Measuring Engaged Learning in College Students: Beyond the Borders of NSSE

Laurie A. Schreiner, Azusa Pacific University
Michelle C. Louis, Bethel University

Abstract

Student engagement is one of the most widely researched topics in the recent higher education literature. Most of the research on engagement has focused on its behavioral indicators and on the environmental supports for educationally purposeful activities. In this study, we developed a multidimensional measure of engagement by adding psychological components. A principal components analysis of the responses of 1270 traditional and non-traditional aged undergraduates from five different institutions extracted three components that were interpretable and internally consistent: Meaningful Processing, Participation, and Focused Attention. With a coefficient alpha of .91 and preliminary evidence for construct validity, the newly developed *Engaged Learning Index* appears to be a valid and reliable tool for educators to measure a broader spectrum of student engagement in the learning process.

Student engagement and its impact on learning is one of the most widely researched topics in the recent higher education literature. In much of the literature on this subject, researchers highlight the need for developing an understanding of engagement by connecting it to meaningful student learning (Astin, 1993; Carini, Kuh, & Klein, 2006) or by proposing that it may serve to enhance student persistence (Milem & Berger, 1997). As increasingly diverse types of learners enter higher education (Keller, 2001), the challenge of engaging those students in their own learning so that they experience success becomes more imperative.

With the advent of the *National Survey of Student Engagement* (NSSE) in 2000, the visibility of the construct of student engagement within the field of higher education increased dramatically, as institutions began to assess engagement in a more intentional and empirical way. As a result, colleges and universities are gaining an understanding of the levels of engagement within their first-year and senior students and are offered practical ways of supporting and encouraging such engagement.

An examination of the items and scales within NSSE (Kuh, Hyek, Carini, Ouimet, Gonyea, & Kennedy, 2001; National Survey of Student Engagement, 2004), as well as an exploration of the conceptual framework of the instrument (Kuh, 2003), reveals that its intention is to measure "the extent to which students are engaged in empirically derived good educational practices and what they gain from their college experience" (p. 1). Thus NSSE focuses primarily on student behaviors indicative of engagement and the effective educational practices that support such behaviors. The goal is for these characteristics of student engagement to serve as effective measures of institutional quality.

Based on Pace's (1969; 1979; 1980; 1984) research connecting the quality of student effort with student learning, as well as on Astin's (1984; 1993) theory of student involvement,

NSSE is predicated on the assumption that certain student behaviors are indicators of engagement in the learning process. In addition, NSSE was constructed based on the principles of effective educational practice outlined by Chickering and Gamson (1987) which were empirically associated with learning gains. Another important premise within this framework is that institutional policies and practices influence levels of such engagement within a particular college or university (Pike & Kuh, 2005a).

The use of the term *engagement* in NSSE is synonymous with Astin's (1984) term *involvement* in his original articulation of student involvement theory. Although Astin defines student involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 298), his focus is primarily on the behaviors in which the student engages: participating in campus organizations, interacting with faculty and peers, attending campus events, and spending time studying, for instance. He emphasizes that he made a deliberate decision to attend to the behavioral components of involvement rather than the motivational components, noting that "it is not so much what the individual thinks or feels, but what the individual does, how he or she behaves, that defines and identifies involvement" (p. 298).

Recently Bean (2005) has noted that this view of involvement solely as behavior does not provide a complete picture of student engagement; while the behavioral component is necessary, it is not a sufficient conceptualization of engagement. As he notes, "[p]articipating in events without committing psychological energy to them indicates that they are unimportant to the student and thus ineffectual in changing the student…. Behavior without thought is not likely to lead to the gains associated with engagement" (pp. 2-3).

As a result of the need to expand the conceptualization of student engagement, we have begun to explore and measure the psychological components of engagement in learning. While the behaviors and environmental supports for engagement have been well researched (Hossler, Kuh, & Olsen, 2001; Kuh, Kinzie, Shuh, Whitt, & Associates, 2005) there has been less emphasis on the psychological processes that are indicative of engagement. Lewin's (1938) conceptualization of behavior as a function of the interaction between persons and environments provides a useful framework for a more comprehensive examination of the construct of engagement. Both the environmental supports for behaviors and the motivation and cognition occurring within the student are important contributors to engagement in learning. NSSE provides strong evidence for the environmental and behavioral components; there remains a need to further develop and more fully articulate the psychological components in order to facilitate a richer understanding of all the aspects of engagement that may promote student learning.

Examining the psychological aspects of engagement may best be achieved through the use of an interdisciplinary approach. Incorporating psychological concepts such as *flow* (Csikszentmihalyi, 1975), *mindful learning* (Langer, 1997), and elements from intrinsic motivation and self-determination theory (Ryan & Deci, 2000) could allow for a fuller understanding of the complexities of engagement that could enable institutions and faculty to design programs, curricula, and teaching strategies to facilitate student success.

Csikszentmihalyi's (1975) concept of flow is often described as an energized, alert mental state in which one loses track of time and any sense of self-consciousness as a result of becoming immersed in challenging activities that are of interest. While the concept of flow represents one type of engagement characterized by heightened attention and time distortion, flow and engagement are not synonymous terms. Whereas flow is experienced on an individual

level as a loss of self-awareness, engaged learning often involves a social component and may coincide with being conscious of oneself as an active participant in the learning process.

Langer's (1997) construct of mindfulness adds another dimension to engagement with its emphasis on psychological presence in the current moment and its focus on novel distinctions. Mindful learning occurs when students notice what is new or different in the surrounding environment or in the task at hand. This novelty captures their attention as they attempt to distinguish the new from what they already know. In Langer's description of mindfulness, there is a sense of active involvement, high curiosity, and a particular quality of attention that keeps the learner firmly situated in the present. Mindfulness also involves perspective-taking and making the material personally meaningful, both of which lead to the deep learning (Tagg, 2003) that tends to have the most significant and lasting impact on students' lives.

In addition to the psychological concepts of flow and mindfulness, another theoretical framework which could provide an enhanced understanding of engagement is Ryan and Deci's (2000) self-determination theory, which is based on the construct of intrinsic motivation. In this theory, individuals whose motivation is authentic, or in Baxter-Magolda's (1992, 2001) terms, "self-authored," are more interested, excited, and confident as they approach a task, which then produces higher levels of creativity and persistence within the task, as well as better performance (Sheldon, Ryan, Rawsthorne, & Ilardi, 1997). Even when controlling for pre-existing levels of self-efficacy, these persons experience greater success, "heightened vitality" (Ryan & Deci, 2000, p. 69), and an enhanced sense of well-being.

While some preliminary research from the NSSE team (NSSE, 2005) has introduced the concept of "learning with understanding" that builds on the constructs of deep learning (Tagg, 2003), we prefer to use the term *engaged learning* to reflect both psychological and behavioral

engagement in the learning process. Engaged learning is defined as a positive energy invested in one's own learning, evidenced by meaningful processing, attention to what is happening in the moment, and involvement in specific learning activities.

Engaged learning is thus conceptualized as a multidimensional construct that contains both the physical and psychological energy to which Astin (1984) originally referred in his articulation of student involvement theory. Comprised of affective, behavioral, and cognitive components (Fredericks, Blumenfeld, & Paris, 2004), we theorize that engaged learning could be measured globally but also could be measured in specific local instances, such as within a particular class session. The latter approach was employed by Handelsman and colleagues (2005), who utilized a non-random sample at a single institution to develop an instrument for use in classroom settings. Their instrument, the *Student Course Engagement Questionnaire* (SCEQ), measured behavioral and affective indicators of academic engagement. Four factors accounting for 42.69% of the variance were identified via factor analysis: skills engagement, emotional engagement, participation/interaction engagement, and performance engagement. Of these four factors, the emotional and participation/interaction types of engagement were most predictive of learning outcomes, including engagement across multiple settings, final exam scores, preference for an incremental theory about learning, and the tendency to set learning goals rather than performance goals.

The Handelsman, et al. (2005) study emphasizes measurement of engaged learning at the micro level. Their findings that emotional and participation/interaction types of engagement account for the greatest variance in learning outcomes are further evidence of the need to measure this type of engagement at the macro level as well. Being able to assess beyond the current behavioral indicators to measure psychological indicators of engagement longitudinally

and across multiple settings would enable institutions to determine the growth that occurs among students. In addition, focusing on the full scope of engagement as an outcome rather than as an intervening variable would allow institutions to determine the impact of a variety of programs on students' psychological engagement and make intermediate adjustments in such programs to maximize their long-term effect on student learning and persistence.

Bean's (2005) conceptual model of engagement expands on the theoretical framework inherent in Astin's (1984) involvement theory and Kuh's (2003) engagement model in that it views engagement as multidimensional and focuses on engagement as an outcome in itself, rather than as a means to an end. In contrast to Astin's I-E-O model, Bean views the student as more than an input into the model and instead as a "psychological actor" within the model (p. 11). The student brings expectations and predispositions into an active interaction with others in the environment and makes decisions to engage or not based on those interactions. The decision to engage then produces both thoughts and behaviors that constitute engagement. There are two continuous feedback cycles within the model, whereby the student is constantly evaluating the engagement for its inherent satisfaction and for its value in meeting the student's needs. Bean proposes that there is a need to develop reliable and valid measures of the concepts in his model, most notably the concept of engagement that he delineates as the dependent variable in the model.

The purpose of this study is to provide a broader definition and measurement of engagement by focusing on the construct of *engaged learning*. Taking an interdisciplinary approach, this study aims to develop and assess the psychometric properties of an instrument designed to assess engaged learning among a sample of college students. The research questions guiding the study are as follows:

What aspects of engaged learning can be measured in a valid and reliable way among diverse college students across multiple settings?

What are the components that account for most of the variation in engaged learning among students?

Method

Participants

The participants in this study were 1,270 undergraduate students enrolled in five different private and public four-year colleges and universities across the United States. On two of the participating campuses all students were given the opportunity to complete the instrument, with an average response rate of 22%. On the remaining three campuses, all students in a variety of courses where faculty volunteered class time completed the instrument. Table 1 outlines the demographic characteristics of the participants. Although the participants are similar in many ways to the national sample of college students, the sample is skewed toward upper-level students. Females and Caucasians are slightly over-represented. The percentage of students in this sample who are older than 24 is slightly more than the national sample (53.5% compared to 43%; National Center for Education Statistics, 2003).

Development of the Instrument

The *Engaged Learning Index* was developed both inductively and deductively. The inductive development of the instrument involved semi-structured interviews with both faculty and students. These interviews focused on their perceptions of the components of engagement. Faculty were asked to describe the behaviors of an engaged student, while students were asked what they were thinking, feeling, and doing when they were engaged in an academic setting.

The deductive development of the *Engaged Learning Index* arose from a conceptualization of engagement based in the psychology literature as well as the literature in higher education. The literature on student involvement (Astin, 1984), engagement (Kuh, et al., 2005), flow (Csikszentmihalyi, 1975), mindfulness (Langer, 1997), intrinsic motivation (Ryan & Deci, 2000), and deep learning (Tagg, 2003) was used to formulate a conceptualization of engaged learning as a positive energy invested in one's own learning, evidenced by meaningful processing, attention to what is happening in the moment, and involvement in specific learning activities.

Twenty items were created to measure the multidimensional nature of an individual student's level of engagement in the learning process. Each item is a positive or negative statement to which the student responds with varying levels of agreement on a five-point Likert scale. Negative items were scattered throughout the instrument in order to prevent response sets and were reverse-scored prior to computing the total index score.

An initial version of the instrument was reviewed by a student focus group in order to ensure that the items were clearly worded and had high face validity. Fifteen undergraduate students participated in a 90-minute focus group, in which they each completed the instrument and then thoroughly discussed each item. As a result of this focus group, the instrument's instructions and the wording of three items were revised in order to be clearer to students.

The demographic items included in the *Engaged Learning Index* assess gender, race/ethnicity, age, class level, major, first-generation student status, eventual degree aspirations, whether the student lives on campus or commutes, whether the student participates in intercollegiate athletics, and hours spent working on or off campus. These variables were included because of the potential relationship that each has to student engagement, based on

previous studies (Kuh, et al., 2005; Pike & Kuh, 2005a; Pike & Kuh, 2005b; Umbach, Palmer, Kuh, & Hannah, 2004). In addition, the instrument includes global questions about students' satisfaction with their college experience as a whole and with the amount they are learning in college. These final two questions are expressed on a five-point Likert scale. The demographic items and the global satisfaction and learning items are used in the assessment of the construct validity of the instrument.

Results

Several statistical analyses were conducted to determine the psychometric properties of the *Engaged Learning Index* (ELI). The internal consistency of the instrument as a whole was estimated via Cronbach's alpha ($\alpha = .91$). Item-total correlations were calculated to determine the extent to which each item contributed to the total construct of engaged learning. Five items with item-total correlations below $r = .45$ that did not contribute strongly to the instrument's reliability were targeted for removal, pending the factor analysis (see Table 2 for the item descriptions, means and standard deviations of the scores, and item-total correlations).

Exploratory factor analysis was warranted, since there was not an existing instrument or a specific theory that was being tested with this instrument (Thompson, 2004). A principal components factor analysis with varimax rotation was conducted to determine the composition of the instrument and to validate the multidimensional nature of the construct of engaged learning. Cases with missing values were deleted listwise and components with eigenvalues less than 1.0 were omitted. Three components were extracted that accounted for 54.19% of the total variance. The rotated component matrix and item loadings appear in Table 3. From this analysis, we noted that one item ("In most of my classes, I like to sit near the front of the room") did not load on

any component and one item loaded on two components ("I enjoy talking to my professors about what I'm learning in class"). These items were removed from the final version of the instrument.

The first component extracted consisted of 11 items that accounted for 27.67% of the variance. We labeled this factor *Meaningful Processing*, as it represents cognitive processing of new information and efforts to relate new material to pre-existing knowledge or determine its personal relevance. This factor included items such as "I can usually find ways of applying what I'm learning in class to something else in my life" and "I usually think about how the topics being discussed in class might be connected to things I have learned in previous class periods."

The second component extracted contained five items that accounted for 14.48% of the variance. We labeled this factor *Participation* because it represented student learning through active involvement and contribution to classroom discussions. This factor included items such as "I regularly participate in class discussions in most of my classes" and "I ask my professors questions during class if I do not understand something."

The final component extracted contained three items that accounted for 12.04% of the total variance. We labeled this factor *Focused Attention* because it was associated with cognitive attentiveness during class. It included such items as "Often I find my mind wandering during class" and "It's hard to pay attention in many of my classes."

Based on the factor loadings, item-total correlations, and reliability analysis, five items were removed from the instrument. These items were "At least once in the last month, I have gotten so involved in what I was doing for a class that I lost track of time," "In most of my classes, I like to sit near the front of the room," "I find ways to make course material relevant to my life," "I enjoy talking to my professors about what I am learning in class," and "When an idea is being discussed during class, I think about my own opinion on the matter." The

remaining 15 items were re-examined for internal consistency. Coefficient alpha reliability estimates were calculated on each component to determine the internal consistency of the scale. The first scale, comprised of nine items and labeled *Meaningful Processing,* had a coefficient alpha reliability estimate of .90. The second scale, *Participation*, was comprised of three items with a coefficient alpha estimate of .74. The final scale, *Focused Attention*, contained three items; coefficient alpha for this scale was .79.

Construct validity was assessed in two ways. Convergent validity was explored by examining the ability of the ELI to predict variables that previous research had shown were significantly associated with engagement. For example, previous research has shown that engagement is predictive of self-reported learning gains (Carini, Kuh, & Klein, 2006; Greenway, 2005). Thus, if the ELI is indeed a measure of engagement, it should be predictive of students' self-reported learning. We regressed students' self-reported amount of learning onto the 15 items that were retained on the final ELI, entering all 15 items directly into the regression equation. This analysis found that 34.5% of the variation in self-reported amount of learning could be accounted for by these items in the final ELI instrument.

Previous research had also found that there was a significant relationship between students' satisfaction with the campus climate and their level of engagement (NSSE, 2005). Accordingly, students' scores on the item assessing their satisfaction with the campus climate were regressed onto the 15 items of the ELI. This analysis found that 28.5% of the variance in student satisfaction with their campus experiences could be accounted for by the ELI item scores.

A second way we explored the construct validity of the ELI was by comparing the scores of groups who were expected to differ in their levels of engagement, based on previous research.

Groups that were expected to have significantly different engagement scores included those who reported high levels of learning compared to those who reported not learning much (Carini, Kuh, & Klein, 2006; Greenway, 2005), students with high levels of satisfaction with their college experience compared to those with low levels of satisfaction (NSSE, 2005), intervarsity athletes compared to non-athletes (Umbach, Palmer, Kuh, & Hannah, 2004), first-generation students compared to those whose parents went to college (Pike & Kuh, 2005b), and students over 25 years of age compared to those under 25 (NSSE, 2002).

Several one-way analyses of variance (ANOVA) were conducted on the *Engaged Learning Index* scale and total scores of groups expected to differ in engagement. Those reporting a high degree of learning had significantly higher ELI total and scale scores than those reporting a low degree of learning. Cohen's *d* as a measure of effect size ranged from .21 to 1.25 on the scale scores and was 1.16 for the total ELI (see Table 4). Students with high scores on the campus satisfaction scale were compared to those with low scores via a one-way ANOVA. As with the high and low learning groups, there were significant differences in the scores of those who were highly satisfied with their college experience compared to those with low scores (see Table 5). Effect sizes were also large.

Results of the one-way ANOVA conducted on the ELI total and scale scores of first-generation students compared to students whose parents went to college indicate statistically significant differences in two of the three scale scores and in the total ELI scores. First-generation students scored significantly higher, but the effect sizes were extremely small (see Table 6).

Another one-way ANOVA was conducted to compare the scale and total scores of intervarsity athletes and non-athletes, who had previously been shown to have differing levels of

engagement in educationally purposeful activities (Umbach, Palmer, Kuh, & Hannah, 2004). This analysis resulted in statistically significant differences in the total ELI scores and all scale scores between intervarsity athletes and non-athletes, with non-athletes scoring higher on all dimensions. Despite slightly larger effect sizes, the practical significance of the differences was small on two of the scales and medium on the Focused Attention scale and the total ELI score (see Table 7).

Because previous research conducted on the behavioral indicators of engagement had found significant differences in the global involvement of students over age 25 (NSSE, 2002) but had found that older students were more highly motivated to succeed than younger students (NSSE, 2005), we explored the effect of age on ELI scale and total scores. As can be seen in Table 8, the one-way ANOVA resulted in significant differences on each of the scale scores and the total ELI scores, with students 25 and older scoring significantly higher on all measures. The effect sizes were relatively large in each case.

Gender and ethnic differences in ELI scores were explored via one-way analyses of variance. Previous research had shown a curvilinear relationship between gender and engagement (Hu & Kuh, 2002) and no clear relationship between ethnicity and behavioral indicators of engagement (NSSE, 2005). The ANOVA results outlined in Table 9 indicate statistically significant gender differences, but very small effect sizes. There were no significant ethnic differences in the ELI scores.

Conclusions and Implications

The goal of this study was to develop an instrument that measures the multiple facets of engaged learning in a way that is reliable and valid. Preliminary evidence from this sample of diverse college students from five universities indicates that the construct of engaged learning is

indeed multidimensional, consisting of three interpretable and internally consistent components. The revised 15-item ELI demonstrates preliminary evidence of construct validity, indicated through convergent validity and through significant group differences (Cronbach & Meehl, 1955). Students who were expected to differ in their levels of engagement, based on previous research, did in fact differ significantly from one another on the scale scores and the total score of the ELI. This finding lends preliminary evidence for the initial validation of the instrument as a measure of engaged learning. Thus, the psychometric properties of the instrument appear to be robust enough to continue to use it to explore levels of psychological engagement in the learning process.

The internal consistency of the instrument also was strong, both for the total scores and each of the three scale scores. All coefficient alphas were above the level expected for psychological instruments (AERA/APA/NCME, 1999), lending support for the three scales as well as for the usefulness of the ELI as a brief but thorough measure of engaged learning for traditional and non-traditionally aged college student populations.

Although this research supports the multidimensional nature of the construct of engaged learning, it is important to note that the scale that accounted for the largest proportion of the total variance (27.67%) was the Meaningful Processing scale. This scale measured many of the variables that other researchers have labeled deep learning (Tagg, 2003), meaning making (Tagg, 2003), learning with understanding (NSSE, 2005), or "unobservable psychological effort" (Bean, 2005, p. 4). The items on the scale appear to measure the psychological energy students invest in the learning process through making connections with previously learned material, believing the learning to be personally valuable, thinking about material presented in class even outside of the classroom setting, applying course material in practical ways to their life, spending extra time to

learn more about what was introduced in class, discussing with their friends what they are learning, and feeling energized by the ideas they are learning. This scale had the largest correlation with students' self-reported learning (r = .52; partial r = .41), and displayed the largest score differences among students who reported high levels of learning compared to those who reported low levels of learning. However, few faculty would be able to discern this type of student engagement, as it is not directly observable in behavior. Yet the results of this study would suggest that meaningful processing is the component of engagement that is most strongly associated with high levels of student-reported learning. In addition to its significant contribution to learning, scores on this scale also varied significantly between those who were highly satisfied with their college experience and those were who dissatisfied. Thus, the meaningful processing that is indicative of deep learning does indeed appear significantly associated with students' overall perception and satisfaction with their campus experiences, as well as with the quality of their learning.

The Focused Attention scale of the ELI points to an area where further research could be beneficial. Moderately large differences on this scale were found between students with high versus low campus satisfaction as well as between those with high versus low reported levels of learning. There was also a fairly large effect size on this scale score when comparing students over 25 to those younger than 25 (Cohen's d = .79), with older students scoring significantly higher (see Table 8). The significantly higher scores reported by students over age 25 is congruent with the research finding that older students returning to college tend to have higher grades and report a higher level of motivation for learning (NSSE, 2005). However, there were only small gender differences and differences by generation status or athlete status, and there were no ethnic or class level differences on this scale. Taken together, the preliminary indication

is that focused attention may contribute in some important ways to students' engagement in learning in ways that are unrelated to student demographics. By capturing students' interest and focusing their attention on the learning process, faculty potentially can affect not only the degree of learning but also the extent to which students are satisfied with their entire college experience.

An examination of the Participation scale provides evidence that this scale is congruent with aspects of the construct of engagement as currently measured by NSSE. Although the behaviors on this scale are more circumscribed and oriented toward classroom participation than the wide variety of behaviors assessed by NSSE, the results are similar to those reported by NSSE (2005): behavioral indicators of engagement increased by class level and varied slightly but significantly by gender, first-generation status, and athlete status. There was a large effect size for age on this scale (Cohen's $d = .80$), indicating that older students are more likely to actively participate in class discussions without fear and to ask questions of the professor when material is unclear.

Because the Participation scale demonstrates only a slight ability to distinguish between high and low levels of student learning and is unrelated to satisfaction with the college experience, relying solely on behavioral indicators of classroom participation is not sufficient for understanding student engagement. Focusing on the overt behavioral indicators of engagement gives only a partial glimpse into the construct of engaged learning. By adding the Meaningful Processing and Focused Attention components, engagement does in fact contribute significantly to students' learning and satisfaction with their entire college experience. For students to learn in ways that are deeply satisfying, it is not enough to simply engage in behaviors; students must also engage psychologically with the learning process through connections, application, and the investment of mental energy and attention. As Handelsman et al., (2005) note, "helping students

become emotionally engaged may be an important complement to teaching knowledge and skills" (p. 190). Knowing about students' levels of Meaningful Processing, Participation, and Focused Attention can help faculty design classroom experiences that can foster engaged learning. Particularly as almost half of college students are not participating in any co-curricular experiences (NSSE, 2005), the classroom is the location where engagement is best fostered. Having the ability to assess the psychological components of engagement, in addition to the behavioral components, adds an important tool for college faculty and administrators as well as for researchers.

This study has at least two limitations. The first limitation concerns the sample. Although the sample was relatively large and derived from multiple institutions, it was not a truly random sample and thus limits the generalizability of the findings. Second, the study measured only self-reported learning, rather than GPA or other objective measures of learning. Future research should collect student GPA in addition to these self-reported measures. Such research should also conduct a confirmatory factor analysis with a cross-validation sample, to further establish the construct validity of the *Engaged Learning Index* and to determine if the three components extracted in the exploratory factor analysis combine to produce a model of engaged learning that accurately fits other student samples.

In developing the *Engaged Learning Index*, our purpose was to expand the boundaries of the engagement construct by utilizing psychological concepts and global measures to assess students' levels of engaged learning across multiple academic settings. In so doing, our hope was to augment the strong institutionally-based information generated by the NSSE projects to allow a more comprehensive portrait of engaged learning to emerge. The ability to measure the multiple facets of individual student engagement can foster a greater understanding of which

aspects of students' learning environment and relationships enhance such engagement. Equipped with this information, educators can design strategies to facilitate the learning process more effectively. By assessing the psychological energy that students devote to learning, further research can focus on the precursors to and predictors of this energy investment. With a fuller picture of student engagement available to faculty and administrators via data generated through the use of the ELI in addition to the NSSE, dialogue about appropriate teaching strategies and effective institutional practices can move to a new level. As increasing numbers of diverse learners enter higher education in the coming decades, a more comprehensive conceptualization of student engagement as "engaged learning" will enhance higher education's ability to facilitate the learning process of all students.

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Table 1

Demographic Characteristics of Participants (N = 1,243)

Characteristic	n	%
Gender		
Female	826	66.5
Male	417	33.5
Class		
First year	235	18.5
Sophomore	265	21.3
Junior	368	29.6
Senior	375	30.2
Generation		
First generation	296	23.8
Not first generation	947	76.2
Degree Aspirations		
Associates	14	1.1
Bachelors	309	24.9
Teaching credential	100	8.1
Masters	644	51.9
Doctorate	120	9.7
Medical or law	54	4.4
Athletic Participation		
Athlete	183	15.4
Non-athlete	1003	84.6
Housing		
On-campus	443	35.7
Off-campus	799	64.3
Race/Ethnicity		
African-American	158	12.8
American Indian/Alaska Native	6	0.5
Asian American/Pacific Islander	33	2.7
Caucasian	907	73.4
Hispanic	92	7.4
Multiethnic	23	1.9

Table 2

Means, Standard Deviations, Item Descriptions, and Item-Total Correlations for Engaged Learning Index Items

Item	M	SD	Item-Total Correlation
1. At least once in the last month, I have gotten so involved in what I was doing for a class that I lost track of time.	3.68	1.20	.35
2. I am learning a lot in most of my classes this semester.	3.83	.99	.63
3. I often discuss with my friends what I'm learning in class.	3.60	1.10	.61
4. I regularly participate in class discussions in most of my classes.	3.91	1.08	.58
5. I feel as through I am learning things in my classes that are worthwhile to me as a person.	3.94	.99	.69
6. In most of my classes, I like to sit near the front of the room.	3.54	1.17	.40
7. It's hard to pay attention in many of my classes. (reverse scored)	3.91	1.20	.48
8. I can usually find ways of applying what I'm learning in class to something else in my life.	3.66	.96	.67
9. I ask my professors questions during class if I do not understand.	3.84	1.06	.52
10. In the last week, I've been bored in class a lot of the time. (reverse scored)	3.63	1.38	.52
11. I find ways to make course material relevant to my life.	3.53	.97	.67
12. I find myself thinking about what I'm learning in class even when I'm not in class.	3.46	1.05	.68
13. Sometimes I am afraid to participate in class. (reverse scored)	4.11	1.23	.36
14. I enjoy talking to my professors about what I'm learning in class.	3.39	1.07	.59
15. I feel energized by the ideas that I am learning in most of my classes.	3.46	.99	.73
16. I usually think about how the topics being discussed in class might be connected to things I have learned in previous class periods.	3.62	.96	.59
17. Often I find my mind wandering during class.	3.42	1.35	.53
18. When I am learning about a new idea in a class, I think about how I might apply it in practical ways.	3.59	.89	.58
19. Sometimes I get so interested in something I'm studying in class that I spend extra time trying to learn more about it.	3.12	1.09	.59
20. When an idea is being discussed during class, I think about my own opinion on the matter.	3.98	.90	.32

Note: N = 1270

Table 3

Rotated Component Matrix and Factor Loadings for the Final Version of the Engaged Learning Index

Items	Factor 1 (Meaningful Processing)	Factor 2 (Participation)	Factor 3 (Focused Attention)
I can usually find ways of applying what I'm learning in class to something else in my life.	.74		
I feel energized by the ideas that I am learning in most of my classes.	.74		
I feel as though I am learning things in my classes that are worthwhile to me as a person.	.73		
I am learning a lot in most of my classes this semester	.72		
I find myself thinking about what I'm learning in class even when I'm not in class.	.72		
I often discuss with my friends what I'm learning in class.	.69		
I usually think about how the topics being discussed in class might be connected to things I have learned in previous class periods.	.65		
When I am learning about a new idea in a class, I think about how I might apply it in practical ways.	.56		
Sometimes I get so interested in something I'm studying in class that I spend extra time trying to learn more about it.	.52		
I regularly participate in class discussions in most of my classes.		.77	
I ask my professors questions during class if I do not understand.		.75	
Sometimes I am afraid to participate in class.		.70	
Often I find my mind wandering during class.			.79
In the last week, I've been bored in class a lot of the time.			.77
It's hard to pay attention in many of my classes.			.75

Note. Factor loadings less than .40 are not displayed. Principal components analysis with varimax rotation.

Table 4

Means, Standard Deviations, and One-Way Analysis of Variance Comparison for High Learning versus Low Learning Students on the Engaged Learning Index

	High Learning		Low Learning		ANOVA	
Variable	M	SD	M	SD	*F* (1, 962)	*d*
Meaningful Processing	3.77	.67	2.92	.70	124.82***	1.25
Participation	3.98	.90	3.78	.98	3.84*	.21
Focused Attention	3.75	1.09	2.91	1.17	41.57***	.74
Total Score	3.82	.63	3.09	.63	102.18***	1.16

Note: High Learning $n = 879$; Low Learning $n = 85$

* $p < .05$; *** $p < .001$

Table 5

Means, Standard Deviations, and One-Way Analysis of Variance Comparison of ELI Scores for High Campus Satisfaction versus Low Campus Satisfaction

	High Satisfaction		Low Satisfaction		ANOVA	
Variable	M	SD	M	SD	*F* (1, 840)	*d*
Meaningful Processing	3.66	.66	2.72	.75	141.63***	1.33
Participation	3.88	.89	3.85	.94	.07	.03
Focused Attention	3.59	1.13	2.70	1.23	44.97***	.76
Total Score	3.70	.63	2.94	.67	103.85***	1.18

Note: High Satisfaction $n = 762$; Low Satisfaction $n = 80$

*** $p < .001$

Table 6

Means, Standard Deviations, and One-Way Analysis of Variance Comparison by First Generation Status on the Engaged Learning Index

	First Generation		Second Generation		ANOVA	
Variable	M	SD	M	SD	*F* (1, 1241)	*d*
Meaningful Processing	3.68	.74	3.57	.73	5.36*	.15
Participation	4.05	.80	3.88	.95	7.78**	.19
Focused Attention	3.68	1.13	3.54	1.17	3.18	.12
Total Score	3.76	.69	3.63	.69	7.63**	.19

Note: First Generation $n = 296$; Second Generation $n = 947$

* $p < .05$; ** $p < .01$

Table 7

Means, Standard Deviations, and One-Way Analysis of Variance Comparison of Intervarsity Athletes and Non-Athletes on the Engaged Learning Index

	Athletes		Non-Athletes		ANOVA	
Variable	M	SD	M	SD	*F* (1, 1184)	*d*
Meaningful Processing	3.38	.76	3.49	.65	2.95	.16
Participation	3.79	.83	3.47	.98	14.72***	.35
Focused Attention	2.91	1.22	3.10	1.18	2.99	.16
Total Score	3.40	.69	3.42	.62	.15	.03

Note: Athletes $n = 183$; Non-Athletes $n = 361$ (only students under age 25 were included in the analysis)

*** $p < .001$

Table 8

Means, Standard Deviations, and One-Way Analysis of Variance Comparison of Older and Younger on the Engaged Learning Index

	25 and over		Under 25		ANOVA	
Variable	M	SD	M	SD	*F* (1, 1268)	*d*
Meaningful Processing	3.74	.74	3.40	.70	70.77***	.47
Participation	4.24	.77	3.55	.94	206.47***	.80
Focused Attention	3.98	.98	3.11	1.19	192.69***	.79
Total Score	3.89	.66	3.39	.64	186.75***	.77

Note: Older Students (25 and over) $n = 680$; Younger Students (under 25) $n = 590$

*** $p < .001$

Table 9

Means, Standard Deviations, and One-Way Analysis of Variance Comparison by Gender on the Engaged Learning Index

	Women		Men		ANOVA	
Variable	M	SD	M	SD	*F* (1, 1241)	*d*
Meaningful Processing	3.65	.71	3.49	.77	13.69***	.22
Participation	3.94	.91	3.89	.94	.80	.05
Focused Attention	3.67	1.10	3.40	1.28	14.57***	.23
Total Score	3.71	.67	3.56	.72	13.94***	.22

Note: Women $n = 826$; Men $n = 417$

*** $p < .001$