

# Tomorrow's Teachers: Do They Engage in the 'Right Things' During College?

Teacher education programs are often accused of lacking intellectual rigor and failing to cultivate the competencies their graduates will need. Using data from the National Survey of Student Engagement, Mr. Carini and Mr. Kuh find that the educational experiences of future teachers compare favorably with those of other students in college. However, these positive experiences do not necessarily stem from teacher education programs.

BY ROBERT M. CARINI AND GEORGE D. KUH

**S**OONER OR LATER, discussions of schooling turn to teacher quality. Both educational leaders and the general public agree that high-quality teachers are a key to boosting student achievement.<sup>1</sup> Why might we not have the high-quality teachers we need? Two reasons dominate the debate. The first is self-selection — the academic ability of those who choose to teach is thought to be a cut (or more) below that of peers headed to other vocations. Second, teacher preparation programs supposedly lack intellectual rigor and don't cultivate certain critical skills and competencies in their students.

Though the evidence supporting these claims is far from conclusive,<sup>2</sup> universities and policy makers seem determined to upgrade teacher quality. One popular approach is to raise the bar for entry into teacher preparation programs by re-

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quiring higher minimum college grades or higher scores on entrance exams. This strategy recalls the specious criteria used in many annual rankings of colleges and universities in which higher scores on such input measures as entrance tests and more resources for faculty salaries or in an endowment yield higher "quality" rankings for the university. The public remains mesmerized by such ranking schemes, despite decades of research on college-level learning that point to a very different conclusion. Indeed, studies show that what matters far more to learning and a host of other desired outcomes during college is what students do with their time and how they use the institution's educational resources, not the test scores they bring to college or the resources a school has.

Equally important, scores on college entrance tests and even such outcome measures as the Praxis I and II exams don't tell us what we should focus on to enhance teacher preparation, because it isn't clear which institutional policies or practices affect the outcomes of interest.

## LOOKING BEHIND TEST SCORES AND OUTCOMES

The best predictor of learning and personal development for college students is the amount of time and energy they expend on educationally fruitful activities.<sup>3</sup> For example, the more students study or practice, the more they learn or the better they become at something.

How can we find out whether students are doing these and other productive activities during college? Process indicators are one potentially instructive source of information. These are measures that represent effective educational practices — student and institutional behaviors that theory and research show are empirically linked to desired outcomes.<sup>4</sup> The argument goes like this: future teachers who are challenged more academically during college or who have considerable firsthand experience in educationally meaningful pursuits, such as active and collaborative learning or classes that demand the use of higher-order thinking skills, will tend to be more effective teachers after college because they will learn more during college and will be well positioned to use similar strategies in their own teaching.<sup>5</sup>

Consider service learning, which is linked to a host of desirable outcomes.<sup>6</sup> If we think of service learning as "a teaching strategy that connects community service with the curriculum,"<sup>7</sup> it stands to reason that teachers who've had this experience during college will be better prepared to use this and allied instructional strategies in their own classrooms when they begin teaching. If teacher education programs had valid, reliable process indicators, then

faculty members and others could diagnose in which areas prospective teachers were underperforming relative to established standards or compared with their peers in other fields. Then they could take corrective steps.

Here we introduce a set of process indicators that can be used to determine the degree to which future teachers engage in effective educational practices during college. Moreover, the source of these indicators — the annual National Survey of Student Engagement — allows us to estimate whether seniors who intend to teach after college are more or less engaged in effective educational practices than their counterparts who are pursuing other vocations.

The National Survey of Student Engagement (NSSE) was developed in the late 1990s to establish national benchmarks of effective educational practice. The results also provide institutions with "actionable" data — information about student experience and institutional performance that can be used immediately to improve the quality of undergraduate education. The NSSE was launched with support from the Pew Charitable Trusts and is co-sponsored by the Carnegie Foundation for the Advancement of Teaching and the Pew Forum on Student Learning. Now in its third year, the project has information from about 285,000 students from more than 600 four-year colleges and universities.

## THE NSSE SURVEY

The short, tightly focused survey was designed by national assessment experts and has been extensively field-tested.<sup>8</sup> Its 69 questions represent behaviors that research studies indicate are associated with high levels of student learning and personal development. The items reflect 1) involvement in different types of in-class and out-of-class activities; 2) amount of reading and writing assigned; 3) participation in selected educational programs, such as study abroad, internships, and senior capstone courses; 4) perceptions of the campus environment, including the quality of students' relationships with peers, faculty members, and administrators; and 5) student satisfaction with academic advising and the overall collegiate experience. In addition, students estimate their educational, personal, and social growth and development in selected areas since starting at their college and provide background information, such as their sex, age, race and ethnicity, enrollment status, living arrangements, and major field.<sup>9</sup>

The information we report is from about 31,000 seniors (randomly chosen from 317 four-year colleges and universities) who completed the NSSE survey near the end of the

spring term in 2001. Of this group, 6,299 students (20%) indicated that they planned to teach at some grade level from prekindergarten through high school within a year or two after graduation. Of the 4,971 women (79%) and 1,328 men (21%) who intended to teach, 4,627 (73%) majored in education at 295 different institutions. As a group, the future teachers who answered the NSSE survey approximate the teaching force with respect to sex, race and ethnicity, and proportion who majored in education.<sup>10</sup>

### EDUCATIONAL ENGAGEMENT OF FUTURE TEACHERS AND THEIR PEERS

To determine how the academic engagement of future teachers compared with that of their peers in other majors, we looked at the responses of future teachers on the seven educational engagement measures shown in Table 1.<sup>11</sup> "Academic challenge" was based on study time and course requirements for reading, writing, and application of higher-order thinking skills rather than on student judgments of the difficulty of the coursework.

Table 1 compares the engagement levels of future teachers and seniors who do not intend to teach. Each comparison was adjusted statistically for a number of differences between the two groups that might otherwise contribute to differences in engagement.<sup>12</sup> The pleasant surprise is that future teachers scored as high or higher on all seven measures; that is, all comparisons either show "higher" in column 1 or show no difference (denoted by NS).<sup>13</sup> Active and collaborative learning and gains in job-related skills exhibited the strongest differences.<sup>14</sup> Enriching educational experiences and personal and social gains scores were also higher for future teachers, though the relationships were considerably weaker. In general, these find-

TABLE 1.

### Educational Engagement of Future Teachers And Other College Seniors<sup>1</sup>

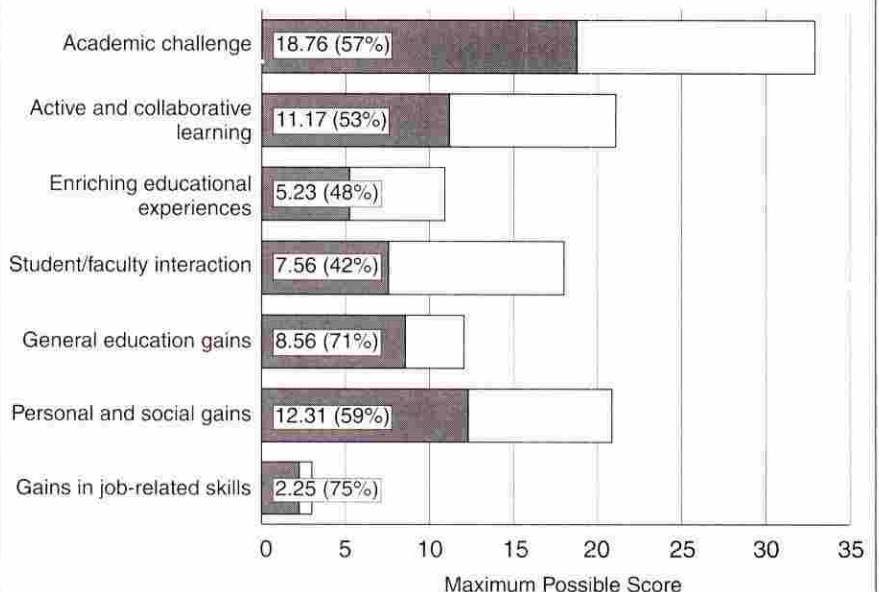
Measure	All Future Teachers Versus Nonteachers	Future Teachers Majoring in Education Versus	
		Nonteachers	Future Teachers Majoring in Other Fields
Academic challenge	NS <sup>2</sup>	NS	NS
Active and collaborative learning	Higher	Higher	Higher
Enriching educational experiences	Higher	NS	Lower
Student/faculty interaction	NS	Lower	Lower
General education gains	NS	Lower	Lower
Personal and social gains	Higher	Higher	NS
Gains in job-related skills	Higher	Higher	Higher

1. ANCOVA tests of mean difference. The numbers of respondents for the individual measures range from 6,040 to 6,261 for all future teachers; from 23,930 to 24,569 for nonteachers; from 4,439 to 4,599 for future teachers majoring in education; and from 1,601 to 1,662 for future teachers majoring in other fields.

2. NS equals "not significantly" different ( $p > .001$ , 2-tailed test).

FIGURE 1.

### Future Teachers' Mean Engagement as a Percentage of Maximum Possible



ings hold for both men and women.

Figure 1 (previous page) displays the engagement levels of future teachers as a percentage of the maximum possible on each of the seven measures. For instance, a mean of 18.76 out of a maximum possible score of 33 for academic challenge suggests that future teachers scored at 57% of the maximum. When we compare future teachers' level of academic challenge with that of the 18 major fields represented on the survey, future teachers scored as high as or higher than 11 of these majors. It is interesting that, when we look at one particular item that contributes to academic challenge, future teachers spent nearly 14 hours per week preparing for class, an amount that falls well short of the faculty-endorsed two hours for every hour spent in class. In other words, if a student enrolled in 15 credit hours, she should spend an additional 30 hours each week reading, rehearsing, and studying outside of class. Future teachers fulfilled only about half of the recommended study time.<sup>15</sup> However, NSSE data show that this is also true for seniors in general.<sup>16</sup>

Figure 1 shows that future teachers' active and collaborative learning scores reflect about 53% of the maximum score across the seven activities that contributed to this measure. Based on what students in focus groups told us about what the various response options mean in terms of their behavior, it appears that future teachers: 1) contribute to class discussions at least once per week, 2) make class presentations about five to seven times during a semester, 3) work in class with other students on projects three to 10 times per semester, 4) work with classmates outside of class on assignments five to eight times per semester, and 5) discuss ideas from their courses outside of class every other day or so.<sup>17</sup> It is notable that two-fifths of future teachers never tutored other college students.

With respect to enriching educational experiences, 89% of future teachers had a practicum or internship of some sort, no doubt reflecting required field experiences such as student teaching. More than two-thirds (70%) performed community service or volunteer work at some point during college, 37% took coursework in a foreign language, 15% studied abroad, and 26% fashioned an independent-study or self-designed major. More than half (55%) reported some type of culminating senior experience, though nearly an equal number (48%) didn't take a course with a service-learning component in their last year of college.

Future teachers reported only 42% of the maximum score for student/faculty interaction. In part, this relatively low score reflects the fact that only about 16% of future teachers collaborated with faculty members on research projects outside of class. To put this in perspective, 62% of physical

science majors and 45% of biological science majors worked with a faculty member on a research project at some time during their undergraduate program. In addition, substantial percentages of future teachers never interacted with faculty members on activities other than coursework (47%) and never discussed coursework or readings outside of class with a faculty member (28%) during the senior year.

Even so, future teachers were generally satisfied with their college experience (83% said they would go to the same school again) and believed their college experience contributed substantially to their development in the following areas: general education (71% of the maximum), personal and social development (59% of the maximum), and job-related skills (75% of the maximum).

### ENGAGEMENT OF FUTURE TEACHERS MAJORING IN EDUCATION AND THEIR PEERS

Looking only at the 73% of future teachers who specifically majored in education produced a more mixed pattern of results. To provide a sense of how education majors performed relative to those in other majors, Figure 2 juxtaposes the engagement levels of future teachers who major in education with those of students who do not intend to teach and who are majoring in three other areas.<sup>18</sup> On average, education majors outscored seniors majoring in humanities, physical sciences, and health-related fields both on active and collaborative learning and on gains in job-related skills. In fact, education majors outperformed students in every one of the 18 major-field categories on the survey on these two measures — with the exception of scoring equal to health-related fields on gains in job-related skills. However, education majors trailed in other areas of effective educational practice. For example, they were well behind humanities majors on academic challenge and general education gains and well behind physical science majors on student/faculty interaction. That humanities majors had a higher level of academic challenge than physical science majors might seem surprising, but this is due to the measure's emphasis on assigned readings and amount of writing completed.

Table 1 also contrasts the engagement of future teachers majoring specifically in education with that of seniors who don't intend to teach (column 2).<sup>19</sup> Education majors scored higher on active and collaborative learning, reported greater gains in job-related skills, and reported greater personal and social gains. At the same time, they scored slightly lower on both student/faculty interaction and general education gains. Unpacking the activities that contributed to the measures shown in Table 1 reveals that, as com-

pared to nonteachers, education majors also:

- wrote more papers fewer than five pages long,
- took courses that placed less emphasis on analytic thinking,
- had fewer serious conversations with students of different racial or ethnic backgrounds,<sup>20</sup> and
- had fewer serious conversations with students who held different beliefs, opinions, and values.

Finally, Table 1 contrasts the engagement of future teachers majoring in education with future teachers majoring in other fields (column 3). In general, education majors fared much as they did against nonteachers — with the exceptions that education majors had slightly fewer enriching educational experiences (even though student teaching and other field placements increased the odds that education majors had a practicum or internship by 744%)<sup>21</sup>

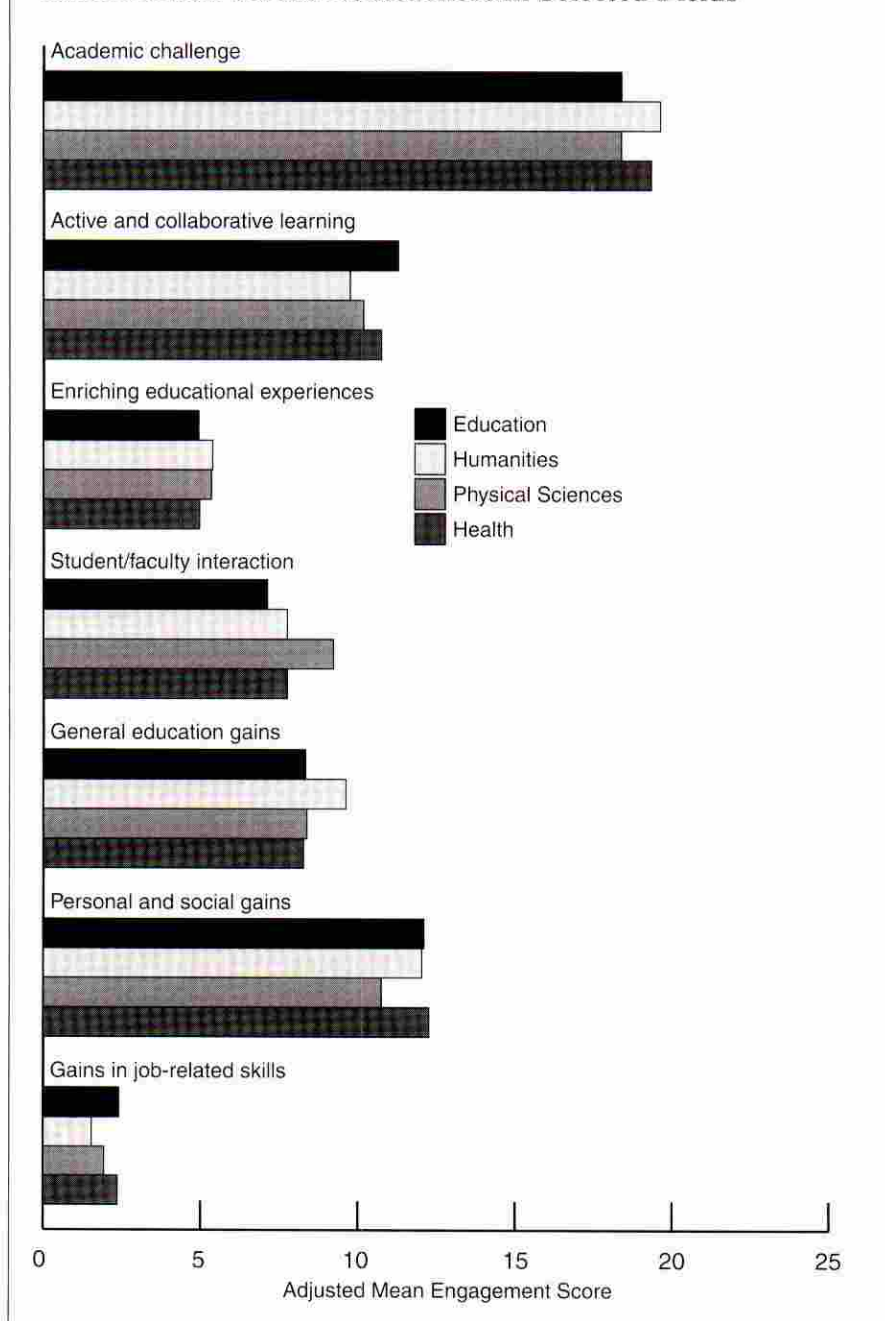
and reported comparable levels of personal and social gains. As when compared against nonteachers, education majors wrote more short papers, took coursework with less emphasis on analytic thinking, and had fewer serious conversations with a diverse range of students.

This pattern of findings for education majors generally holds for students who reported education to be their primary or secondary (or additional) major. The former group probably includes mostly those bound for elementary and middle schools, with some secondary education majors mixed in. The latter group probably includes students who are majoring in an arts or sciences field and are seeking a teaching license.

### WHAT CAN WE SAY ABOUT FUTURE TEACHERS?

On balance, today's prospective teachers appear to be at least as engaged in effective educational practices during college as their counterparts who are pursuing other vocations. This is good news for those who have been working assiduously to improve the quality of the teaching force. In fact, future teachers had more experience with active and collaborative learning, participated in more enriching educational experiences, and reported gaining more from their college experience with respect to personal and social development and job-related skills. Future teachers held their own on academic challenge, the measure that seems most closely related to test scores. These findings generally comport with some

**FIGURE 2.**  
**Engagement Levels of Future Teachers Majoring In Education Versus Nonteachers in Selected Fields**



recent studies showing that the academic quality of teachers is higher than many believe.<sup>22</sup>

At the same time, certain findings are worrisome. First, the overall level of engagement in effective educational practices that future teachers report is well below what may be desirable, in that there is substantial room for improvement on all the measures. And this has direct implications for improving America's schools. For example, one rarely mentioned obstacle to raising standards for K-12 student performance is that elementary and secondary teachers themselves succeed in college without expending nearly as much academic effort as faculty members say is needed to do well. American high school students average only about one hour of study time per day; by comparison, their counterparts in China and Korea study about four hours per day.<sup>23</sup> Yet the proportion of college-bound high school seniors with an A average is at an all-time high — almost 45%.<sup>24</sup> There is no evidence to suggest that U.S. students have unusual abilities that enable them to master learning objectives more efficiently than peers elsewhere in the world. It seems more likely that many high schools and universities are handing out relatively good grades for relatively little effort.

Second, education majors feel that they are generally well prepared to teach after college. This view differs from what beginning teachers report: while their collegiate training was generally adequate in terms of theoretical content, it often fell short in preparing them to cope with real-world problems, including classroom management, teaching students with special needs, and using various assessment techniques.<sup>25</sup> Perhaps student teaching (for which most students earn an A) contributes to an illusion on the part of future teachers as they near graduation that they are better prepared than they actually are.

Third, education majors report lower levels of student/faculty interaction than their peers in other majors. In part, this outcome may be because the vast majority of education majors spend perhaps as much as half of their senior year of college student teaching away from the campus. Other professions, such as health-related fields, also feature apprentice-like experiences in the senior year that may hinder student/faculty contacts. Indeed, NSSE data show that seniors majoring in health-related fields have rates of contact with their faculty members that are similar to, though slightly higher than, those of education majors. (See Figure 2.) Education majors may interact with faculty members less because student teachers are essentially the wards of local school personnel, who handle the lion's share of the supervision during this time. The upshot is that university teacher education faculty members have few formal

instructional responsibilities at this point in the preparation program. And those university personnel who do work with student teachers often are graduate students or hold adjunct appointments.<sup>26</sup>

Are there other approaches that would put student teachers into more regular and meaningful contact with university faculty members? One innovation designed to increase contact between faculty members and student teachers is the rise of professional development schools (PDS). These schools typically stipulate minimum levels of interaction desired between faculty members and students in field placements. Though they emphasize collegial relationships and joint research projects, the more common PDS configurations seem to have had only limited impact on the nature and quality of interactions between tenure-track faculty members and preservice teachers.<sup>27</sup> In part, this is because faculty members tend to reduce their fieldwork commitments if they perceive that their research productivity is being negatively affected or if the fieldwork with preservice teachers itself will not lead to "scholarly" research.<sup>28</sup>

Unless these obstacles are addressed, the PDS alternative is not likely to increase substantially the frequency and quality of student/faculty contact. That said, it's possible that, without the addition of the PDS and other similarly focused innovations, the amount of contact between education majors and tenure-track faculty members would be even lower than the NSSE results indicate.

One way to enhance the legitimacy of the PDS and other efforts to bring student teachers and faculty members into more frequent substantive contact in the last year of college is to link them to campus-based activities that resonate with core values of the professoriate. The Scholarship of Teaching and Learning initiative is one such effort. Sponsored by the Carnegie Foundation for the Advancement of Teaching, the champions of this movement posit that teaching and inquiry are complementary, synergistic processes and that teaching is best improved through classroom research conducted by teachers themselves. Imagine if education faculty members collaborated with future teachers to design and implement reflective inquiries into teaching processes and classroom environments during the student teaching experience. Such activity would regularize contact between future teachers and education faculty members, encourage reflective practice on the part of both the university faculty and the future teachers, and generate information about schooling that faculty members might be able to use in their own research programs.

Another finding from the NSSE survey that warrants attention is that education majors write more short papers but are asked to do less analytic thinking in coursework

and don't have more assigned readings. What do education majors write about? On what do they reflect and base their thinking, if assigned readings are not used extensively? Many of the short documents that education majors write may well include lesson plans, summaries of field experiences, and student profiles — products that might not require grounding in scholarly or research literature. But the fact that there is relatively little contact with faculty members in their final year of college should give us pause about the quality of the students' writing, about whether it shows a substantial reflective component, and about whether the students are challenged sufficiently to improve their thinking and writing in the absence of substantive feedback that might occur through more faculty contact.

### GETTING THE TEACHERS WE NEED

The primary use of student engagement results is to improve undergraduate education.<sup>29</sup> Toward this end, it's easy to imagine using NSSE results to identify aspects of the undergraduate experience of teachers at the individual or institutional level that could be improved.

The sea change under way in the demographic makeup of students in public schools makes it imperative that teachers develop understanding, appreciation for, and competence in working with people from different backgrounds.<sup>30</sup> For this reason, the relatively low frequency of interaction with people from diverse backgrounds that education majors report is particularly worrisome. Addressing diversity issues in teacher education courses is welcome, of course. But, ultimately, actual experience with people from different racial, ethnic, and cultural backgrounds may prove a more powerful vehicle for learning to understand and appreciate diversity.

Data on educational engagement could also be used to evaluate the merits of alternative teacher preparation or credentialing programs or to compare engagement patterns at different institutions that have teacher preparation programs. Unfortunately, we can't say anything at this point about the relative quality of such programs. However, in future years, we might add questions to the NSSE that would allow us to assess directly students' experiences in and perceptions of various approaches and models. Prospective students, accreditors, and agencies that support educational research and program development surely would find such information useful. In addition, a criterion-referenced approach to using engagement information could be instructive: for example, using the NSSE survey or a similar tool as a checklist of sorts to determine whether students

preparing to be teachers are being exposed to the wide array of educational experiences — such as tutoring and service learning — that would prepare them well for instructing others.

In addition, teacher preparation programs might be enhanced by other practices that the college student development research suggests are powerful levers for promoting educationally purposeful activity. These include living units organized around themes relevant to teaching; linked courses that are tied to a service-learning experience; and capstone projects that require rigorous integration and synthesis of knowledge, coupled with demonstrated competence and perhaps displayed as part of an electronic portfolio. Some teacher preparation programs already incorporate these and other effective educational practices.<sup>31</sup> It would be instructive if the NSSE or a similar tool could be used to document their efficacy.

The bottom line is this: if we want tomorrow's teachers to use effective educational practices when they work with pre-K–12 students, preservice teachers must become knowl-



*"It's hard to be businesslike when the conversation includes words like Yahoo, Hotbot, and Google."*

edgeable about these practices. Moreover, they need to engage in such practices as undergraduates so that they will be able to model and use them appropriately. To the extent they do so, they'll not only know that much more about teaching, they'll also learn more during college. And that is a goal we must pursue if we are to get the teachers we all want and need.

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9. For psychometric properties of the survey instrument, see George D. Kuh, "The National Survey of Student Engagement: Conceptual Framework and Overview of Psychometric Properties," Indiana Postsecondary Research and Planning, 2001, available online at [www.indiana.edu/~nsse](http://www.indiana.edu/~nsse); click on the "Research" link; and George D. Kuh et al., *NSSE Technical and Norms Report* (Bloomington: Indiana University Center for Postsecondary Research and Planning, 2001).
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11. Specific survey questions that contribute to each measure, as well as descriptive statistics, are available from the authors or at [www.iub.edu/~nsse/acrobat/kappan\\_appendix.pdf](http://www.iub.edu/~nsse/acrobat/kappan_appendix.pdf).
12. We used an ANCOVA design to rule out a number of potentially confounding variables at both the student and school levels (enrollment sta-

tus, whether living on campus, sex, age, race/ethnicity, parental educational attainment, transfer status, whether a double major, Carnegie classification, sector, undergraduate enrollment from the Integrated Postsecondary Education Data System, and selectivity of admissions). In supplementary analyses, we employed hierarchical linear modeling techniques on the comparisons in Table 1 but found similar patterns.

13. MANCOVA analyses involving all seven measures yielded significant differences ( $p < .001$ ) for each of the three comparisons in Table 1. The patterns in Table 1 generally held when we ran comparisons without any control variables (ANOVA).

14. Effect sizes for all analyses are available from the authors upon request.

15. Only 14% of future teachers reported "less than full-time" enrollment.

16. *National Survey of Student Engagement, NSSE 2001 Overview* (Bloomington: Indiana University Center for Postsecondary Research and Planning, 2001).

17. Judith A. Quimet et al., "Using Focus Groups, Expert Advice, and Cognitive Interviews to Establish the Validity of a College Student Survey," *Research in Higher Education*, February 2004, in press.

18. While we include those who marked education as a primary or secondary major whenever possible, Figure 2 presents data *only* for those who selected a single major to prevent overlap across major fields. We controlled for the same variables as in Table 1, except for "whether a double major."

19. We obtain nearly identical results if we omit 208 education majors from among the nonteacher group.

20. In supplementary analyses on this item, we also controlled for the proportions of different races and ethnicities among the seniors on each campus, using information from the Integrated Postsecondary Data System. Our findings do not suggest that this pattern can be attributed to education majors' attending more racially and ethnically homogenous campuses.

21. Multivariate logistic regression on a dichotomous dependent variable.

22. Bruschi and Coley, op. cit.; Gitomer and Latham, op. cit.; and Henke, Geis, and Giambattista, op. cit.

23. Susan J. Paik, Debbie Wang, and Herbert J. Walberg, "Timely Improvements to Learning," *Educational Horizons*, vol. 80, 2002, pp. 69-71.

24. Linda J. Sax et al., *The American Freshman: National Norms for Fall 2001* (Los Angeles: Higher Education Research Institute, UCLA, 2001), p. 15.

25. Steve Farkas, Jean Johnson, and Tony Foleno, with Ann Duffett and Patrick Foley, *A Sense of Calling: Who Teaches and Why* (New York: Public Agenda, 2000).

26. Senior education majors may have overstated the frequency of their interaction with faculty members to the extent that they included contact during student teaching with non-university personnel in a supervisory role. In particular, preservice teachers may have more contact with adjunct-faculty and graduate-student supervisors than most other majors and might have also included these contacts when responding to NSSE items related to student/faculty interaction.

27. Clive Beck and Clare Kosnik, "Professors and the Practicum: Involvement of University Faculty in Preservice Practicum Supervision," *Journal of Teacher Education*, vol. 53, 2002, pp. 6-19; Robert V. Bullough, Jr., et al., "Long-Term PDS Development in Research Universities and the Clinicalization of Teacher Education," *Journal of Teacher Education*, vol. 48, 1997, pp. 85-95; and Brenda Power and Constance Perry, "True Confessions of Student Teaching Supervisors," *Phi Delta Kappan*, January 2002, pp. 406-13.

28. Beck and Kosnick, op. cit.; and Bullough et al., op. cit.

29. George D. Kuh, "Assessing What Really Matters to Student Learning: Inside the National Survey of Student Engagement," *Change*, vol. 33, 2001, pp. 10-17, 66.

30. *What Matters Most: Teaching and America's Future* (New York: National Commission on Teaching and America's Future, 1996).

31. Christine I. Bennett, "Enhancing Ethnic Diversity at a Big Ten University Through Project TEAM: A Case Study in Teacher Education," *Educational Researcher*, March 2002, pp. 21-29. **■**

