

# IMPROVING UNDERGRADUATE LEARNING:

*Findings and Policy Recommendations  
from the SSRC-CLA Longitudinal Project*

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# INTRODUCTION

▶ Politicians, policymakers, and private foundations have united in recent years around achieving a common goal: college for all. As President Barack Obama pledged in his first speech to a joint session of Congress in February 2009: “We will provide the support necessary for you to complete college and meet a new goal: by 2020, America will once again have the highest proportion of college graduates in the world.” At the beginning of the 21st century, increasing and ensuring

individual access to college presents itself not just as a moral imperative, but an economic necessity. As employment opportunities in manufacturing continue to grow scarcer in the United States, both individual and national global economic competitiveness requires mastery of what many commentators have termed “21st century skills.” These skills, generally thought uniformly taught at U.S. colleges and universities, are defined as including critical thinking,

complex reasoning, and written communication. But what if sending students to college did not necessarily ensure that much was learned once there? What if at the beginning of the 21st century many colleges and universities were not focused primarily on undergraduate learning, but instead had become distracted by other institutional functions and goals?

We have systematically investigated the state of undergraduate learning

in contemporary colleges and universities. Following several thousand traditional-age students as they enrolled in coursework from Fall 2005 to Spring 2009, across a wide range of four-year colleges and universities, we found a set of conditions suggesting that something indeed is seriously amiss in U.S. higher education. In *Academically Adrift: Limited Learning on College Campuses* (University of Chicago Press, 2011), we have described some of these

disturbing conditions and documented the extent to which many students show little if any growth over the first two years of college in their ability to perform tasks requiring critical thinking, complex reasoning, and written communication as measured by the Collegiate Learning Assessment (CLA; for more information on the CLA see the Methodological Appendix). This report extends findings reported in our recent book to document the

rate of growth on the CLA for the full four years of college, academic practices associated with improved student performance, as well as differences across individuals and institutions in the level of learning. Moreover, we present recommendations for policymakers, institutions, and practitioners to consider for improving undergraduate learning at U.S. colleges and universities.

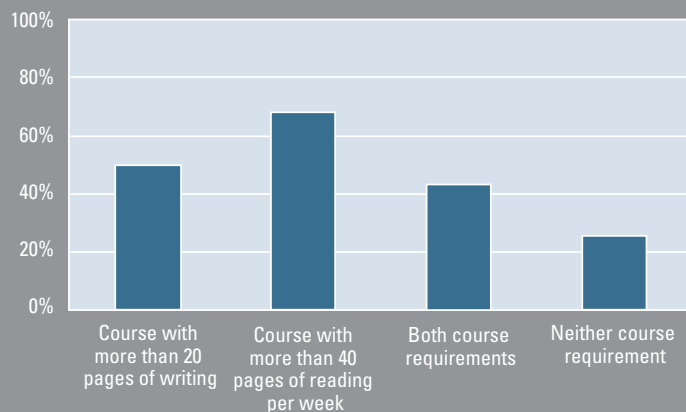
# LIMITED ACADEMIC ENGAGEMENT AND LEARNING OUTCOMES

▶ While higher education is expected to accomplish many tasks, existing organizational cultures and practices too often do not prioritize undergraduate learning. Large numbers of college students report that they *experience only limited academic demands and invest only limited effort in their academic endeavors*. Findings from our study document that:

■ Large numbers of students report that they enroll in courses that do not require either substantial writing or reading assignments. In a typical semester, 32 percent did not take any courses with more than 40 pages of reading per week and 50 percent did not take a single course in which they wrote more than 20 pages over the course of the semester. A quarter of students

experienced neither of those course requirements in a typical semester. Over their entire four years of college coursework, 50 percent of students reported that they had taken five or fewer courses that required 20 pages of writing over the course of the semester, and 20 percent of students reported that they had taken five or fewer courses that required 40 pages of reading per week.

Figure 1. Reading and writing course requirements



Note: Based on Spring 2007 Survey



■ On average, students in a typical semester spend only between 12 and 14 hours per week studying (approximately 50 percent less time than full-time college students did a few decades ago, according to recent research by labor economists Phillip Babcock and Mindy Marks published in the *Review of Economics and Statistics*). Combining the hours spent studying with the hours spent in classes and labs, students spend

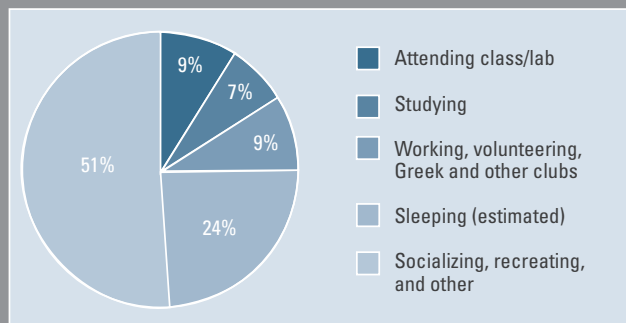
less than one-fifth (16 percent) of their time each week on academic pursuits.

■ When studying, students attending four-year colleges on average spend about one-third of their time studying with peers in social settings that are not generally conducive to learning. Excluding studying with peers from our calculations, college students on average spend only between 8 and 9 hours per

week studying alone. More troubling still, 35 percent of students at four-year colleges report that they spend five or fewer hours per week studying alone.

■ Students interact with their professors outside college classrooms rarely (on average only monthly), if ever (9 percent of students never meet with faculty outside the classroom in a typical semester).

**Figure 2. Student time use**



Note: Based on Spring 2007 survey.  
Percentages are based on 168 hours - i.e., full seven-day week.

# LIMITED ACADEMIC ENGAGEMENT AND LEARNING OUTCOMES

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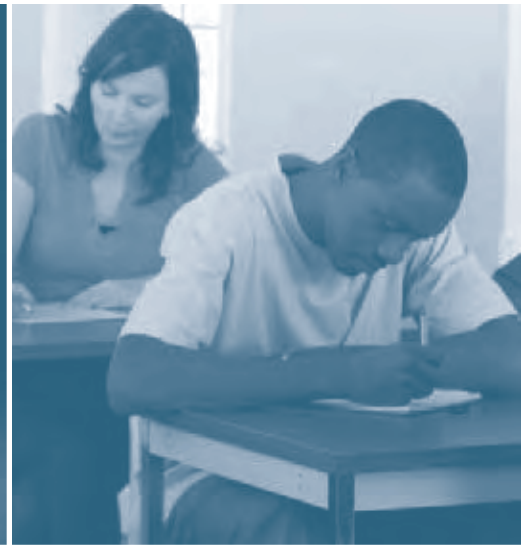
Our findings on limited collegiate academic investment and curricular demands replicate findings identified by the National Survey of Student Engagement (NSSE), which over the past decade has surveyed more than 2 million students at more than 1,000 colleges and universities. Among other results, NSSE reveals a limited amount of time students spend studying (13 to 14 hours for full-time students, 9 to 10 hours for part-time students) and meager writing

requirements found in contemporary undergraduate coursework (for example, 51 percent of college seniors reported that they had not written a paper during the current academic year that was 20 or more pages long; even at the top 10 percent of schools in the NSSE study, 33 percent of college seniors reported that they had not written a paper of this length during their last year in college).

Given the limited academic engagement shown by many students, it is not surprising that we find that *gains in student performance are disturbingly low*. We find in our study that on average, gains in critical thinking, complex reasoning, and writing skills (i.e., general collegiate skills) are either exceedingly small or empirically non-existent for a large proportion of students:

- Forty-five percent of students did not demonstrate any significant improvement in learning, as measured by CLA performance, during their first two years of college.
- Considering all four years of college, we find that 36 percent of students did not demonstrate any significant improvement in learning, as measured by CLA performance.





■ On average, students improved performance on the CLA by only 0.18 standard deviations over the first two years of college and 0.47 standard deviations for the full four years of college. Students who scored at the 50th percentile of students in their entering freshman cohort would have moved up only to the 68th percentile after four years of college (if, when graduating college, the students retook the test with a new cohort

of entering freshmen). In an extensive review of the literature presented in *How College Affects Students*, Ernest Pascarella and Patrick Terenzini estimated that students in the 1980s learned at twice the current rate—seniors at that time had an advantage of one standard deviation over freshmen in critical thinking.

If students' self-reports of their own academic engagement were not so limited, one might be tempted to dismiss these findings as a methodological artifact associated with a limitation of the essay-based, open-ended assessment approach used by the CLA. Related work conducted by a research team led by Charles Blaich at the Center of Inquiry in the Liberal Arts at Wabash College also puts such objections to rest. While we found that students

on average only gained 0.47 standard deviations on the CLA between their fall freshman and spring senior semesters, Blaich found that students in participating colleges he studied gained only 0.44 on an alternative close-ended, multiple choice assessment indicator of critical thinking and complex reasoning (ACT's Collegiate Assessment of Academic Proficiency).

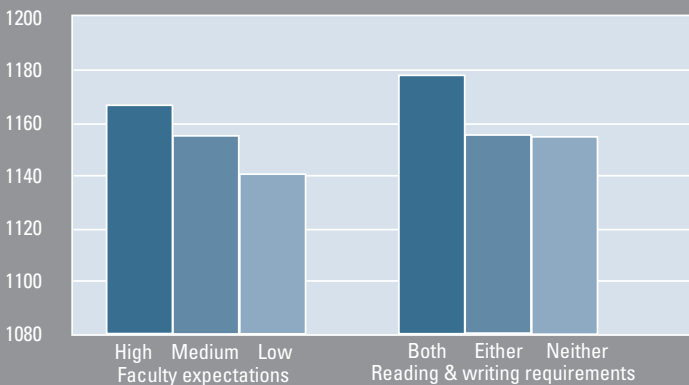
# ACADEMIC FACTORS ASSOCIATED WITH LEARNING

When exploring collegiate experiences associated with improved student learning, we found consistent evidence that certain factors were beneficial to growth in CLA performance and others were not. In general, our findings suggested that educational practices associated with *academic rigor* improved student performance, while collegiate experiences associated with *social engagement* did not.

Specifically, our results identified the following measures associated with academic rigor that were conducive to improved student performance on the CLA:

- Students who spent more hours studying alone had greater gains on the CLA.
- Students who took courses requiring both significant reading (more than 40 pages per week) and writing (more than 20 pages over the course of the semester) had higher rates of learning.
- Students reporting faculty with high expectations at their institutions had higher rates of learning.
- Students who had more advanced coursework in high school had greater subsequent gains on the CLA in college.

**Figure 3. Predicted 2007 CLA scores by faculty expectations and reading/writing course requirements**



Note: Predictions based on a model estimating 2007 CLA scores while controlling for 2005 CLA scores, student characteristics, and institutions attended.

While educational practices associated with academic rigor facilitated learning, measures associated with student *social engagement* did not:

- Students who spent more hours studying with peers showed diminishing growth on the CLA.
- Students who spent greater hours in fraternities and sororities had decreased rates of learning.

■ Other student activities, such as working on or off campus, participating in campus clubs/organizations, and volunteering, were not related to learning.

The extent to which our findings highlight the importance of *academic rigor* over *social engagement* for learning should serve as a cautionary signal to colleges that have emphasized the latter in efforts to increase student retention in higher education. These results, however, do not suggest that all forms of group-learning experiences should be abandoned. Group learning in specifically structured contexts, such as within learning communities or particular majors, may facilitate students' mastery of course material and development of general skills. Further research is needed to assess how specific types of group-centered activities are related to objective measures of student learning.

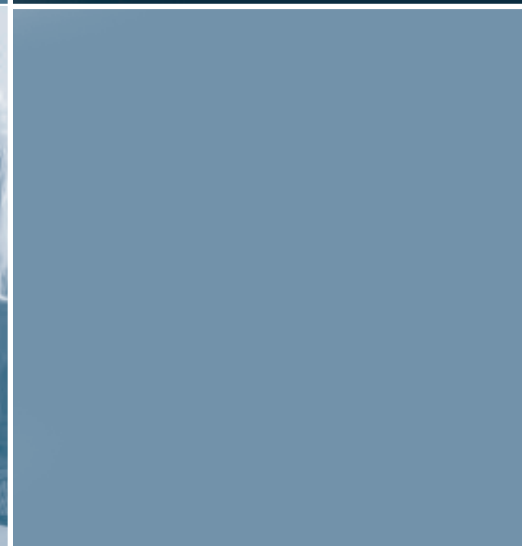
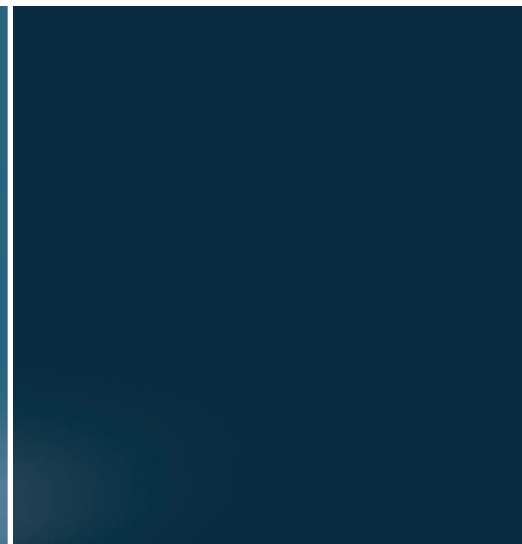
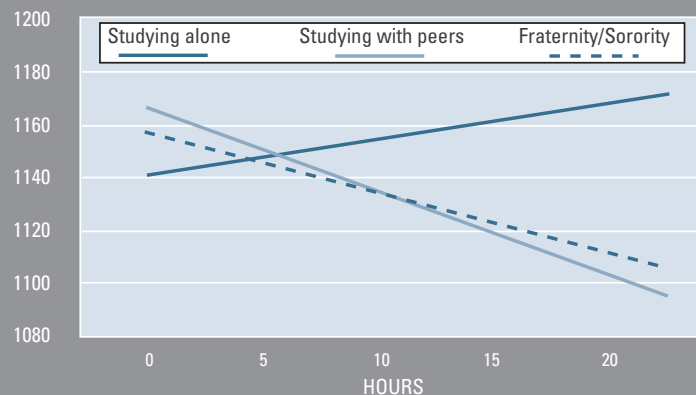


Figure 4. Predicted 2007 CLA scores by hours spent on selected student activities



Note: Predictions based on a model estimating 2007 CLA scores while controlling for 2005 CLA scores, student characteristics, and institutions attended.

# VARIATION ACROSS INSTITUTIONS AND INDIVIDUALS

▶ While the average trends in our data indicate that too many students are embedded in institutions that place very limited academic demands on them and that limited learning occurs for all too many students during college, there is notable variation across students as well as across institutions. In our study, we found many high-performing students from all socio-economic

backgrounds and racial/ethnic groups, as well as students with different levels of academic preparation, who improved their performance on the CLA at impressive rates while enrolled in college. In virtually every college examined we found students who were devoting themselves to their studies and learning at rates substantially above the average.

*There is notable variation in experiences and outcomes across institutions.* Students attending certain institutions have more beneficial college experiences (in terms of reading/writing requirements, hours studying, and high faculty expectations) and demonstrate significantly higher gains in critical thinking, complex reasoning, and writing skills over time, even after we control for students' individual characteristics.

■ Colleges and universities make a difference in improving student performance. Over four years of college, we find that 23 percent of variation in CLA performance occurs across institutions.

Many institutional factors (such as institutional type, size, sector, and resources) could potentially be related to variation in student



performance. We focused on one institutional variable that past sociological research has shown can have a strong relationship to learning: peer composition. In particular, we measured the selectivity of entering freshmen at an institution and examined the extent to which this measure of peer characteristics was associated with variation in rates of learning over and above a student's own individual characteristics.

with respect to academic endeavors, variation in curricular demands, as well as variation in faculty expectations.

*There is more variation within institutions than across institutions.* Although institutional selectivity is related to students' experiences and growth in the CLA, high- and low-performing students can be

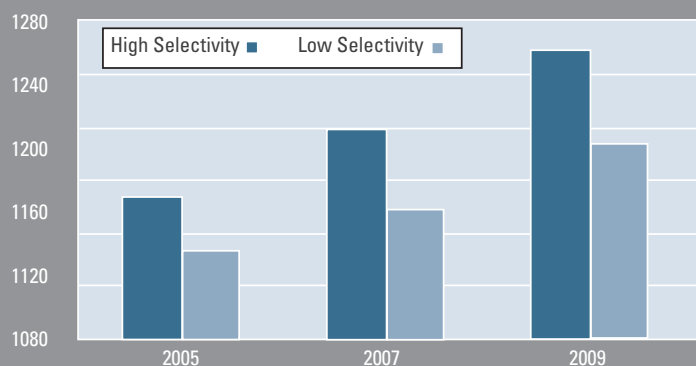
found at each institution and within each level of selectivity.

- Students demonstrating substantial learning (e.g., the top 10 percent of the CLA growth distribution) are found at each institution.

- Institutional differences associated with student selectivity are related to increased growth in CLA performance over four years of college.

Selectivity of entering freshmen is a measure that likely taps multiple sources of institutional variation, including differences in peer orientations and student behaviors

**Figure 5. Predicted CLA scores, by institutional selectivity**



Note: Predictions based on a three-level hierarchical linear model, controlling for a range of individual characteristics, including academic preparation. "High selectivity" represents institutions one standard deviation above the mean; "low selectivity" represents institutions one standard deviation below the mean.

# VARIATION ACROSS INSTITUTIONS AND INDIVIDUALS

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*Learning in higher education is characterized by persisting and/or growing inequality.* There are significant differences in critical thinking, complex reasoning, and writing skills across students from different family backgrounds and racial/ethnic groups:

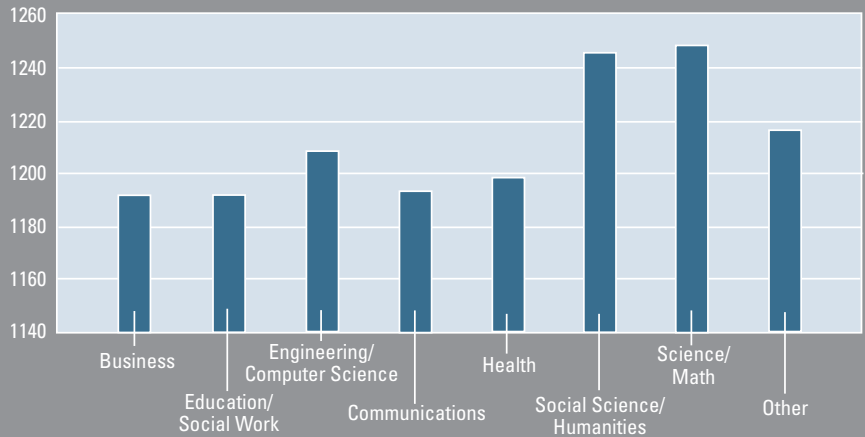
■ Students who come from families with different levels of parental education enter college with different levels of performance but learn at approximately equivalent rates while attending four-year colleges.

■ Black-white gaps in student test score performance, however, increase in magnitude over four years of college. African American students improve their CLA performance at lower levels than white students during four years of college.

Findings of persisting and/or growing inequality are consistent with research on K-12 education. Gaps in CLA performance across students from different family backgrounds in our study can be explained by the varying levels of academic preparation with which students enter higher education. Mirroring results from K-12 research, most but not all of the black-white gap can be explained by measured individual and institutional characteristics. Approximately two-thirds of the black-white gap in CLA growth in our study is accounted for by academic preparation, college experiences, and institutions attended.

*There is notable variation in academic experiences and outcomes across fields of study.* Variation by field of study may reflect a range of different factors, including differences in curriculum as well as differences in academic aptitude and orientations of students who

Figure 6. Predicted 2009 CLA Scores by College Major



Note: Predictions based on a model estimating 2009 CLA scores while controlling for 2005 CLA scores.

have chosen particular majors. While appreciating the diverse causes of differences by field of study, we observed several patterns in our data:

- Students majoring in traditional liberal-arts fields, including social science, humanities, natural science, and mathematics, demonstrated significantly higher gains in critical thinking, complex reasoning, and writing skills over time than students in other fields of study.

- Students majoring in business, education, social work, and communications had the lowest measurable gains.

- Greater gains in liberal-arts fields are at least in part related to faculty requiring higher levels of reading and writing and students spending more time studying.

Higher performance of students in liberal-arts fields may not be surprising given the focus of the CLA on general skills, including critical thinking, analytical reasoning, and writing. Reported findings do not preclude the possibility that students in other fields are developing subject-specific or occupationally-relevant skills. These patterns, however, do challenge the assumption that focusing on field-specific knowledge will inevitably lead to improvement in general skills.

Differences in student outcomes both across and within higher education institutions highlight the extent to which colleges seeking to improve student learning can gain as many insights by looking within for institutional strengths and weaknesses as looking outside to exemplary institutions. NSSE's work on *Project DEEP* (Documenting Effective Educational Practice) and the efforts

of the Association of American Colleges and Universities (AAC&U) to develop principles of effective practices, such as those outlined in *General Education & Liberal Learning: Principles of Effective Practice*, provide at least two recent examples of on-going efforts to improve undergraduate academic experiences and outcomes.

# POLICY RECOMMENDATIONS

actions a deep commitment to these goals and a willingness to take personal and institutional responsibility for their successful achievement.

Before identifying policies and practices that we believe will lead to improvement in student learning, we explicitly note here our reservations to one proposed remedy that has received much attention.

In our estimation:

■ **Externally imposed accountability systems would be counterproductive.**

Our findings are disturbing enough that many well-intentioned legislators might be easily tempted to call for the imposition of a federally mandated accountability system for higher education institutions, similar to those recently introduced in K-12 education. While such sentiments would be understandable given our findings on the state of undergraduate learning, we believe that such efforts at this time would be counterproductive. Our current ability to measure accurately diverse forms of students' general and subject-specific performance is still in the early stages of development. While we support the promotion of increased personal and institutional responsibility to address this issue, the imposition of federally mandated regulatory schemas would likely have unintended negative consequences that would far outweigh any demonstrated

▶ In recent years, discourse around higher education has increasingly focused on improving college access, retention, and completion. Our research, however, highlights the need for policymakers and practitioners to focus as much attention on improving student learning as has been demonstrated in recent years toward these other laudatory goals. There are no simple solutions to the

problem of limited learning on college campuses. Improving learning outcomes in undergraduate education will require the commitment and dedication of a diverse set of individuals and institutions. One cannot mandate learning through the imposition of increased regulation; rather, for change to occur, various entities and actors will have to demonstrate in their behaviors and



prepared upon matriculation into college demonstrate increased learning and better performance in higher education, there must be continued concerted efforts to improve academic preparation. Current endeavors to increase achievement in K-12 and to align postsecondary curricula with higher education deserve careful attention and need to be supplemented with efforts to help students develop mature values and behaviors conducive to learning.

#### *Higher Education Institutional Recommendations*

■ **Strong leadership in higher education to foster an institution-wide culture of learning.** Institutional leaders and administrators need to take responsibility for modifying existing internal institutional incentives and practices to develop—and articulate a commitment to embracing—organizational cultures that prioritize undergraduate learning and student assessment. College and university trustees, regents, and overseers must work to ensure that institutional leaders and administrators prioritize undergraduate learning as an organizational goal. Institutional leaders and administrators should be held accountable by these existing governance mechanisms, which should require internal reporting on measurable student learning outcomes, expenditures devoted

improvements. Efforts to mandate the use of specific measures for accountability purposes (as opposed to promoting their use for research and internal formative assessment tied to improving instruction) would likely be counterproductive at this time.

In the changing economic and global context facing contemporary college graduates, and our commitment to

the development of an educated citizenry capable of contributing constructively to a democratic society, we offer several recommendations as next steps for improving collegiate learning.

#### *K-12 System Improvement*

■ **Improved elementary- and secondary-school student preparation.** Given that students who are better

# POLICY RECOMMENDATIONS

## CONTINUED

to instructional purposes, and institutional activities devoted to improving instruction.

■ **Enhanced curriculum and instruction associated with academic rigor.** More rigorous, appropriately demanding course requirements and standards must be put in place to ensure the development of critical thinking, complex reasoning, and written

communication skills (i.e., increased academic assignments requiring greater student effort, adequate student reading and writing, and high expectations by faculty). Moreover, if active/collaborative learning approaches outside the classroom are adopted as instructional models, these models must be specifically structured and carefully assessed to ensure that adequate academic development is occurring.

Faculty must take collective and individual responsibility for ensuring that coursework offered at their institutions is both rigorous and demanding.

● *Faculty* should have high standards and expectations for their students and should be adequately trained and supported by their institutions to serve as effective instructors.

● *Students* must take responsibility for embracing the academic opportunities they have been afforded. Colleges and universities must promote organizational cultures that encourage and require students to demonstrate serious commitment to academic endeavors and to take responsibility for devoting sufficient time to their studies.

■ **Increased measurement of student learning.**

Colleges and universities should consistently collect diverse, comprehensive sources of evaluation and assessment data to improve instruction and student learning on an ongoing basis. Given the great variation in student performance within institutions in our study, all schools would benefit from developing internal organizational mechanisms to identify the strengths and weaknesses of their respective curricular programs in

order to engage in ongoing instructional improvement efforts that are informed by assessment data. Institutions can learn from and build on the efforts of colleges and universities currently engaging in assessment of learning for institutional improvement, such as those participating in the Voluntary System of Accountability or the New England Consortium on Assessment and Student Learning.

*System Level Actions*

■ **Reallocation of government resources to improve undergraduate learning.** While public investment in research is a worthy end, federal and state government grant programs tied to improvement of undergraduate learning and its assessment on both institutional and individual levels would encourage the development of policies and practices to enhance undergraduate educational outcomes.

■ **Enhanced research infrastructure for measuring and understanding student learning in higher education.**

In addition to the recommendations for practitioners and policymakers identified above, our research identifies the importance of embedding longitudinal measurement of collegiate learning outcomes in future federally organized national probability studies. Such measures would greatly enhance the available research infrastructure to allow future

social science researchers to better identify determinants of collegiate learning. Moreover, limited place randomized field trials of promising curricular and instructional models would generate increased knowledge of effective programmatic interventions to guide policy and practice.

# METHODOLOGICAL APPENDIX

## ► *Determinants of College Learning (DCL) Dataset*

Presented analyses are based on the Determinants of College Learning (DCL) dataset, which was developed in partnership with the Council for Aid to Education (CAE). The CAE initiated the Collegiate Learning Assessment (CLA) Longitudinal Project in Fall 2005, administering a short survey and the CLA instrument

to a sample of traditional-age freshmen at four-year institutions. The same students were contacted for the sophomore-year follow-up in Spring 2007 and senior-year follow-up in Spring 2009. Some institutions and students participated in all three waves of the study while others participated in only some of the waves. In total, more than 3,000 students at 29 four-year institutions

participated in the project. Most of the reported regression analyses are based on the first two years of data, including 2,322 students attending 24 institutions. The sample includes a range of institutions from all four regions of the country, of varying sizes, selectivity, and missions, from liberal arts colleges and large research institutions to a number of Historically Black Colleges and Universities (HBCUs) and Hispanic Serving Institutions (HSIs).

In addition to completing the CLA, in 2007 and 2009 students completed a brief survey covering two main areas: *college experiences*, including questions regarding academic experiences, extracurricular involvement, employment, faculty and peer climates, college financing, and college major; and *background information*, including questions regarding sociodemographic characteristics, high schools attended, academic preparation, and educational and occupational aspirations.

Logistic and resource constraints required reliance on participating institutions to implement appropriate random sampling and retention strategies. We thoroughly investigated the extent to which students in our sample were indeed representative of students from these institutions as well as U.S. higher education more broadly. On most

measures examined, students in the DCL dataset appeared reasonably representative of traditional-age undergraduates in four-year institutions and the colleges and universities they attended resembled four-year institutions nationwide. DCL students' racial/ethnic and family backgrounds, as well as their English-language background and high school grades, tracked well with national statistics (see Table 1). Moreover, four-year colleges and universities in the DCL sample have a similar proportion of white students and a similar level of academic preparation as do four-year institutions in general (see Table 2). Indeed, the 25th and 75th SAT percentiles of the entering student body at the DCL institutions and four-year institutions nationwide are virtually identical. However, as a result likely of the voluntary participation required in our study, our sample did have fewer men as well as a smaller number of students of lower scholastic ability as measured by standardized tests (e.g., students' combined scores at the 25th percentile of the SAT were higher in our sample than at DCL institutions or four-year institutions nation-wide). Consequently, we believe that any biases introduced into our analysis by the sampling procedures used in the study are likely to be in the direction of leading us to over-estimate students' *positive* educational experiences and institutional success.

**Table 1. Student characteristics and experiences in the DCL and BPS samples**

	DCL Sample <sup>a</sup> Mean	BPS Sample <sup>b</sup> Mean
<b>Background Characteristics</b>		
<i>Race/ethnicity</i>		
White	0.64	0.70
African-American	0.15	0.09
Hispanic	0.05	0.10
Asian	0.10	0.05
Other	0.05	0.06
<i>English not primary language</i>		
	0.13	0.10
<i>Parental education</i>		
High school or less	0.14	0.23
Some college	0.21	0.18
Bachelor's degree	0.29	0.29
Graduate/professional degree	0.36	0.30
<i>High school GPA</i>		
D or lower	0.00	0.00
C-/C	0.00	0.01
C/B-	0.03	0.05
B-/B	0.10	0.10
B/A-	0.38	0.35
A-/A	0.48	0.49
<b>College Experiences</b>		
<i>Employment</i>		
Not working	0.35	0.29
Average # of hours working (if employed)	12.48	20.50
<i>Studying with peers<sup>c</sup></i>		
Never	0.23	0.24
Sometimes	0.61	0.58
Often	0.16	0.18
<i>Meeting with faculty outside of class<sup>c</sup></i>		
Never	0.09	0.09
Sometimes	0.60	0.55
Often	0.32	0.36

a The DCL sample includes students who participated in the 2005 and 2007 waves. This is the sample on which most of the reported analyses are based.

b Beginning Postsecondary Students (BPS) Longitudinal Study, 2003-2004 cohort. The sample is restricted to students who entered four-year institutions and were 19 years of age or younger as of 12/31/2003. College experiences are based on the 2006 survey and thus typically reference students' junior year.

c These categories represent BPS coding. DCL questions were mapped as closely as possible to these categories (for hours studying with peers: 0 - never, 1-5 hours - sometimes, above 5 hours - often; for times met with faculty: 0 - never, 1-4 times - sometimes, more than 4 times - often).

**Table 2. Institutional characteristics of colleges and universities in the DCL sample compared to IPEDS reports**

	<b>Our Sample: DCL Schools<sup>a</sup> Mean</b>	<b>IPEDS: DCL Schools Only<sup>b</sup> Mean</b>	<b>IPEDS: All Four-Year Institutions<sup>b</sup> Mean</b>
<b>Institutional Demographics</b>			
Total Score 2005	0.37	0.46	0.45
Total Score 2007	0.59	0.61	0.59
Difference between 2007 and 2005 Total Score	0.19	0.14	0.13
<hr/>			
% Male	0.37	0.46	0.45
% White	0.59	0.61	0.59
% African-American	0.19	0.14	0.13
% Hispanic	0.05	0.08	0.13
% Asian	0.11	0.10	0.06
% Other <sup>c</sup>	0.05	0.07	0.09
<b>Institutional Selectivity</b>			
SAT, 25th percentile	1052.83	995.15	993.14
SAT, 75th percentile	1212.83	1219.02	1219.23
ACT, 25th percentile	22.05	20.86	20.33
ACT, 75th percentile	26.29	25.77	25.31

a The DCL sample includes students who participated in the 2005 and 2007 waves. This is the sample on which most of the reported analyses are based.

b Integrated Postsecondary Education Data System (IPEDS) data include first-time, degree-seeking undergraduates and are weighted by enrollment.

c For the IPEDS sample, this category includes American Indians, students of unknown backgrounds, and non-resident aliens. For the DCL sample, this category includes American Indians and any students who self-identified as "other" race/ethnicity.

*Collegiate Learning Assessment (CLA)*

Student learning was assessed using the performance task of the Collegiate Learning Assessment (CLA). The CLA aims to measure general skills-based competencies such as critical thinking, analytical reasoning, and written communication. Measures used to assess student learning consist of three sets of open-ended prompts that have been

carefully constructed in consultation with experts on student assessment and elaborately pre-tested and piloted in prior work. The three components include: performance task, make an argument, and break an argument. We focus on the performance task because that component of the CLA was administered most uniformly across institutions, had the largest completion rate, and is

the state-of-the-art component of the assessment instrument. The performance task allows students 90 minutes to respond to a writing prompt that represents a “real-world” scenario in which they need to use a range of background documents (from memos and newspaper articles to reports, journal articles, and graphic representations) to solve a task or a dilemma. The testing

materials, including the background documents, are accessed through a computer. For more information on the CLA, see [www.collegiatelearningassessment.org](http://www.collegiatelearningassessment.org).

The Collegiate Learning Assessment was developed for instructional assessment and improvement, not for accountability purposes. Variation in CLA scores within individuals and the recent validity study organized by the Fund for the Improvement

of Postsecondary Education (FIPSE) indicate that the CLA (as well as other currently available measures of learning in higher education) should not be used for high-stakes testing with consequences for individual students. Moreover, the CLA measures a select set of skills that represent a sub-set of skills taught in higher education. Although virtually all faculty agree that teaching critical thinking, analytical reasoning, and writing is at the core of undergraduate education, these skills do not capture the totality of student experiences or learning in specific subject areas and occupational fields.

#### *Analyses*

In addition to presenting descriptive results, we conducted multivariate regression analyses predicting 2007 CLA performance task scores, while controlling for the 2005 CLA

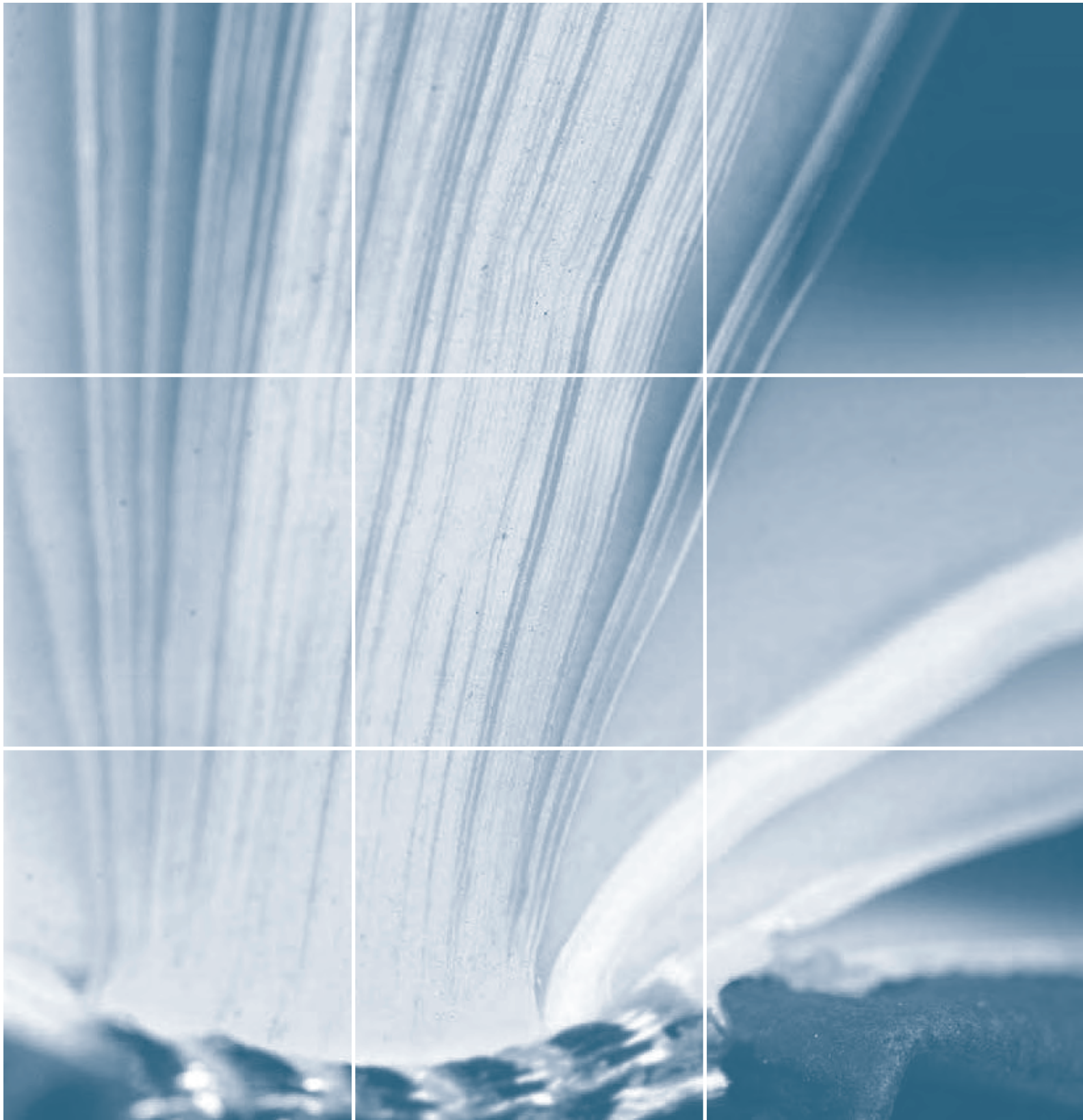
performance task scores. Moreover, for analyses of institutional selectivity, we use a three-level hierarchical linear model to estimate change in CLA scores over the full four years of college. It is worthwhile to note that our strategy differs from the value-added approach typically adopted by institutions using the CLA, which is also often based on cross-sectional data. Instead of estimating value-added models, we aim to understand the relationship

between specific students' characteristics and experiences and their growth on the CLA over time, and we use a longitudinal design to do so.

Findings regarding college activities summarized in this report are based on regression analyses that control for students' sociodemographic backgrounds (race/ethnicity, gender, parental education and occupation, English home language, number of siblings, and two-parent household), high school characteristics (region, urbanicity, and racial composition [i.e., 70 percent or more non-white]), academic preparation (number of Advanced Placement courses taken, high school GPA, and SAT/ACT performance), and institutions attended (using fixed effects). The three-level HLM models control for a similar set of background characteristics.

Figures for predicted test scores are based on models with the complete set of covariates. In these predictions, all continuous variables (2005 CLA scores, high school GPA, and SAT/ACT performance) are set at their means. This implies that we are predicting 2007 CLA scores for an average student on those measures, i.e., a student with a mean 2005 CLA score, as well as mean high school GPA and SAT/ACT performance. For categorical variables, our

predictions are based on the reference category. For more information on statistical analyses, as well as robustness checks regarding ceiling and motivation effects, see the Methodological Appendix of *Academically Adrift: Limited Learning on College Campuses* (University of Chicago Press, 2011).



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