Understanding evidence-based improvement in higher education:

The case of student engagement

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Reform has been on the higher education agenda for at least a quarter-century. The National Institute of Education's 1984 report, *Involvement in Learning,* proposed research on improving educational quality, such as: "What are the most effective organizational strategies, policies, and processes available to administrators as they seek to maximize student learning and development and simultaneously to utilize their resources more efficiently?" The report also emphasized the goal to improve educational quality and challenged institutions to adopt organizational strategies, policies, and processes that would maximize the use of evidence to inform institutional improvement.

Calls to improve undergraduate education have grown more insistent in recent years. Stakeholders are demanding greater accountability and transparency, and expressing doubts about the quality of undergraduate education (e.g., Commission on the Future of Higher Education, 2006). In response to the push for accountability and evidence of quality, many colleges and universities have launched significant reform initiatives (Kezar & Eckel 2002). In addition, most institutions of higher education have increased their assessment activities and are using this information to inform campus change efforts and as a means for monitoring progress (Banta, 2009; Kuh & Ikenberry, 2009; Maki, 2004). However, while there has been increased activity in assessment and reform efforts at colleges and universities, there is less evidence that the assessment loop has been closed—examining whether the changes undertaken have produced improvements (Banta, 2009; Suskie, 2004). In fact, few studies examine before-and-after assessment results to substantiate institutional change (Keup et al. 2001; Jeffery 2008). Also missing are qualitative case studies that analyze the process of change (Astin et al. 2001; Keup et al. 2001). The research project of which this paper is a part aims to fill these gaps by using time

series data from a widely used assessment to (1) identify institutions that demonstrate positive trends on a range of educational effectiveness measures, (2) describe observed patterns of improvement, and (3) examine informants' accounts of what produced the improved results. This study informs broad questions about organizational learning and educational improvement by identifying the circumstances that enable intentional change to take root and thrive.

This research project takes advantage of a well-established national assessment initiative, the National Survey of Student Engagement (NSSE), that provides participating colleges and universities with valuable information about educational practices associated with desired learning outcomes. More than 1,400 baccalaureate degree-granting colleges and universities participated in NSSE from 2000 through 2009, representing the full range of institutional types. As of 2009, more than 530 U.S. institutions had participated at least four times, with many having participated five, six, or more times. NSSE surveys random samples of first-year and senior students to determine the time and effort they put into their studies and their involvement in a range of activities associated with valued educational outcomes (Chickering & Gamson, 1987; Kuh, 2001). NSSE also assesses the organization of learning opportunities and services to promote learning and success. Because NSSE focuses on actionable information, results can inform efforts to improve undergraduate education. Standardized sampling and administration protocols assure that results are comparable between institutions and over time. NSSE thus provides a rich source for studying both the prevalence of effective practices and institution-level trends across a wide range of institutions.

The availability of institution-specific results over several years affords a unique opportunity to identify cases (institutions) that show positive trends in effective practices and to

investigate what contributed to these results. In short, NSSE provides a window into improvement and organizational learning in U.S. colleges and universities.

Our specific research questions are:

1. Do NSSE results provide evidence of trends (positive or negative) in effective educational practices at the institutional level?

2. If trends are found, which measures or combinations most commonly show trends?

3. How do institutional informants account for positive trends?

Conceptual framework

The study is informed by treatments of organizational learning and intentional change in organizations. Organizational learning provides a framework for understanding how organizations acquire and interpret information, interpret their experience, and make choices, while the literature on change provides a sharper focus on goal-directed change.

Fundamental propositions about organizational learning hold that learning results from interpreting experience and is encoded into organizational routines and standard operating procedures (Daft & Weick 1984; Fiol & Lyles 1985; Levitt & March 1988). Among the conceptual differences expressed by theorists of organizational learning is whether it is necessarily positive and produces improved performance. Contrast Huber's agnostic view—"[L]earning does not always increase the learner's effectiveness or even potential effectiveness… Entities can incorrectly learn, and they can correctly learn that which is incorrect" (1991, p. 89)—with the improvement-focused orientation of Fiol and Lyles: "Organizational learning

means the process of improving actions through better knowledge and understanding" (1985, p. 803). From an evaluation perspective, Torres and Preskill (2002) see organizational learning as involving intentional, goal-directed change: "Organizational learning is a continuous process of growth and improvement that (a) uses information or feedback about both processes and outcomes (i.e. evaluation findings) to make changes; (b) is integrated with work activities, and within the organization's infrastructure (e.g., its culture, systems and structures, leadership, and communication mechanisms); and (c) invokes the alignment of values, attitudes, and perceptions among organizational members" (p.388). We embrace the latter perspectives that learning is improvement-focused.

Some theorists posit an important role for organizational interpretations of the past and the information that an organization collects (Cohen & Sproull 1991; Levitt & March 1988; Daft & Weick 1984). This study calls special attention to the interpretive function, given our interest in the use of assessment data to inform improvement efforts.

Levitt and March observe that organizations evaluate performance relative to targets, and that their reaction "depends on the relation between the outcomes they observe and the aspirations they have for those outcomes" (1988, p. 320). Similarly, Argyris and Schön (1978) view organizational learning as arising from "a surprising mismatch between expected and actual results" that stimulates a desire for change. This is consistent with Schein's perspective that "all forms of learning and change start with some form of dissatisfaction or frustration generated by data that disconfirm our expectations or hopes" (1996). We assume that assessment data is a potential source of such disconfirmation, motivating action to render actual experience more consonant with aspirations, hopes, and expectations. Our focus on intentional change assumes

that we will find cases where assessment results were disappointing, leading to interventions to improve future performance. However, we also recognize that we may encounter cases where positive results are unplanned or emergent, resulting perhaps from uncoordinated local efforts (Leslie, 1996).

Studies of organizational learning in education are rare, particularly in higher education. Dill (1999) studied the adaptation of a multinational sample of universities to new quality assurance regimes using a framework that based on the organizational learning literature. He concluded that five features characterize an "academic learning organization:" a culture of evidence, meaning a commitment to systematic use of evidence in problem identification and solution; improved coordination of teaching units; learning from others; the establishment of structures to promote and support the improvement of teaching and learning; and knowledge transfer between academic units within the university.

In a qualitative study of teams at 14 campuses participating in the Diversity Scorecard project, Bauman (2005) concluded that three conditions contributed to organizational learning (defined as a new recognition of institutional problems related to educational equity): the presence of new ideas—that is, new ways of looking at institutional data; raising doubts about knowledge and practices, thereby questioning existing routines, norms, and shared understandings; and development and transfer of new knowledge among institutional actors.

The literature on change in institutions of higher education demonstrates that reform is as dynamic and complex as it is in any other organization (Kezar, 2001). Hearn (1996) asserted several propositions about transformation in U.S. higher education, including insights that organizational politics and institutional culture are important considerations for change, and that

transformation is resource-dependent. Many studies of change in higher education have demonstrated that the existing structures of colleges and universities, including loosely coupled systems, shared governance, and employee commitment, affect the change process. In addition, change models for institutions of higher education include an array of variables such as the environment, political climate, the commitment of leaders, and the involvement of the whole system (Kezar, 2001). Implementing large-scale, transformational change in colleges and universities is difficult, due in part to their complexity and also to their governance practices (Cuban, 1999; Birnbaum, 2000). Overall, research on institutional change suggests that "institutional transformation" is rare and that, if change is possible, it is most likely to be incremental (Kezar, 2001). Models of institutional change in colleges and universities are complex, take many forms, and are highly dependent on the type of change being initiated.

Data and methods

From the outset, one of NSSE's principal goals has been to provide participating colleges and universities with diagnostic, actionable information that can be used to improve undergraduate education. This goal, combined with steady growth in the number of participating institutions and large numbers that administer the survey on a regular basis, means the NSSE data archive is well-suited to examining questions of institutional change. To conduct a complete examination of trends and to understand how institutions account for change, we designed two distinct research phases. Phase one involved the examination of trends across a variety of measures of educational effectiveness among institutions with multiple NSSE administrations, affording a longitudinal view of change and stability in NSSE results. This entailed quantitative analysis of time series data from institutions that participated in NSSE multiple times over a

nine-year period. Phase two involved a qualitative approach to study a select subset of institutions that displayed positive trends to learn more about their change initiatives (if any), actors involved, and interpretations of what contributed to the improvements.

Phase One: Detecting Trends

For the first phase of the study, we identified 534 institutions that had administered NSSE at least four times between 2001 and 2009. Two-thirds of this sample had at least five administrations, and one-quarter had seven or more (table 1). The sample reflects the diversity of U.S. higher education with respect to size, control, Carnegie classification, and region. Specifically, the sample comprised 18% Doctorate-granting, 46% Master's, 33% Baccalaureate, and 3% other types of colleges and universities; 43% of the institutions were public and 7% were minority-serving institutions. With regard to undergraduate enrollment, 27% were very small (fewer than 2,000 students), 32% were small (2,000 – 4,999), 19% were medium (5,000 – 9,999), and 23% were large (at least 10,000).

Because NSSE surveys first-year and senior student populations, we analyzed trends separately for each group. The first-year student dataset included more than 600,000 individuals, of whom 56% were female and 77% were age 19 or younger. The senior dataset included more than 640,000 students (58% female and 63% under age 24). The average institutional response rate was 37.9%, and the average number of respondents per institution was 282 first-year and 304 senior students.

For phase one, we examined the following measures: four NSSE Benchmarks of Effective Educational Practice (Academic Challenge, Active & Collaborative Learning, Student-

Faculty Interaction, Supportive Campus Environment); six subscales (active learning, collaborative learning, course-related faculty interaction, out-of-class faculty interaction, support for success and enrichment, support for academic success); two course emphasis scales (higher order thinking and integrative learning); a scale tapping experiences with diversity; and the proportion of students reporting high-impact practices (see Kuh, 2008). We examined measures separately for first-year students and seniors. Additional detail about these measures is presented in the appendix.

First, we identified and excluded instances of unreliable data for a given institution and year (that is, administrations with low response rates or large sampling errors). For example, we excluded administrations with sampling errors above 15%. We also identified those with sampling errors below 10% as "high confidence" cases. We included some institutions with relatively low response rates (less than 25%) if they had a large number of respondents (more than 150), but we flagged such cases to be interpreted with caution. We reviewed exclusions carefully to avoid unintentionally biasing our sample (for example, because larger institutions tend to have lower response rates). From the remaining data, we created separate year-specific institutional scores for first-year and senior students.

Because each institution had relatively few observations (a minimum of four and a maximum of nine for a given year in school), conventional time-series techniques were not suitable for the detection of trends. In addition, there is no theoretical reason to expect trends to take a particular functional form (e.g. linear). We wanted to make as few assumptions as possible about when a trend would begin and what shape it would take. Consider the range of possibilities for when improvement might begin: some campuses might implement change initiatives after

their first NSSE results, while others might wait until additional administrations confirm the need for improvement; some might take several years to design and implement a change effort; different change efforts might require different amounts of time before producing results; and some campuses may have had change efforts in place prior to their first NSSE administration, resulting in a left-censored trend. Next, consider the many possible shapes that a trend might take: some change efforts may show steady additive effects (linear growth); others might show strong initial effects that diminish over time (deceleration); still others may start small and build momentum over time (acceleration). Because these various scenarios of timing and patterning would affect the shape of the trend, we allowed for a range of possible functional forms.

We ran trend analyses in Excel to generate goodness-of-fit R-square values for each measure by institution and class level (first-year or senior). We examined goodness-of-fit values for four different functional forms: linear, logarithmic, exponential, and power. We used the following criteria to determine a meaningful trend:

- Statistically significant difference between first and last observation, with an effect size (Cohen's *d*) of at least .3[1]

- A pattern that fits at least one functional form with a goodness-of-fit R-square of at least .7

After identifying institutions with positive and negative trends, we examined the patterns of change within institutions: Did trends focus on specific measures or combinations of

[1] As recommended by Cohen (1988), we used a contextualized effect size criterion. NSSE developed a set of contextualized effect-size guidelines for the benchmarks (Gonyea & Sarraf, 2009), and we used the general suggestion of .3 for scales other than the percentage-based high-impact practices measure.

measures? Were trends limited to first-year or senior-year students? We also looked at the scales where trends were detected, to determine whether some measures evidenced more change than others.

Phase Two: Understanding What Accounts for Change

To conduct a more thorough examination of positive trends and what may account for the observed changes, we identified a subset of institutions representing a diverse group of institutional types from the larger dataset that showed strong positive trends (effect size of at least .4) across a variety of measures. We thus identified 142 institutions for further examination. The selected institutions had characteristics similar to the full dataset: 22% Doctorate-granting, 52% Master's, 23% Baccalaureate, and 3% other types of colleges and universities; 44% of the institutions were public and 6% were minority-serving institutions. With respect to undergraduate enrollment, 18% were very small (fewer than 2,000), 31% were small (2,000 – 4,999), 22% were medium (5,000 – 9,999), and 30% were large (10,000+).

Case study methods are well-suited for gaining an in-depth contextual understanding of a contemporary phenomenon, of organizational processes, and of the meaning of these experiences for those involved (Merriam, 1998; Yin, 2003). By investigating improvement efforts in a real-life context, we seek to promote a more dynamic and action-oriented perspective beyond simply cataloguing campus change initiatives (Yin, 1994). Ultimately, we seek to identify the specific characteristics, patterns, and practices that contributed to positive outcomes in order to produce a rich, thick representation of the complex realities of organizational learning and institutional change (Merriam, 1998; Sander, 1981).

To solicit institutional participation in phase two, we sent email messages to NSSE institutional contacts at selected institutions describing the project and how their institution was identified for further study, with a request to secure agreement to participate from the chief executive officer. Contacts at participating institutions were then asked to complete a questionnaire seeking their perspectives on the observed trends, information about change initiatives (if any), actors involved, and interpretations of what contributed to the results. We secured agreements to participate and completed questionnaires from 61 of the 142 institutions (43%). Of this group, 20% were Doctorate-granting, 56% Masters, 20% Baccalaureate, and 3% other types; 42% were public and 5% were minority serving institutions. The range of institutional characteristics thus remained fairly constant across the two phases of this study. Twenty institutions declined to participate, and nearly forty contacts did not respond to the invitation to participate. We followed up with about twenty of the contacts who either refused or did not respond, in order to understand their decision and any concerns they may have had. Most were apologetic, and explained that they were just too busy, with too many demands on the person(s) who would have to complete the questionnaire and conduct any follow-up. Contacts at two institutions said that they were unaware of the changes identified and were not interested in exploring what had occurred.

The questionnaire included about a dozen questions, with a mix of closed- and open-ended questions on themes such as: awareness of the positive results, whether the institution had implemented any change efforts that the respondent believes had contributed to those results, motivation for and goals of change efforts, features of change efforts (for example, key actors, organizational units involved, etc.), whether assessment results informed the work, and what factors the respondent believed contributed to the positive results. We also invited respondents to

identify relevant documents for our review (e.g., assessment reports, strategic plans, accreditation self-studies, quality improvement plans, faculty senate minutes, and campus publications) and to suggest other possible informants.

The research team then undertook textual analysis of questionnaire responses to identify key themes in the narratives of institutional change. Documents were also used to corroborate and augment evidence from the questionnaire (Yin, 2003). We conducted case analyses for each institution using questionnaire responses and additional documents and evidence provided by the institutional contact. We also consulted existing information that many of the institutions had previously reported (outside of the present research project) regarding the use of NSSE results on campus.

The case analysis protocol included the following topics: What accounts for the observed positive change? What was the nature of the change effort (for example, was it goal- or mission-driven, motivated by assessment results, driven by external forces such as accreditation or legislative mandate, related to strategic planning, or unplanned and serendipitous?) To what extent was the change effort "home grown" versus based on established findings or examples from the field? What role did assessment data play in the initiative? If change was data-informed, what motivated the institution to pay attention to data? Who were key players or offices involved in change? We closely examined each case and characterized themes related to data use and institutional improvement, and we developed metaphors that characterized the change efforts. Members of the research team exchanged case analyses to achieve reliability and consistency across reviewers, and to consider alternate interpretations. We then conducted several extensive meetings to share findings from selected cases and discuss emerging themes. In a subsequent

phase of this project (beyond the scope of the present study), we will select a further subset of cases for site visits and more detailed case study analysis.

Findings and Discussion

Phase One Findings: Trends and Patterns

Of 534 institutions, we found far more institutions with at least one positive trend (411) than at least one negative trend (72), providing strong evidence that our methodology is not simply detecting chance variation. This imbalance between positive and negative results is strongly suggestive of intentional efforts to improve the quality of undergraduate education. We found more instances of positive trends for first-year students (322) than for seniors (270) (table 2). Negative trends were similarly distributed (44 for first-years and 38 for seniors), and tended to be among institutions with higher initial scores.[2]

Patterns of change across measures and between first-year and senior scores suggest four propositions about institutional change. First, *the first-year experience may be more amenable to change than the senior experience*. The higher incidence of positive trends for first-year students suggests either that the first-year experience may be easier to change than the senior experience, that more institutions target the first year experience for improvement, or both. In either case, it is likely that the greater incidence of improvement in first-year measures reflects widespread concern for the first-year experience and student retention. This also corresponds to the

[2] The sum of institutions with positive (or negative) first-year and senior trends exceeds the total because some institutions had detectable trends for both first-years and seniors.

development of a robust body of knowledge about the first-year experience, including policies, strategies, programs, and services that facilitate a successful transition to college.

The second proposition reflects an intentional and targeted focus of improvement efforts: *institutions and faculty appear to be investing particular effort in promoting active & collaborative learning.* For both first-year students and seniors, we found more positive trends for active & collaborative learning than for any other measure (table 2). In fact, the number of institutions that showed positive trends for first-year students on active & collaborative learning was at least twice that of all other measures, but for one. These patterns suggest broad efforts to adopt more engaging pedagogical practices that increase students' involvement in learning.

The second most common area of improvement was different for first-year students (student-faculty interaction) than seniors (supportive campus environment), but both of these suggest additional investments in promoting personal and supportive connections. Among seniors, this finding may indicate department-level efforts to improve advising and academic support, or to provide opportunities for students to develop meaningful relationships in the major.

Indeed, many institutions showed positive trends for first-year students on *both* active & collaborative learning *and* student-faculty interaction. The combination of improvement across these two benchmarks suggests the possible influence of the First Year Experience movement (Upcraft & Gardner 1989), which has focused attention on the importance of providing new students an orientation to college via a challenging and academic first-year experience that promotes student-faculty interaction and quality interaction with peers. Concerted efforts have been made to enhance the first-year experience through a comprehensive body of research and

evidence-based practice on the first year of college, and since the 1980s through national convenings like the First Year Experience conference.

We found many instances of positive trends on the same measure for both first-year students and seniors. This pattern reflects a third proposition about change: *many institutions appear to have endorsed a particular broad-based change in a way that spans class levels*. A broad improvement agenda might be reflected in, for instance, positive trends in supportive campus environment scores for both first-year students and seniors. The increase might be associated with institution-wide efforts to improve academic support services or implement expanded, integrated, and better coordinated academic support services, or the creation of a "One Stop Shop" for student support services such as financial aid, admission, bursar, registrar, and career services.

We found positive trends across the spectrum of institutional differentiation (control, size, Carnegie type). This finding leads to a fourth proposition that challenges the conventional wisdom about the relationship between institutional characteristics and change: *capacity for sustained, positive change is not limited to small colleges, private institutions, or residential institutions.* For example, the active & collaborative learning benchmark accounted for the most instances of change (table 2), and also the most cases with larger effect sizes (.5 or greater), across the range of institutional types. We found many instances of positive trends in active & collaborative learning in the first year, including at large public institutions. Contrary to the common belief that urban or commuter institutions do not typically support high levels of student-faculty interaction, we found that 41% of the institutions with positive trends on this benchmark for first-year students are urban institutions. Urban and commuter institutions

showing improved scores may have adopted pedagogical practices and policies that promote student-faculty interaction. The fact that we found patterns of systematic positive change at both public and private institutions, in every size category and Carnegie type, suggests that the potential for improving performance exits across the full range of colleges and universities.

Although these results suggest the promise of reform, it is also important to consider the measures where we found the fewest positive trends. For first-year students, positive trends on diversity experiences and support for academic success were least common. Among seniors, the lowest frequency was for high-impact practices and integrative learning experiences, followed by student-faculty interaction and diversity experiences. Several phenomena may be at work here, such as amenability, attention, and ceiling effects. Some may be genuinely difficult to improve relative to the other measures in our study, and this difficulty manifests itself in the low frequency of positive trends. Another possible factor is attention—the processes tapped by the measure may be relatively less important to faculty and administration, and consequently there are fewer efforts to improve it. Finally, ceiling effects are possible: if baseline performance is already relatively high, the opportunity for realizing improvement—especially sufficient to be detectable as a trend—may be quite limited.

For the measures noted above for having a low incidence of positive trends, there is little evidence that this is due to ceiling effects. If baseline performance is high, we would expect more opportunities for decline. But table 2 shows that the measures noted above are generally not the ones with a high incidence of negative trends. The one possible exception is support for academic success, which is tied for the highest incidence of negative trends among first-year students. But at only nine such cases compared to 55 cases of positive trends, the evidence is

weak. Further examination of aggregate responses from a recent NSSE administration on the component items of this measure show ample room for improvement: only 35% of first-year students who reported "very much" institutional emphasis on providing support for academic success, 33% who rated academic advising as "excellent," and 36% and 48%, respectively, who rated the quality of relationships with administrators and faculty as a 6 or 7 on the 7-point scale.

That leaves amenability and attention as possible explanations. Because two of three components of our diversity measure are based on the frequency of serious conversations with different others, it may be that institutions have limited ability to directly influence this measure. To achieve gains in high-impact practice participation, at least one if not both of the following must occur: they must be made available to more students, and more students must avail themselves of the opportunities. Institutions may face challenges on both fronts. But given that involvement in high-impact practices such as service-learning, study abroad, undergraduate research, and culminating senior experiences corresponds to desirable outcomes—especially for traditionally underserved populations (Kuh, 2008)—this reflects an important dimension for institutional growth and there may be great value in learning how some institutions managed to achieve steady gains.

The small number of institutions that saw improvement in integrative learning may reflect the challenge of creating a coherent educational program in which students frequently participate in academic activities that integrate ideas from various sources, include diverse perspectives, and discuss ideas with others outside of class. There is room to bring all these programs up to scale at all institutions and thereby greatly increase their transforming effects on students' lives and learning.

Phase Two Findings: Accounting for Change

These aggregate findings are tantalizing. To advance higher education's improvement agenda, however, we need to move beyond description to understand the conditions of change at the institutional level. By examining each positive trend institution as a case, we can get a more in-depth and nuanced account of improvement over time that can advance our understanding of institutional change and the potential for gauging the impact of reform efforts.

Results from the questionnaire revealed important information about the extent to which the trends that we observed in the NSSE data were the result of intentional change efforts, and about the genesis of those efforts. Importantly, all but four of the 61 institutional contacts reported that they had implemented change efforts that they believe account for the positive results. Three were unsure, but provided a comprehensive accounting of campus change efforts, and one indicated that no intentional change had been undertaken on the campus. We asked respondents to identify all the motivators for their change efforts from a fixed response set based on a recent National Institute for Learning Outcomes Assessment (NILOA) study of campus assessment and improvement initiatives (Kuh & Ikenberry, 2009). Nearly all respondents identified an "institutional commitment to improving undergraduate education" as one of the motivators behind their change efforts. While in part this may be attributable to retrospective sense making, it also evokes the observation by Kuh et al. (2005) that a "positive restlessness" around student learning and undergraduate education existed at institutions with better-than-expected levels of student engagement.

The next most popular response was "data that revealed concerns about undergraduate education." This is highly consistent with the perspectives on the genesis of organizational

learning articulated by Argyris and Schön (1978), Levitt and March (1988), and Schein (1996) involving unfulfilled aspirations or dissatisfaction with performance.

The third most frequently cited motivation was "faculty or staff interest in improving undergraduate education." Although several campuses indicated other response options as influential, including "accreditation" and "internal program review," it was noteworthy that "national calls for accountability," and "mandates from governing, state or legislative boards" were identified by very few respondents as motivating change initiatives.

Elaborations on what motivated campus change efforts revealed a variety of different issues. However, the common catalyst for change was clearly an institutional commitment to improvement plus data corroborating a specific concern. At a private Eastern doctoral university, the president charged the core curriculum committee to be "bold, not old" in plans to address concerns about a stale, incoherent curriculum and declines in retention. Ten years of data on a variety of student learning measures did not align with strategic goals, so action was needed. An Eastern master's institution's commitment to improving the first-year experience, coupled with a tradition of assessing incoming students' academic readiness and concerns about gateway course success rates, led to an enriched orientation program and pedagogical changes in first-year courses.

These results about catalysts for change show the strong influence of intrinsic motivation, internal constituencies, and evidence about quality in the undergraduate experience. While the NILOA study found that accreditation was the main driver for assessment activities in colleges and universities (Kuh & Ikenberry, 2009), our results showed accreditation was a less important force behind change initiatives. While initially surprising, this finding highlights the difference

between assessment that is undertaken for accountability and compliance purposes and assessment that informs institutional diagnosis and improvement. Finally, the limited influence of external forces such as national calls for accountability and state mandates for improvement suggest these forces have limited capacity to trigger genuine change and improvement.

The next theme relates to what facilitated change efforts. An unsurprising finding was that leadership from the top—by presidents and provosts—was important to bringing about change and sustaining the improvement agenda over time. The importance of senior leadership cannot be overstated. According to our informants, the most important factor related to success of a change initiative was visible, sustained commitment from campus leadership—trustees, presidents, deans, and faculty. An institutional research director at a Southern university credited "clear endorsement by leaders in administration that maintained momentum…. Adequate resources for faculty and staff reinforced the administrative message that the improvement initiatives are valued." A private, urban institution illustrated the importance of leadership to evidence-driven improvement. The institution had launched an extensive examination of the quality of service delivery and quality of campus relationships. Administrative leaders were already attuned to the need to reduce bureaucracy and develop more "one-stop" services, and analyses of longitudinal NSSE results on the quality of campus relationships and satisfaction measures reinforced this need. Institutional leaders promoted the assessment project and then invested attention and resources in the restructuring of student services, particularly the registrar, bursar, and financial aid operations.

Another important finding related to the facilitation of change is participation in national programs and initiatives. Examples include the Foundations of Excellence (FOE) self-study and

improvement process of the John N. Gardner Institute for Excellence in Undergraduate Education; the Teagle Foundation's project to improve student learning; the Wabash National Study of Liberal Arts Education; and the Association of American Colleges and Universities' (AAC&U) Bringing Theory to Practice (BTP) and Liberal Education and America's Promise (LEAP) projects. A mid-Atlantic master's institution participating in both the FOE and BTP initiatives saw its results over seven NSSE administrations show improvement on several first-year measures, including active and collaborative learning and student-faculty interaction. This institution credited its intensive work with the FOE self-study to identify where students were encountering obstacles in the first year, and the BTP project for providing a rich framework for considering evidence-based practice to improve student success. To improve the first-year experience and retention rates, the institution created "road maps" to aid students' academic planning and completion of requirements, increased its emphasis on learning communities and first-year seminars, implemented a peer-to-peer supplemental instruction program for first-year students, and provided an opportunity for students to "catch up" though hybrid and online courses offered to first-year students during winter and summer breaks. Our results indicate that participation in initiatives like FOE and BTP provided institutions with structure and support to explore assessment results and make changes in practice informed by both local assessment results and best practices in the field.

After noting several institutions that reported on and credited their involvement in national initiatives as initiating and often sustaining their improvement efforts, we wondered whether other institutions identified for the present study were also involved in such initiatives. Many initiatives publicize lists of institutional participants, so we were able to tabulate the proportion of institutions that had participated selected projects. Table 3 reports the percentage of

institutions invited to participate in the present study that were involved in three national initiatives, and also the percentage of all initiative participants invited for this study. The strong representation in this study of institutions involved in these projects suggests a beneficial relationship, especially for the Foundations of Excellence project, with 44% of its participants having been identified in the present study as having positive trends on one or more of the measures examined.

Although accreditation in itself was not widely identified as a driver for change efforts, many respondents indicated that their change efforts were related to specific quality-improvement aspects of regional accreditation. A private institution indicated that the Southern Association of Colleges and Schools' Quality Enhancement Plan (QEP) was instrumental in advancing a project to increase experiential learning. The project led to efforts to promote foreign language courses, study abroad, and increased opportunities for global learning and diversity experiences across the educational program. However, it was the structure and requirements of the QEP process that helped the institution advance its objectives. The long-term process of developing institutional investment in the QEP and its implementation, and then the expectation for the regular collection of evidence to evaluate program effectiveness and assess participation and continuous improvement, provided the institution the support to implement, refine, and sustain the project.

Meaningful strategic planning processes were also an important factor in change efforts. A large, public commuter institution in the Midwest credited strategic plan goals to "enhance student access to and successful participation in higher education through quality and innovative instruction" and to provide "student life programs that increase graduation rates and provide

career placement opportunities for a diverse student body" with orienting their reform efforts. The plan promoted several promising programs on campus, including academic and co-curricular programs supporting African-American student retention. The plan also helped advance their efforts to develop more service-learning experiences. Most importantly, the strategic plan provided a framework for launching an array of institutional improvement initiatives to improve student success.

The need to address a real campus problem, such as declining retention and graduation rates or a financial crisis, or to address other concerns revealed by data facilitated change at many institutions. For example, data regarding the number of hours of off-campus work and corresponding low levels of interaction with peers, coupled with declining persistence rates, signaled a concern to a small private college in the Midwest. The institution compiled additional evidence and sought external funds to underwrite several changes in the first year experience. The resulting small grant-funded pilot project garnered positive attention. The grant, the local attention it received, and evidence of the program's effectiveness helped institutionalize the reform.

These accounts offer initial insight into activities on the ground that led to the changes observed in longitudinal NSSE results. We are continuing to analyze questionnaire results in preparation for in-depth site visits to selected campuses in the next phase of this study.

Limitations

This study is not without its limitations, of course. By selecting institutions with positive trends, we risk making stronger *post-hoc* attributions than might be justified—our study design

does not permit identification of institutions that may have implemented similar change efforts that did not yield positive results. When asked to account for positive results, our informants may be subject to retrospective sense-making, constructing plausible accounts for the positive results. We nevertheless find that our data conform to conceptual accounts of organizational learning, and by studying a large number of cases we are able to identify common patterns in informants' accounts that lend support to our interpretations.

Summary and Conclusion

NSSE was created to inform institutional improvement efforts. After a decade in the field, we can begin asking important questions about whether and how colleges and universities can improve student engagement. A careful analysis of time series data for 534 institutions that administered NSSE from four to nine times between 2001 and 2009 revealed an appreciable number of institutions with detectable trends. Positive trends far outnumbered negative ones, by a margin of about 7:1. Our examination of change statistics across a range of measures of effective educational practice, deep approaches to learning, and high-impact practices demonstrate that it is possible to "move the needle" with regard to student engagement. An important finding of this work is that improvement is possible across the spectrum of institutional diversity.

Following the quantitative analysis of trends and patterns within those trends, we undertook qualitative inquiry at a diverse group of institutions with strong positive trends in order to illuminate the circumstances behind the observed trends. Our analysis suggests that most improvement efforts come not as a result of external pressure and accountability demands, but

from an intrinsic motivation to improve, often motivated by data that revealed a gap between aspirations and actual performance.

This paper offers plentiful existence proofs that intentional change is possible in higher education. It advances our understanding of change in higher education institutions and offers practical insights for reform-minded institutions. It contributes to the national conversation about how institutions can improve performance to address widespread concerns about quality and success in undergraduate education. Higher education institutions operate in a challenging climate of high expectations, diminished resources, and serious questions—even suspicion—about commitment to educational value. There is perhaps no better time to tell an evidence-based story about institutional improvement and for colleges and universities to effectively demonstrate their commitment to improving student engagement and learning.

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Table 1—Number and percentage distribution of institutions according to number of NSSE administrations between 2001 and 2009

	Four	Five	Six	Seven	Eight	Nine	Total
Number	175	124	97	53	51	34	534
Distribution	33%	23%	18%	10%	10%	6%	100%

Table 2—Number of institutions with trends detected, by criterion measure, trend direction, and class level

	Positive trends		Negative trends	
	First year	Senior	First year	Senior
Academic challenge	53	41	7	6
Active & collaborative learning	147	116	2	5
Active learning	144	75	3	4
Collaborative learning	53	47	3	2
Student-faculty interaction	73	33	1	2
Course-related interactions with faculty	78	44	2	3
Out-of-class interactions with faculty	46	26	3	4
Supportive campus environment	57	96	4	10
Support for success and enrichment	62	56	4	1
Support for academic success	32	46	9	14
Courses emphasize higher-order thinking	55	36	0	4
Courses emphasize integrative learning	50	29	2	4
Experiences with diversity	20	34	8	5
High-impact practices	55	26	9	3
Across measures, at least one trend detected	322	270	44	38

Table 3—Participation in Three National Initiatives by Institutions in the Present Study*

	Foundations of Excellence	Bringing Theory to Practice	LEAP
Number of study institutions in initiative	48	16	30
Share of all study institutions (N=140)	34.3%	11.4%	21.4%
Total number of initiative institutions	110	123	310
Share of initiative institutions	43.6%	13.0%	9.7%

*As of February, 2011

Appendix

Description of Measures

Below are brief definitions and item specifications for the 14 measures examined in the study. For response options and additional information about these items on the NSSE survey, please refer to the NSSE codebook: www.nsse.iub.edu/2009_Institutional_Report/pdf/NSSE%202009%20Codebook.pdf

Level of Academic Challenge

The extent to which an institution promotes high levels of student achievement by emphasizing the importance of academic effort and setting high expectations for student performance.

Variable	Description
readasgn	Number of assigned textbooks, books, or book-length packs of course readings
writemor	Number of written papers or reports of 20 pages or more
writemid	Number or written papers or reports between 5 and 19 pages
writesml	Number of written papers or reports of fewer than 5 pages
analyze	Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components
synthesz	Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships
evaluate	Making judgments about the value of information, arguments, or methods, such as examining how other gathered and interpreted data and assessing the soundness of their situations
applying	Applying theories or concepts to practical problems or in new situations
workhard	Worked harder than you thought you could to meet an instructor's standards or expectations
acadpr01	Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)
envschol	Spending significant amounts of times studying and on academic work

Active & Collaborative Learning

How often students participate in class and collaborate with other students in solving problems or mastering difficult material.

Variable	Description
clquest	Asked questions in class or contributed to class discussions
clpresen	Made a class presentation
classgrp	Worked with other students on projects during class
occgrp	Worked with classmates outside of class to prepare class assignment
tutor	Tutored or taught other students (paid or voluntary)
commproj	Participated in a community-based project (e.g., service learning) as a part of a regular course
oocideas	Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)

Active Learning

Students learn more when they are intensely involved in their education and are asked to think about and apply what they are learning in different settings.

Variable	Description
clquest	Asked questions in class or contributed to class discussions
clpresen	Made a class presentation
commproj	Participated in a community-based project (e.g., service learning) as part of a regular course

Collaborative Learning

Collaborating with others in solving problems or mastering difficult material prepares students to deal with the messy, unscripted problems they will encounter daily during and after college.

Variable	Description
classgrp	Worked with other students on projects during class
occgrp	Worked with classmates outside of class to prepare class assignments
tutor	Tutored or taught other students (paid or voluntary)
oocideas	Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)

Student-Faculty Interaction

How often students interact with faculty members inside and outside the classroom.

Variable	Description
facgrade	Discussed grades or assignments with an instructor
facideas	Discussed ideas from your readings or classes with faculty members outside of class
facplans	Talked about career plans with a faculty member or advisor
facfeed	Received prompt written or oral feedback from faculty on your academic performance
facother	Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)
resrch04	Worked on a research project with a faculty member outside of course or program requirements

Course-Related Interactions with Faculty

The extent to which students interact with faculty on course-related matters.

Variable	Description
facgrade	Discussed grades or assignments with an instructor
facideas	Discussed ideas from your readings or classes with faculty members outside of class
facfeed	Received prompt written or oral feedback from faculty on your academic performance

Out-of-Class Interactions with Faculty

The extent to which students interact with faculty in out-of-class activities.

Variable	Description
facplans	Talked about career plans with a faculty member or advisor
facother	Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)
resrch04	Worked on a research project with a faculty member outside of course or program requirements

Supportive Campus Environment

The extent to which students perceive the institution is committed to their success, and provides institutional support for academic success, and cultivates high quality student relationships with faculty and administrators, and peers.

Variable	Description
envsocal	Providing the support you need to thrive socially
envsuprt	Providing the support you need to help you succeed academically
envnacad	Helping you cope with your non-academic responsibilities (work, family, etc.)
envstu	Quality of relationships with other students
envfac	Quality of relationships with faculty members
envadm	Quality of relationships with administrative personnel and offices

Support for Success and Enrichment

The extent to which students perceive the institution is committed to their success and cultivates positive working and social relations among different groups on campus and opportunities to enhance academic enrichment.

Variable	Description
envschol	Spending significant amounts of time studying and on academic work
envsuprt	Providing the support you need to help you succeed academically
envcompt	Using computers in academic work
envdivrs	Encouraging contact among students from different economic, social, and racial or ethnic backgrounds
envnacad	Helping you cope with your non-academic responsibilities (work, family, etc.)
envsocal	Providing the support you need to thrive socially
envevent	Attending campus events and activities (special speakers, cultural performances, athletic events, etc.)

Support for Academic Success

The extent to which students perceive the institution is committed to their success, cultivates quality relationships among students and faculty and administrators, and promotes quality advising.

Variable	Description
envsuprt	Providing the support you need to help you succeed academically
envfac	Quality of relationships with faculty members
envadm	Quality of relationships with administrative personnel and offices
advise	Overall evaluation of the quality of academic advising you have received at your institution

Deep Approaches to Learning: Higher Order Thinking

The extent to which students believe that their courses emphasize advanced thinking skills such as analyzing the basic elements of an idea, experience, or theory; and synthesizing ideas, information, or experiences into new, more complex interpretations.

Variable	Description
analyze	Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components
synthesz	Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships
evaluate	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
applying	Applying theories or concepts to practical problems or in new situations

Deep Approaches to Learning: Integrative Learning

How often students participate in academic activities that integrate ideas from various sources and include diverse perspectives, and discuss ideas with others outside of class.

Variable	Description
integrat	Worked on a paper or project that required integrating ideas or information from various sources
divclass	Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments
intideas	Put together ideas or concepts from different courses when completing assignments or during class discussions
facideas	Discussed ideas from your readings or classes with faculty members outside of class
oocideas	Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)

Experiences with Diversity

How often students interact with other students who are different from them in terms of race, ethnicity, religious beliefs, political opinions, and personal values; and the extent to which the institution encourages this interaction.

Variable	Description
divrstud	Had serious conversations with students of a different race or ethnicity than your own
diffstu2	Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values
envdivrs	Encouraging contact among students from different economic, social, and racial or ethnic backgrounds

High-Impact Practices

The proportion of students who report participation in specific educational experiences that have been shown to relate positively to student outcomes. The relevant population (first-years [FY] or seniors [Sr]) is identified in parentheses.

Variable	Description
lrncom04	Done: Participated in a learning community or some other formal program where groups of students take two or more classes together (FY)
commproj	Participated in a community-based project (e.g., service learning) as part of a regular course (FY & Sr)
stdabr04	Done: Study abroad (Sr)
snrx04	Done: Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, etc.) (Sr)
inter04	Done: Practicum, internship, field experience, co-op experience, or clinical assignment (Sr)
resch04	Done: Worked on a research project with a faculty member outside of course or program requirements (Sr)