QUALITY IN THE UNDERGRADUATE EXPERIENCE
What is it? How Should it be measured? Who decides?

A committee of the National Academies of Sciences, Engineering, and Medicine's Board on Higher Education and Workforce convened a workshop on December 14–15, 2015 to engage more than 100 researchers, educators, industry leaders, and others on the topic of "Quality in the Undergraduate Experience" (see the workshop description, agenda, and list of participants *here*). The goals of this workshop were as follows:

1. To engage scholars and researchers--as well as leaders from higher education, business, civic organizations and government--in focused discussions about quality in the undergraduate educational experience.

2. To begin to understand how to define and measure those factors that contribute to a quality educational experience that are difficult to quantify but that represent the core elements of a successful undergraduate experience for most students.

3. To identify key questions and research themes for possible further study on the definition, measurement and determination of a quality education.

4. To stimulate further research and dialogue among education leaders and policy makers on the topic of quality, which could in turn influence both institutional policy and practice and public policies at the federal and state levels.

This Meeting in Brief provides a summary of the presentations and discussions at the workshop, and lays the groundwork for ongoing conversations about this important topic.

Much of the focus on "quality" in undergraduate education in recent years has been on a combination of input factors and outcome measures: reputation, entrance examination scores and admissions selectivity, financial resources, graduation rates, graduates' employment and earnings, and other attributes that can easily be measured but that say little about student learning. The challenge, however, is to better understand the concept of quality in terms of student learning. There is wide agreement that an undergraduate experience should enable students to acquire broad knowledge in a variety of disciplines and expertise in at least one discipline, and that it should also inculcate a range of diffuse skills and habits of mind that prepare students for career success, engaged citizenship, intercultural competence, social responsibility, and continued intellectual growth. Although these outcomes are much more difficult to measure, they are at least as important as factors such as graduation rates, the acquisition of relevant knowledge, skills, and abilities (KSAs), the ability to apply those KSAs in real-world settings, and starting salaries.

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Panel I: What Is Quality? How Should It Be Measured and Who Should Decide?

In introducing the first panel discussion, **Paul Courant**, professor of public policy, professor of economics, and professor of information at the University of Michigan, observed that quality in general is not something that can be easily defined and measured, but once one has specified the metrics of quality, such measurements are both manageable and meaningful.

Determining exactly what produces differences in quality is also something that still needs study. "Quality has to be measured in the context of what we are trying to accomplish," Courant said. "Who are the students, what are their purposes for attending college, and what kinds of institutions are we talking about?"

Ellen Hazelkorn, policy advisor to the Higher Education Authority in Ireland, stated that whether we like it or not, rankings matter; the increased emphasis on rankings is now an international phenomenon. One consequence of the highly visible rankings systems is that there is increased focus on the quality of teaching. Some of this is a reaction to an overemphasis on research, but it's also a reaction to peer-based accreditation and increased efforts to improve the evaluation of teaching. Another issue, according to **Alexander McCormick**, associate professor of educational leadership and policy studies at Indiana University, is determining at what level quality should be measured. Perhaps the best locus for defining quality is at the department or program level, rather than at the institutional level.

Marco Molinaro, assistant vice provost at the University of California, Davis, reminded the panel that we are in the service of educating students: "I think about the conditions that allow high quality to be probable, and from this perspective, quality only seems to be possible when those engaged in instruction are participating in a process of continuous improvement." He agreed that we have to focus on quality not just at the course level but also at the program and institutional levels, and this requires "working with clearly enumerated goals, approaches, and tools to measure the outcomes related to those goals."

Paul LeBlanc, president of Southern New Hampshire University, asked whether institutions are defining quality in terms of their mission, context, and the types of students they serve. Are they using any, or the right types of, assessments to back up their claims about their student learning? According to LeBlanc, policy makers in higher education need to address the possibility that college degrees may no longer represent the acquisition of core skills as they did 30 years ago. He argued that many students graduate from postsecondary institutions and are not prepared to meet employers' skill demands, too often lacking the knowledge and abilities needed to be successful in today's workforce.

According to **Roy Swift**, executive director of Workcred, "Employers say that higher education needs to be more customer focused," but the question remains, "Who is the customer?" Employers are telling us that often college and university students are gaining knowledge, but are not necessarily developing skills they need to succeed in the workforce. As such, are employers key customers that need to be more fully engaged in this national conversation?

Jordan Matsudaira, assistant professor at Cornell University in the Department of Policy Analysis and Management, and author of a commissioned paper for this workshop, noted that too often we focus on the conditions we think are associated with high-quality outcomes, "but we don't go to the next step to verify that those claims are actually true, in the sense that they are actually producing students who have a jobs in the field that they're training for, or going to become good global citizens." Any focus on quality has to include this verification and measurement component. For too long, he added, "We've just thought of college completion as a good outcome per se, and getting people into college as good per se, and thought about differences in the value of colleges primarily in terms of their cost. I think that's led to a really harmful neglect of the benefit side of that equation."

In the question and answer session, **Julie Peller**, senior program officer for the Lumina Foundation, asked whether quality has to be the same for every person, or whether it can be different for different students or learners. Panelists agreed that quality may vary based on the type of student or institution. Josh Wyner, vice president and executive director of the College Excellence Program at the Aspen Institute, asked whether there should be an attempt to come up with a single integrated definition of quality, relying on post-graduation success data, to inform what we mean by a quality undergraduate experience (e.g., learning, completion, and labor market outcomes).

Keynote Address: A 21st Century Framework for Quality College Learning Already Exists

Carol Geary Schneider, president, Association of American Colleges and Universities (AAC&U), suggested that a 21st century framework for quality college learning already exists, and a key challenge is addressing the mounting evidence that there is "a huge disconnect between our aspirations to provide a quality education for students and what many of them are actually getting out of their education." She shared data from a recent survey conducted by AAC&U's Liberal Education and America's Promise (LEAP) program on the top learning outcomes for students, as well as employer needs/desires regarding student learning (See Figures 1 and 2).

Employer Priorities for Most Important College Learning Outcomes

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Knowledge of Human Cultures and the Physical and Natural World

• Knowledge and understanding of democratic institutions and values	87% ■
• Broad knowledge in the liberal arts and sciences	78% ■
• Intercultural skills and understanding of societies and cultures outside the US	78% ■

Intellectual and Practical Skills

• Oral communication	85% ❖
• Teamwork skills in diverse groups	83% ❖
• Written communication	82% ❖
• Critical thinking and analytic reasoning	81% ❖
• Complex problem solving	70% ❖
• Information literacy	68% ❖
• Innovation and creativity	65% ❖
• Technological skills	60% ❖
• Quantitative reasoning	56% ❖

Personal and Social Responsibility

• Problem solving in diverse settings	96% ■
• Civic knowledge, skills, and judgment essential for contributing to the community and to our democratic society	86% ■
• Ethical judgment and decision making	81% ❖

Integrative and Applied Learning

• Applied knowledge in real-world settings	80% ❖

Note: These data are taken from *Falling Short? College Learning and Career Success,* a 2015 report on findings from a survey of employers and a survey of college students conducted for AAC&U by Hart Research Associates. For a full report on this survey and earlier reports on employer views, see www.aacu.org/leap.

■ indicates percentage of employers who "strongly agree" or "somewhat agree" that, "regardless of a student's chosen field of study," every student should attain this area of knowledge or skill.

❖ indicates percentage of employers who rate this outcome as very important (8-10 on a 10 point scale) for recent graduates entering the job market.

LEAP

Figure 1 Employer Priorities for Most Important College Learning Outcomes
Source: Adapted from *Falling Short? College Learning and Career Success*, copyright 2015 by the Association of American Colleges and Universities. Carol Geary Schneider presentation, December 14, 2015.

Top Learning Outcomes for All College Students

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

★ Knowledge of Human Cultures and the Physical and Natural World

	2009	2015
• Humanities	92%	92%
• Sciences	91%	92%
• Social Sciences	90%	89%
• Global/World Cultures	87%	89%
• Mathematics	87%	92%
• Diversity in the United States	73%	73%

★ Intellectual and Practical Skills

• Writing Skills	99%	99%
• Critical Thinking	95%	98%
• Quantitative Reasoning	91%	94%
• Oral Communication	88%	82%
• Intercultural Skills	79%*	79%*
• Information Literacy	76%	76%
• Research Skills	65%	75%

★ Personal and Social Responsibility

• Intercultural Skills	79%*	79%*
• Ethical Reasoning	75%	75%
• Civic Engagement	68%	63%

★ Integrative Learning

• Application of Learning	66%	65%
• Integration of Learning	63%	68%

Note: In 2015, 85% of AAC&U member institutions surveyed reported that they had a common set of learning outcomes for all students. This percentage was up from 78% who reported this in the earlier 2009 study. Percentages cited above include those outcomes for which 2/3 or more of those *with campus-wide goals* report that this outcome is *one* of the learning goals they have for *all students*.

The four categories of learning outcomes correspond to a set of "Essential Learning Outcomes" developed as part of AAC&U's LEAP initiative. See www.aacu.org/leap. For 2009 findings, see *Learning and Assessment: Trends in Undergraduate Education—A Survey Among Members of the Association of American Colleges and Universities* (AAC&U and Hart Research Associates, 2009). For 2015 findings, see *National Trends in General Education Design, Learning Outcomes, and Teaching Approaches* (AAC&U and Hart Research Associates, forthcoming January 2016). AAC&U's 1350 institutional members represent the entire spectrum of regionally accredited postsecondary institutions. Member institutions are half public, half private, and include two-year and four-year institutions, liberal arts colleges, comprehensive institutions, and research universities, both public and private.

 * The starred items are shown in two learning outcome categories because they apply to both.

LEAP

Figure 2 Top Learning Outcomes for All College Students
Source: Adapted from *Falling Short? College Learning and Career Success*, copyright 2015 by the Association of American Colleges and Universities. Carol Geary Schneider, presentation, December 14, 2015.

Schneider also discussed two current models for defining quality student learning: the Degree Qualifications Profile (DQP) and the Valid Assessment of Learning in Undergraduate Education (VALUE). The DQP, which has been used by more than 400 colleges and universities, provides a baseline set of reference points for what students should know and be able to do for the award of associate's, bachelor's and master's degrees, regardless of their field of study. The DQP can be found at http://degreeprofile.org/. VALUE is a campus-based assessment initiative sponsored by AAC&U; its rubrics or scoring guides provide tools to assess students' own authentic work, produced across their learning progressions to determine how well students meet the learning outcomes that both employers and faculty consider essential. More information on VALUE rubrics can be found at https://www.aacu.org/value. Schneider challenged workshop participants to recognize the need for a new design of quality; not just better metrics, but a new way of thinking about what students are in college for and about ways they're using the technological revolution to advance inquiry learning.

Panel II: How Do "Consumers" of Higher Education See Quality? Perspectives from Students, the Federal Government, Employers, and Foundations

Paul LeBlanc, moderator for the second panel, opened the session with a discussion of student preparation for the workforce. According to LeBlanc, only 11 percent of business leaders and 14 percent of the American public believe that colleges are adequately preparing students for today's workforce, compared to 96 percent of chief academic officers. Emily Slack, majority staff person for the Education and the Workforce Committee in the U.S. House of Representatives, argued that institutions of higher education, employers, and state and federal governments must share the responsibility for reducing this skills gap.

Andy MacCracken, executive director of the National Campus Leadership Council, agreed that the challenge facing many employers is that today's graduates are incredibly intelligent but do not know how to apply their knowledge in different settings. It is important to create a higher education structure that treats experiences outside of the classroom as a key component of the learning process. Several other panelists acknowledged the importance of hands-on or experiential learning in preparing students for the workforce.

LeBlanc then asked panelists whether affordability is linked to quality. MacCracken responded affirmatively, saying the two are tied together through the idea of value. Students make substantial financial investments in their education and expect to earn enough to cover this debt. Yet the focus of many studies and reports, said MacCracken, is the "divide between what is valued in traditional academia, in the college environment, and what's valued outside of the classroom."

According to **Aprille Ericsson**, an aerospace engineer at NASA Goddard Space Flight Center and program manager at NASA's Innovative Technology Partnerships Office, affordability is key when evaluating the quality of a student's undergraduate experience. She shared anecdotal evidence about underrepresented students and the impact of funding on their grade point averages (GPAs). Many students who attend historically black colleges and universities matriculate with a lower income base and have to work part- time, which often causes their GPAs to suffer. Many times, the result is that these students cannot get the higher-paying jobs at places such as NASA, she said.

Regarding the issue of data-driven analysis in the education sector, LeBlanc acknowledged that better access to and better use of data can serve as a basis for good policy making or would help improve quality. The problem lies in identifying and understanding the data that exist. **Jennifer Engle,** senior program officer at the Bill and Melinda Gates Foundation, agreed with the need for more data and better data analysis and stressed the importance of facilitating data use by a number of stakeholders—including institutions themselves. Some institutions, for example, are using technology-enabled advising systems to collect data that will help them understand why some students are not making sufficient progress toward their degrees.

Engle pointed out that there are many "disconnected data systems that were all created for their own purpose." Ideally, the data infrastructure would allow various data systems to talk to each other, would improve integration of state and federal systems, and would include private systems like a national student clearing house. She encouraged stakeholders to look at the data issue from the student level, classroom level, and departmental level.

The discussion turned to the role of accreditation in quality assurance. **James Kvaal**, deputy director of the Domestic Policy Council at the White House, stated that accrediting agencies are responsible for academic quality, states are responsible for consumer protection, and the federal government is responsible for program compliance and institutional integrity. LeBlanc agreed that quality assurance is not the role assigned to the federal government, yet accreditation plays a critical role in ensuring quality. Slack also agreed, stating that it is not the role of the U.S. Department of Education to evaluate quality. She noted that traditionally, accreditors have been driven by inputs, focusing on factors such as faculty, credentials, and facilities, but recently they have been placing more emphasis on outputs and outcomes. Slack suggested that accreditors consider how institutions are doing in terms of their diverse missions, noting that

the U.S. House of Representatives, U.S. Senate, and White House are encouraging accreditors and institutions to look at student learning outcomes.

LeBlanc closed the second panel by asking whether a core set of commonly agreed-upon criteria for assessing quality—that also respects the diversity of institutional mission and type—should be developed. MacCracken responded by commenting on the importance of critical thinking, communication, and the ability to apply research/knowledge in different settings, which are skills that are transferable and applicable to different occupations. Kvaal said it would be difficult to assign a simple set of metrics to the diverse world of higher education since institutions have different missions according to the population they serve.

Panel III: Perspectives on Quality from a 4-Year University, 2-Year College, Online Institution, and Web Development Immersive School

Alexander McCormick moderated the final panel, composed of institutional leaders, and posed the following questions: What internal incentive and reward structures are needed to ensure that institutions focus on the right indicators of quality? How do you get buy-in from faculty so there will be increased commitment to providing a quality education? Whose job is it to ensure that students develop strong problem-solving and critical thinking skills? McCormick said that while higher education has recently moved in a direction requiring faculty to have greater specialization within their field of study, we have heard a lot about the importance of developing diffuse and general skills, capacities, and proficiencies.

Sally Johnstone, vice president for academic advancement at Western Governors University (WGU), spoke about the institution's broad goals, including making higher education much more accessible. To ensure that WGU's learning outcomes are valid, the institution uses external faculty and employers to determine what competencies have to be mastered.

The university regularly measures the learning experience of students and makes any necessary adjustments to curricula within 6 months. She cited an example in which the university determined that students were most successful mastering the content of a course using a certain pathway, and then used this observation and information to offer faculty relevant feedback on the redesign of course learning materials. From the audience, Cliff Adelman, said that WGU was unique because it is "organized around a very clear-cut mission in purposeful, intentional ways, and gathers information internally to improve that process."

Scott Ralls, president of Northern Virginia Community College, described his institution as a "pathway college" instead of a "destination college," because students enroll with the goal of getting a job or attending a 4-year university. As president of the institution, he has to be particularly attuned to some external definitions of quality—including those at the institutions to which his students transfer. School leaders and administrators must be proactive in creating constant feedback loops to stay abreast of employer needs and university requirements.

At Eastern Connecticut State University, where **Elsa Núñez** is president, students apply classroom learning through community-based projects, internships for credit or co-op, or paid work supervised by faculty, among other ways. The incentive for faculty is release time, and though that is costly, the result has been positive. Núñez also described a multistate collaborative pilot project that the institution conducted, which involved faculty creating a rubric to measure student learning—both intellectual skills and integrated applied learning. The rubric, evaluated by out-of-state faculty, has allowed her to seek investments from her board. She believes Eastern's project was the first in the nation to use a nationally recognized rubric and an external review process to assess the students' products. In conclusion, Núñez said, "I always look at how my minority students are doing, my students of color. We cannot look at quality without looking at inclusive excellence. Quality is for everyone, and we must be—as leaders, as faculty members, as administrators—very, very careful when we have this discussion about quality that we're not talking about quality for only a certain segment of the population, but that we can ensure quality for all students."

LeBlanc urged participants to think about the way consumption of education is changing. While the majority of college students today think in terms of the 4-year residential model, learning is increasingly being consumed in smaller units, so there is a lot of conversation about nanodegrees and microcredentials, such as those offered by Udacity. He suggested discussing quality at the programmatic level due to the variability between programs.

During the question and answer session, Wyner argued for an integrated set of quality measures for which everyone takes ownership; it is important that an institution own student success before they arrive and after they leave so they can determine what works and make changes accordingly. Wyner described an emerging knowledge base called the "collective impact model," which requires common goals between institutional types and common measures against which to assess. Moreover, Wyner contended, employers and institutions must work together.

A Global Perspective on Quality

Nigel Croft, chairman of the International Standards Organization's (ISO) Committee for Quality Systems, provided the ISO's definition of quality: "the degree to which a set of inherent characteristics of an object fulfills requirements." Croft suggested, however, that the meaning of quality for a student may not intersect with that of employers. Knowing this, quality can be defined as the extent to which characteristics meet the needs and expectations of the various interested parties. He elaborated on the growing intersection between the definitions of quality in the global business and industry sectors and the definitions of quality sought by higher education, and suggested that colleges and universities could learn a great deal by understanding how businesses measure quality and drive changes based on those measurements.

Group Discussion

Workshop participants were divided into small groups to discuss issues raised in the workshop. They explored a wide range of topics, some of which are included here. These represent a sample of topics mentioned by individual participants; they do not represent any views of the workshop participants as a whole, the planning committee, or the Academies. Some of the topics mentioned were: 1) The importance of conversations with multiple stakeholders on defining and measuring quality, such as students, institutions, governments, employers, accreditors, and professional societies; 2) Variations in the definition of quality for various groups, such as within the many "credentialing" systems, and why certain quality measures are valued by each group; 3) Understanding of the student as "customer" or "investor" and how his/her investment in or definition of quality might change over time; 4) How quality fits into students' choices about which institutions to attend and governmental choices about the allocation of resources; 5) Challenges in data accessibility, data quality, and data use, especially for smaller institutions with limited resources; and 6) The place of accreditation standards in the discussion of quality.

Each of the breakout groups also discussed possible topics for future exploration, research, and action, including, for example: 1) Better definition and measurement of the quality of student learning at postsecondary institutions of all types, including both degree granting institutions and the growing number of credentialing institutions;   2) Adapting measurement tools such as the "College Scorecard" to different types of institutions; 3) Research on the European model of diploma supplements and possible use in the U.S.; 4) Increased focus in accreditation on measurable student learning outputs; 5) Development of consumer-oriented quality frameworks, as competency-based models of education become more prevalent; 6) Ways in which business and industry define and measure quality and possible adaptation of industry models in higher education; and 7) New and emerging models for providing postsecondary education, including "traditional" 4-year universities, 2-year community and technical colleges, online institutions, "boot camps," and other delivery systems.

Concluding Remarks

Committee Chair Courant concluded the workshop by offering some reflections on issues that arose during the 2-day event. "While I do not believe that there exists a set of quality indicators that are applicable to the broad set of undergraduate experiences and institutions," he said, "there is a set of attributes that are essential to high quality that do apply to (almost) every undergraduate experience." He suggested that any discussions on this topic consider the issue of quality along these dimensions:

1. A higher education institution (and the departments/programs within it) should be clear about its purposes and should provide a clear description of its activities, as well as a publicly available evaluation of the extent to which it is achieving its goals.

2. There should be a policy and set of supporting activities at each institution (and, again, at the department or program level) aimed at using data for continuous improvement.

3. The institution should provide information and guidance that allows students (and parents) to make good choices, both at the institutional level (by providing public data on what the institution is doing and how well), and at the programmatic level (when students are selecting courses and curricula during enrollment). In the U.S. system, where we give students a lot of choice, we should also give them a lot of usable information and advice to help make those choices.

4. Diversity and inclusion are essential both for students who are disadvantaged in seeking higher education and for students who need to develop habits and skills of teamwork and cultural competence, although effective programs in this area are likely to be complicated. One example raised during the discussions was that of unpaid internships: many students cannot afford to be without pay, so serious attention to diversity and inclusion would require "scholarships" to support internships. ■

PLANNING COMMITTEE: **Paul Courant**, (Chair), Arthur F. Thurnau Professor, Harold T. Shapiro Collegiate Professor of Public Policy, Professor of Economics, Professor of Information, and Faculty Associate in the Institute for Social Research at the University of Michigan; **Ellen Hazelkorn**, Policy Advisor to the Higher Education Authority (Ireland), Emeritus Professor and Director, Higher Education Policy Research Unit (HEPRU), Dublin Institute of Technology; **Paul LeBlanc**, President, Southern New Hampshire University; **Alexander C. McCormick**, Director of the National Survey of Student Engagement (NSSE) and Associate Professor of Educational Leadership and Policy Studies, Indiana University School of Education; **Marco Molinaro**, Assistance Vice Provost for Educational Effectiveness, University of California at Davis; **Indira Nair**, Former Vice Provost of Education and Professor, Engineering and Public Policy, Carnegie Mellon University; and **Roy Swift**, Executive Director, Workcred an affiliate of the American National Standards Institute. Academies Staff: **Thomas Rudin**, Director, Board on Higher Education and Workforce (BHEW); **Aqila Coulthurst**, Associate Program Officer (STEP); **Irene Ngun**, Research Associate (BHEW); and **Adriana Courembis**, Financial Associate (BHEW).

DISCLAIMER: This meeting summary has been prepared by **Tom Rudin** as a factual summary of what occurred at the meeting. The committee's role was limited to planning the meeting. The statements made are those of the author or individual meeting participants and do not necessarily represent the views of all meeting participants, the planning committee, the Board on Higher Education and Workforce, or the Academies.

The summary was reviewed in draft form by **Norman Bradburn**, University of Chicago and **Linda Slakey**, Association of American Colleges and Universities, to ensure that it meets institutional standards for quality and objectivity. The review comments and draft manuscript remain confidential to protect the integrity of the process.

This workshop was supported by a grant from the Lumina Foundation.