

Foundational Skills Integration in Higher Education Instruction and Assessment

Challenge:

Higher education is feeling pressure from parents, accreditors, and state/federal governments to show the value of a degree and ensure that students who leave college are employable. In the last few decades, new graduates have entered the workforce with more domain knowledge in their chosen career path than ever before. **While increased subject specific knowledge makes students highly employable on paper, employers are finding that these graduates lack universal, foundational skills that lead to success in the workplace.**¹ Not only do foundational skills provide a solid base for graduates to excel and advance in their careers, it also provides flexibility for students who graduate into a tough job market with limited opportunities in their chosen career path. People already in the workforce who want to make a shift into a different career path can also benefit from strong foundational skills that translate to any career.

What skills should our students have and how are these skills defined?

Proving that students have these skills is a difficult task. Employers may define skills like critical thinking, communication, problem solving, etc. broadly, but in the world of higher ed, foundational skills are defined more granularly, with specific learning outcomes for each skill.

Higher education as a whole has yet to agree on how to define foundational skills; finding agreement on a universal standard is difficult, with a different definition for every educational system, standards body, or assessment provider.

Foundational skills can also take on different meanings within the contexts of different disciplines: e.g. critical thinking in the sciences, versus critical thinking in the humanities.

Institutions of higher education developing strategies to assess foundational skills can look to the work of others where there is more consensus on learning outcomes, like the AAC&U VALUE Rubrics. However many also choose to develop their own at the state or local level to reflect their unique degree offerings and student populations. To achieve a credible system of accountability, a common framework is key, but can be challenging with larger groups.

Within a single institution, establishing a common framework for measuring foundational skills is critical if Assessment Coordinators or the Office of Institutional Effectiveness ever hope to collect consistent, valid data on student performance from different degree programs, general education, undergraduate courses, and capstone courses.

¹ Hart Research Associates, "It Takes More Than a Major: Employer Priorities for College Learning and Student Success," Association of American Colleges & Universities, April 10, 2013, http://www.aacu.org/sites/default/files/files/LEAP/2013_EmployerSurvey.pdf

Where should we assess students?

Ensuring these foundational skills are present in the curriculum and taught in the classroom is another challenge. Research by Behar-Horenstein & Niu (2008)² and Abrami, et al. (2011)³ has shown that **explicit teaching of skills like critical thinking is the most effective way to ensure student success**. Some institutions take a head-on approach by offering courses on “critical thinking” or similar skills in the general education curriculum or in certain programs. While this may be an attractive option to “check the box” on foundational skills, it is not the most effective. Most experts agree that foundational skills are best taught by deep integration into the curriculum rather than stand-alone courses. Deep integration in the curriculum can be tricky to accomplish, requiring that all faculty approach the teaching of foundational skills with intention. Implicit instruction, assuming students will develop skills inherently through coursework, is not nearly as effective an approach.

Institutions of higher education have a ways to go in getting faculty on board with explicit teaching of skills like critical thinking. Another study by Eales-Reynolds, L-J, and Clarke (2016)⁴ shows that **only ~30% of faculty explicitly teach critical thinking, while another ~35% implicitly teach it, and yet another ~30% either do not teach it or aren't sure**. Institutions must ensure foundational skills are explicitly present in syllabi and course

learning outcomes, rather than simply implied, or missing altogether.

Curriculum mapping exercises give institutions insight into where foundational skills are present in courses. Tools like student learning outcome matrices are useful for this planning, to help visualize where skills appear in programs, courses, and sections, and what level of mastery is expected from the student at each level. Achieving curricular coherence through this mapping allows an institution to not only backwards design their curriculum by creating pathways that cover foundational skills in multiple courses, but also backwards design an assessment strategy that tests students in diverse ways across general education into programs and majors, all under the same common framework.

When should we assess our students?

The frequency with which foundational skills are taught is also vitally important. Research shows that these skills should be taught over and over again in the context of new material and disciplines for students to truly develop competency in those areas. Similar to writing and other fields, many in education have adopted the Rule of Three: accept that students require exposure to concepts and material at least three times before they will be able to internalize and apply it. **An institution should aim to measure the same skill at different times throughout a student's course of study.**

² Linda S. Behar-Horenstein and Lian Niu. “Teaching Critical Thinking Skills In Higher Education: A Review Of The Literature.” *Journal of College Teaching and Learning* 8, no. 2 · (2011): 25–42. doi: 10.19030/tlc.v8i2.3554

³ Philip C. Abrami, Robert M. Bernard, Evgueni Borokhovski, Anne Wade, Michael A. Surkes, Rana Tamin, and Dai Zhang, “Instructional Interventions Affecting Critical Thinking Skills and Dispositions: A Stage 1 Meta-Analysis,” *Review of Educational Research* 78, no. 4 (2008): 1102–1134, <http://www.physics.emory.edu/faculty/weeks/journal/abrami-rer08.pdf>

⁴ Lesley-Jane Eales-Reynolds and Colin Clarke (Eds), “Critical Thinking in Higher Education; Teaching, Assessment, and Current Perspectives” (forthcoming)

“Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time”.⁵

Student learning outcome matrices and campus-wide rubrics support curricular coherence, ensuring that instruction and assessment of foundational skills are properly scaffolded as building blocks through the curriculum. These tools and their use should grow in complexity as students advance in their skills within each course, but also over the long-term throughout the student lifecycle.

How should we assess our students?

Regardless of the type of assessment used, **best practices of instructional design encourage faculty to use backwards design to align assessments with learning outcomes.** Backwards design starts with understanding the learning outcomes associated with each foundational skill. Faculty then must determine the appropriate level of mastery for each learning outcome. Pairing learning outcomes and establishing mastery levels are most often seen in rubrics, which can be used campus-wide, like the AAC&U VALUE Rubrics, or in the classroom with grading rubrics specifically designed for the assessment they are used to score. Once a rubric has been established, faculty can more easily design assessments that accurately measure a learning outcome.

There are many options for assessing students' foundational skills. A standardized summative assessment is one approach that offers the benefits of easy data collection and reporting. Recruiting students for a standardized assessment

can be difficult if the test is given outside the curriculum, and many institutions worry that students will not take such assessments seriously if the results aren't meaningful to them personally or affect their course grade. A one-size-fits-all assessment is also problematic for institutions with non-traditional student populations and demographics.

Authentic assessment is quickly growing as a popular alternative to standardized tests, and is often accomplished by inspecting student artifacts. This approach allows faculty to design their own assessments that align their discipline with foundational skills, enhancing motivation to participate in a culture of assessment. Seldomly disrupting the normal flow of the course, these assignments offer flexibility for students with special needs to approach the assessment differently, while still meeting basic requirements. The challenge with this approach is making certain that each assignment aligns with the learning outcomes for each foundational skill, to ensure comparable data across the institution. Since student artifacts must also be graded by hand,

it can be difficult to validate the assessment instrument without the benefit of “big-data” statistical analysis that comes from machine

graded assessments. Machine grading of student writing exists, but it is not yet widespread or reliable. The challenges mentioned here also extend to Assessment Coordinators, who must verify learning outcome to assessment instrument alignment across many courses, all while collecting and synthesizing volumes of student data.

⁵ Gloria Auer, “MSC: A Multi-State Collaborative to Advance Learning Outcomes Assessment,” State Higher Education Executive Officers Association, <http://www.sheeo.org/projects/msc-multi-state-collaborative-advance-learning-outcomes-assessment#Principles>

How can we manage assessment data?

Using tools such as learning outcome matrices and campus-wide rubrics can help plan and execute the assessment of foundational skills, but managing the output of those efforts (student assessment data) is still a challenge for many institutions. While many have embraced the authentic assessment model using student artifacts as a superior method of assessment, it is less scalable than other summative options. Paper-based systems leave much to be desired

as they require time and effort to coordinate between assessment and faculty, and may exclude non-full-time instructors from participating. There are tools that can automate these systems. **New technologies utilize the power of metadata to granularly label and categorize assessment components, thus streamlining the workflow of grading student artifacts.** They also simplify data analysis by allowing multiple differing views of student data within a single assessment instrument, as opposed to tracking reports on learning outcomes across many assessments.

Conclusions:

- For colleges and universities to ensure that students will leave their institutions with foundational skills, they must explicitly teach and scaffold these skills throughout the curriculum.
- Assessments must be validated against the learning outcomes they measure and represent the appropriate level of difficulty based on their placement in the scaffolded structure.
- Data must be easy to gather and synthesized at multiple levels, from individual to institution-wide, and provide longitudinal insight into progress.
- Executing a common framework for foundational skills pays dividends when insights gained from assessment data help institutions meet the expectations of external stakeholders, while also improving the quality of instruction, and therefore the prospects, of its students.