the survey via the web. Click here to see the Institutional Engagement Index for U.Va.

Finally, and perhaps most interestingly, NSSE established five benchmark indices from 40 questions on the survey which measure desired educational outcomes (critical thinking, problem solving, effective communication, and responsible citizenship). The five indices were called: Level of Academic Challenge, Active and Collaborative Learning, Student Interactions with Faculty Members, Enriching Educational Experiences, and Supportive Campus Environment.

The Five NSSE Benchmarks

Each of the five benchmarks NSSE created is composed of 6-12 questions and was tested (through factor analysis) for reliability. More about how the indices were created and the factor analysis statistics can be found in Appendix B of the NSSE 2000 Report. Below we describe each of the five benchmarks, and list the individual questions which make up the index.

Level of Academic Challenge looks at the quantity and quality of academic work assigned, the cognitive complexity of work, and the standards faculty use to evaluate student work. The Academic Challenge Index was composed of 10 items:

- How many hours per week a student spent preparing for class (studying, reading, writing, rehearsing, and other activities related to their academic program).
- How many assigned textbooks, books, or book-length packs of course readings a student read.
- How many written papers of 20 pages or more a student wrote.
- How many written papers of less than 20 pages a student wrote.
- The extent to which a student's coursework emphasized analyzing the basic elements of an idea, experience, or theory.
• The extent to which a student's coursework emphasized synthesizing and organizing ideas, information, or experiences.
• The extent to which a student's coursework emphasized making judgments about the value of information, arguments, or methods.
• The extent to which a student's coursework emphasized applying theories or concepts to practical problems or new situations.
• Whether the campus environment emphasized spending significant amounts of time studying and on academic work.
• How often a student worked harder than they thought they could to meet an instructor's standards or expectations.

**Active and Collaborative Learning** attempts to measure the extent to which students take advantage of opportunities in and outside of the classroom to actively participate in the learning process. Seven questions make up this index. Each question asked how often a student had:

• Asked questions in class or contribute to class discussions.
• Made a class presentation.
• Worked with other students on projects during class.
• Worked with classmates outside of class to prepare class assignments.
• Tutored or taught other students.
• Participated in a community-based project as part of a regular course.
• Discussed ideas from their reading or classes with others outside of class (students, family members, coworkers, etc.).

**Student Interactions with Faculty** tries to get at how closely and how often students interact with their professors. Six items make up the index and asked how often a student had:

• Discussed grades or assignments with an instructor.
• Talked about career plans with a faculty member or advisor.
• Discussed ideas from their reading or classes with faculty members outside of class.
• Worked with faculty members on activities other than coursework (committees, orientation, student-life activities, etc.).
• Received prompt feedback from faculty on their academic performance.
• Worked with a faculty member on a research project.

**Enriching Educational Experiences** looks at the opportunities students have to learn in a diverse environment, both in and outside of the classroom. Exposure to differing points of view, the use of technology in the educational environment, and the opportunities to participate in educational activities such as internships, volunteer work, and study abroad are all areas which contribute an an enriching educational experience. The index consists of 11 items:

• How many hours per week a student participated in co-curricular activities (organizations, publications, student government, sports, etc.).
• Whether a student had done a practicum, internship, field experience, co-op experience, or clinical assignment.
• Whether a student had participated in community service or volunteer work.
• Whether a student had foreign language coursework.
• Whether a student had taken an independent study course or had a self-designed major.
• Whether a student had participated in a culminating senior experience (comprehensive exam, capstone course, thesis, project, etc.).
• Whether a student had studied abroad.
• How often a student had serious conversations with other students holding religious beliefs, political opinions, or personal values very different from their own.
• How often a student had serious conversations with students of a different race or ethnicity.
• How often a student used an electronic medium (e-mail, list-serve, chat group, etc.) to discuss or complete an assignment.
• The extent to which a student felt the campus environment encouraged contact among students from different economic, social, and racial or ethnic backgrounds.

The Supportive Campus Environment index looks at the extent to which the school is actively committed to helping students succeed academically and socially. This index was composed of six items:

• Whether the campus environment emphasized providing the support students needed to help them succeed academically.
• Whether the campus environment emphasized helping students cope with nonacademic responsibilities (work, family, etc.).
• Whether the campus environment emphasized providing the support students needed to thrive socially.
• Whether students felt the quality of relationships with other students were friendly and supportive and promoted a sense of belonging.
• Whether students felt that faculty members were available, helpful and sympathetic.
• Whether students felt the relationships with administrative personnel and offices were helpful, considerate, available, and flexible.

How the University Fared on the Five NSSE Benchmarks

On two of these indices, Enriching Educational Experiences and Academic Challenge, U.Va. students were near the top -- not only among all colleges and universities but also among AAUDE peer institutions. On two others, Student Interactions with Faculty Members and Active and Collaborative Learning, the University did not fare so well. The fifth benchmark, Supportive Campus Environment, produced mixed results. We examine each of the benchmarks and the University’s performance. For each, we have created separate tables of frequencies for the individual response items. These charts indicate the frequencies for U.Va. first-year and fourth-year students, as well as the national and AAUDE frequencies for first-year and fourth-year students.
Fourth-year University students were in the 90th percentile of the Enriching Educational Experiences index. The participating AAUDE institutions, in comparison, scored between the 50th and 60th percentiles on this index. On this same measure, using the Institutional Engagement Index, the University also fared well, moderately outperforming what one would expect, given the University’s IPEDS data. First-year U.Va. students also scored highly on the Enriching Educational Experiences index, between the 80th and 90th percentile, and somewhat higher than AAUDE institutions, which scored in the 60th-70th percentile. However, on the Institutional Engagement Index, the score for first-year students was a bit below what was predicted by the IPEDS data.

In examining the University's mean scores on the individual questions which make up the enriching experiences index, three questions stand out:

- How often a student had used an electronic medium (e-mail, list-serve, chat group, etc.) to discuss or complete an assignment.
- How often a student had serious conversations with students with religious beliefs, political opinions, or personal values very different from theirs
- How many hours per week a student was participating in co-curricular activities (organizations, publications, student government, sports, etc.).

On each of these questions, for both first-year and fourth-year students, the University outperformed the national sample and these differences were statistically significant, though substantively small to moderate. For the question about having conversations with different types of students, the University also outperformed the AAUDE group for both first-year and fourth-year students. Sixty-five percent of University fourth-years had serious conversations with students whose backgrounds differed from their own, compared to 48% of AAUDE fourth-years and 45% of all fourth-years.
For the question on participation in co-curricular activities, the University did moderately better than AAUDE but only for fourth-year students. Only 36% percent of University fourth-years participated in co-curricular activities for five or fewer hours each week; 62% of AAUDE fourth-years and 64% of national fourth-years participated for five or fewer hours each week. **Click here for a chart which shows the eleven individual question frequencies for the Enriching Educational Experiences index.**

**Academic Challenge** was another index in which U.Va. students, both first-year and fourth-year, did well, both groups scoring in the 70th percentile overall. Among the 46 universities participating in the 2000 NSSE with the Carnegie Classification "Doctoral/Research Universities-Extensive," U.Va. was selected as one of four potential "exemplars," relative to its peer institutions.

For this index, six individual questions stand out, meaning that statistically significant differences with either the AAUDE group or national sample were identified. The six questions were:

- How much time a student spent preparing for class.
- The extent to which students' coursework emphasized making judgments about the value of information, arguments, or methods
- The extent to which students' coursework emphasized synthesizing and organizing ideas, information, or experiences
- The extent to which the campus environment emphasized spending significant amounts of time studying and on academic work
- The number of written papers or reports of fewer than 20 pages
- The number of assigned textbooks, books, or book-length packs of course readings.

U.Va. first-years and fourth-years both reported reading a higher number of assigned textbooks, books, or book-length packs of course readings than either AAUDE students or the national sample.
About two-thirds of first-year and fourth-year U.Va. students read more than 10 textbooks, books, or book-length packs of course readings in the past year. For AAUDE first- and fourth-years, about half the students had read more than 10 and for the national sample a bit less than half had done so. Click here for a chart which shows the 10 individual question frequencies for the Level of Academic Challenge Index.

U.Va. did not fare well on two of NSSE's benchmarks. Student Interactions with Faculty Members and Active and Collaborative Learning.

First-year U.Va. students scored in the 10th percentile on the student-faculty index, and fourth-year students in the 30th percentile. First-year students from the AAUDE group scored a bit higher than U.Va. and fourth-year students from the AAUDE group scored a bit lower than U.Va. One in five first- and fourth-year U.Va. students had talked about career plans with a member of the faculty "often" or "very often," compared to about one in three students from the national sample. Click here for a chart which shows the six individual question frequencies for the Student Interactions with Faculty Index.
First-year U.Va. students scored in the 20th percentile on the collaborative learning index, and fourth-year students in the 10th percentile. Students from the AAUDE group scored similarly or a bit lower than U.Va. When asked how often they had made a class presentation in the past year, 24% of U.Va. first- and fourth-years said "often" or "very often," compared to 43% of the national sample. Click here for a chart which shows the seven individual question frequencies for the Active and Collaborative Learning Index.

On the fifth benchmark, Supportive Campus Environment, U.Va.'s results were mixed. U.Va.'s actual scores significantly exceeded its predicted scores for both first- and fourth-year students. Click here to see the Institutional Engagement Index results.

U.Va.'s Supportive Campus Environment benchmark scores for both first-years and fourth-years were higher than AAUDE institutions' scores. On one of the questions making up the benchmark about how much support students felt they received from the campus environment for "thriving socially," 48% of U.Va. first- and fourth-years said the campus environment provided the support they needed to thrive socially "quite a bit" or "very much," while 35% of the AAUDE students and 37% of the national sample felt similarly. However, despite this individual result and despite exceeding what was predicted on the Institutional Engagement Index, U.Va.'s Supportive Campus Environment was no better than average nationally for first-year students (the 50th percentile) and below the national average for fourth-year students (30th percentile). Click here for a chart which shows the six individual question frequencies for the Supportive Campus Environment Index.
The AAUDE Consortium Questions

Members of the AAUDE consortium added twenty questions to the 2000 NSSE that were included as a final supplement to the NSSE survey. A list of the questions and table of frequencies, as well as a table of means, including the results of statistical significance testing, are available by clicking here. For the purposes of this analysis, we are only reporting those questions in which a statistically significant difference between the University and the rest of the AAUDE group, for either first-year or fourth-year students, was moderate or higher in its effect size. Four questions met this criteria:

- How a student rated the academic quality of the university in general.
- How a student rated the quality of academic advising they received from their college or department.
- The source, during the past year, from which the student received most (emphasis added) of their academic advising.
- When and if the student expected to complete their bachelor's degree.

We look at each question in turn. Both first-year and fourth-year students rated the University's academic quality in general very highly, moderately higher than students from the rest of the AAUDE group. Sixty-eight percent of U.Va. first-years, compared to 36% of AAUDE students, rated the academic quality "excellent." The same comparison for fourth-year students is 55% of U.Va. students and 25% of AAUDE students. U.Va.'s high rating in academic quality did not carry over to academic advising. Only 33% of U.Va. first-year students felt the quality of the academic advising they received was "good" or "excellent." Fifty-eight percent of first-year AAUDE students felt similarly. There was not much difference between U.Va. and AAUDE fourth-year students' ratings of advising.
Another disparity between U.Va. and AAUDE first-year students is the source from which they received most of their academic advice. Only 19% of U.Va. first-years claimed they received most of their advice from their advisors, compared to 49% of AAUDE first-years. Two-thirds of U.Va. first-years said they received most of their advice from either the "undergraduate catalog or other publications" or "friends or family." Only 37% of AAUDE first-years said likewise.

When and if a student expected to receive their bachelor's degree was the question in which the strongest difference between U.Va. and AAUDE was observed. Ninety-three percent of U.Va. students (first- and fourth-year combined) felt they would receive their bachelor's degree within 4 years, compared to only 54% of AAUDE first- and fourth-years. All in all, the AAUDE questions were good news for how the University fared on the NSSE. The exception was academic advising; the University's first-year advising system is not highly regarded or utilized by its students.

**Individual Questions of Interest to the University**
Several individual questions are of particular interest to the University. In answer to the question, "how would you evaluate your entire educational experience at this institution?" 52% of U.Va. first- and fourth-years rated their experience "excellent," compared to 28% for AAUDE and 34% for the national sample.

Another area which has received much national attention lately is how much time students spend studying. When asked how much time they spend preparing for class (studying, reading, writing, rehearsing, and other activities related to your academic program), slightly more than a third of U.Va. students claimed to be studying more than 20 hours per week. About 25% of AAUDE students and the national sample were studying that much. Conversely, a bit less than a quarter of U.Va. students were studying less than 11 hours per week, compared to more than a third of AAUDE students and the national sample. These numbers are both good news and bad news for the University. While University students are spending more time studying and preparing for class than AAUDE institutions and the national sample, still nearly a quarter of first- and fourth-year students surveyed were studying an average of only an hour and a half a day.

Another question that might be of interest to University faculty and administrators is how much a student's college education contributed to the student "being honest and truthful." University first- and fourth-year students gave more credit to the University in this regard. Nearly three-quarters of U.Va. students said the University contributed "quite a bit" or "very much." Fifty-four percent of AAUDE students and 61% of the national sample said likewise.

**Summary and Conclusion:**

**What Can We Learn from NSSE?**

NSSE, while only a few years old, has been thoroughly field-tested. A pilot survey was conducted in 1999 to test the instrument and the reliability of the five indices. After the 2000 survey, extensive psychometric analyses were conducted to examine the validity and reliability of the survey questions. Focus groups were organized with respondents to determine if the questions were being consistently interpreted by respondents and whether respondents are interpreting questions as the designers intended. A few problems were reported. For example, the question on "number of books read on your own" caused some confusion among students who
did not know if this item referred to books read for pleasure or to supplement class readings. The vast majority of questions, however, were found to be "clearly worded and easy to complete."

*Conceptual Framework, Interpreting the Meaning of Engagement Items: Results from Student Focus Groups, NSSE College Student Report 2001.* NSSE did not change the wording of the vast majority of questions in the 2001 instrument but rather included additional information to clarify some questions. A few wording changes were made. NSSE staff even conducted a telephone survey of nonrespondents to see how they may have differed from respondents. Interestingly, nonrespondents were a bit more engaged than respondents. But the differences were not large, and one must be cautious about interpreting this result, since telephone interviews sometimes have been shown to cause higher scores than paper surveys. A more thorough examination of the nonrespondent issue can be found on NSSE's website presenting its *Nonrespondent Analysis* for the 2001 survey. In addition to the psychometric testing, focus groups and nonrespondent analyses, NSSE staff compared the results of the institutions that participated in both the 1999 and 2000 surveys and the 2000 and 2001 surveys. Overall, the correlations for common questions were high, though some were higher than others. See "Estimates of Stability," in the "Conceptual Framework" section of the 2001 report.

Despite the sound methodology and substantive interest of NSSE, there are still methodological concerns, as well as substantive problems that need to be addressed. In the area of methodology, the primary concern seems to be around the relatively low response rates for the surveys. Less than half of those surveyed responded and these respondents did differ somewhat from the populations. Women are overrepresented in the national samples and part-time students are underrepresented. Weighting can reduce this bias. However, if respondents differ in other ways that cannot be accounted for in weighting, the consequences are more serious. The nonrespondent analysis mentioned earlier indicated that nonrespondents were slightly more engaged than respondents, meaning that student engagement is underestimated by NSSE. This problem is mitigated by the comparative value of the survey. If the nonrespondent bias is distributed evenly across institutions, the bias would cancel itself out, though the absolute level of engagement might still be understated. Still, higher response rates both at U.Va. and nationally would diminish the nonrespondent problem. For the 2002 survey, the University is offering incentives to students taking the survey, the single most effective means of increasing response rates on surveys.

Beyond methodology, some have criticized the value of NSSE because the more elite institutions are less likely to participate. Colgate University has stated that it will not participate in future surveys because its peer institutions are not participating, according to an article in the *Chronicle of Higher Education*, Nov. 17, 2000. For U.Va. this is somewhat of a problem also. Berkeley has chosen not to participate, as well as the University of Pennsylvania. Other top-tier state universities have participated, most notably the University of Michigan. The AAUDE institutions on the whole are not U.Va. peers. However, even if the comparative value of the survey is not ideal, the University still can use NSSE to identify its strengths and weaknesses. For example, we have learned that University students do not have as much contact with faculty as they do at other institutions. While this might also be the case for peer institutions, it nevertheless is a worthy goal for the University to improve and increase student-faculty interaction. Another substantive criticism that has been leveled at NSSE has more to do with *how* it is used. The results for individual colleges or universities are not made public, except by
permission of the participating institution (most don't give it). Prospective students and parents cannot use NSSE as an alternative to the U.S. News rankings because so few schools make the results public.

On the whole, the NSSE results have identified several significant strengths at the University.

- The quality of the faculty and administration has created a challenging, rich and diverse academic environment for both its first-year and fourth-year students.
- The University has created an outstanding extracurricular environment and is exceeding expectations in establishing an environment supportive to its undergraduates outside of the classroom.

The results of NSSE have also pointed to some areas for improvement.

- While the supportive environment is higher than what one might expect, given the University's size and other characteristics, this level of support is only about the same as the national average for first-year students and below the national average for fourth-year students.
- The area most in need of improvement, based on its identified importance to undergraduate student engagement, is in the area of faculty-student interaction. Students do not have enough positive interactions with faculty, especially first-year students whose score was near the bottom nationwide.
- While fourth-years fared better compared to other institutions, their score on the student-faculty index was still lower than the national average. Moreover, U.Va.'s scores on student-faculty interaction were below expectations in this area for both first- and fourth-year students.

The NSSE area in U.Va. did least well was the active and collaborative learning index, which attempts to measure the extent to which students take advantage of opportunities in and outside of the classroom to actively participate in the learning process. For both first- and fourth-year students, the University ranked significantly below average, and less than expected. The importance of such learning experiences in a large research university can be debated. When looking at some of the measures making up this index--making a class presentation, working with classmates outside of class, tutoring other students--one can argue that such experiences are not only less feasible in a large research university, they might also be less appropriate in a University whose students are as highly regarded as U.Va.'s. Nevertheless, other aspects of the index--participating in a community-based project as part of a course and discussing ideas from readings or class with others outside of class--would still seem to be areas of potential weakness that the University would not want to ignore.

The NSSE is a thoroughly-tested and informative alternative to the U.S. News rankings from the point of view of an institution that is looking for ways to improve the undergraduate educational experience. To that end the University community should take note of its strengths and weaknesses. The good news for the University is that its strengths outnumber its weaknesses, and the amount of change required for improvement does not seem to be outside the realm of possibility.