



Integrative Learning:

Coherence out of Chaos

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Carleton prides itself on its lean administration, dedicated faculty, strong programs, and impressive students. Perhaps because of these strengths, Carleton is more likely to trust its administration, faculty, and students to fulfill institutional objectives and less likely to micro-manage. The result is a creative, dynamic, well-integrated institution where everyone works very hard. Maybe too hard.

Participation in the Integrative Learning Project (ILP), cosponsored by the Carnegie Foundation for the Advancement of Teaching and the Association of American Colleges and Universities (AAC&U), has given Carleton the chance to examine how it delivers learning. Doing so has begun to show us that our casual coordination of teaching and learning, while in many ways highly integrated and successful, risks exhausting the people upon whose efforts the institution most relies. Assessment of the status quo requires concomitant assessment of the mechanisms that make the status quo possible. In our case, we are learning that our history of semi-controlled chaos often bears high costs, notably the potential for burnout among all constituent groups. As such, participation in the Integrated Learning Project challenges us to tease out the mechanisms that actually integrate Carleton's institutional values for all stakeholders.

Important Early Insights

Carleton's ILP had its origins in two observations that at first seem in opposition to one another. The first was that too often faculty were trying to deliver a complete liberal arts education to every student in every class. However—and this is the second observation—students did not necessarily connect their work in individual courses to overarching educational goals. Each course was a thing of beauty, set apart from the whole of a student's college education.

To address the first observation, we developed a skills matrix. Along one axis of this matrix are the skills and knowledge we want students to develop. Along the second axis are our classes. By identifying the correspondence between skills and classes, we can effectively identify where and how often students have opportunities to work on key skills. Information gained during the first stage of our ILP confirms that everyone is spread thin, but it also suggests that course design can be conceptualized strategically. If everyone in a department typically assigns short papers, we can depend on students having done short papers in introductory and intermediate classes and eliminate them from our upper-level classes. If upper-level classes require research, we can use a junior-level methods class to ramp up experiences that prepare students for independent research.

The geology department pioneered such uses of the skills matrix. For geology majors, the skills matrix has contributed to student satisfaction with the major, especially in terms of preparedness for the senior project. The geology department's experience demonstrates how matrix design in departments can be an important first step toward integrated learning.

"More May Be More, and Less May Be Nothing"

The above quote comes from Nathan Grawe, an assistant professor of economics at Carleton, and refers to the economics department's decision to collectively integrate their participation in a departmental review along with a variety of grant-funded, skills-based initiatives rather than separately discussing each skill. By framing a common conversation about multiple skills (such as writing, information literacy, and quantitative literacy) in the context of a broad curricular conversation, and by developing a matrix similar to the one used by the geology department, the economics department was able to systematically discuss trade-offs and relative value. Faculty perceive the attention their courses get from students to be highly constrained, which makes every moment of classroom and homework time extremely valuable. Curricular initiatives that feel like marginal add-ons are unlikely to rise to a level of importance that justifies attention to them in place of existing content. From the economics department's per-

spective, there has been substantial synergy between a holistic approach to a skills-based conversation and a broad departmental review of curriculum.

The same message came from faculty in the history department, who drew on the important distinction between invention and innovation. As Professor of History Kirk Jeffrey said, "Lots of invented things are never innovated"—a distinction largely derived from the chasm that exists between good ideas and the implementation of those ideas. Like

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the economics department, the history department conducted conversations informed and motivated by a departmental review that linked the development of multiple skills with very specific courses and assignments.

One result of their discussions was a closer connection between invention and innovation within the history major. Neither department was able to identify significant curricular efficiencies as a result of their departmental conversations. However, both the economics and history departments emphasized how the conversations they had over the construction of their matrices provided important opportunities for junior faculty development in a low-stress environment.

Transferring Knowledge Is Hard for Students

Intentional learning requires clarity about the tasks we expect students to master and how we would recognize mastery, which speaks to the second observation noted above. For this reason, Carleton's work with the sophomore writing portfolio also focused on making students aware of larger learning objectives. Something as simple as using consistent terminology can have an impact on student learning. Research shows that transferring knowledge from one task to

another is hard work for students, and if students have to sort out inconsistent terminology, it becomes more difficult. According to the National Research Council's *How People Learn*, "Teaching practices congruent with a metacognitive approach to learning . . . those that focus on sense-making, self-assessment and reflection . . . increase the degree to which students transfer their learning to new settings and events" (Bransford, Brown, and Cocking 2000, 12). Getting our students to partner with us in working toward acknowledged goals should deepen their learning.

Carleton's sophomore writing portfolio was created to assess a graduation requirement in the context of writing across the curriculum. Therefore, development of the portfolio required broad faculty conversations

about course goals, assignment design, rubrics, and feedback for student writers. The portfolio's design has morphed into a local lexicon that helps unify discourse around student writing at the lower division. Faculty use this lexicon as they assign writing in their courses.

Furthermore, faculty development programming continues to support productive talk about student writing through workshops, a speaker series, brown bag discussions, summer grants for course development, and the annual portfolio reading session—a remarkable faculty development opportunity for the more than sixty faculty members who have participated to date.

Corporately, we see what is demanded of students by faculty across the curriculum, and we also see what students can do. If port-

folios give our students opportunities for reflection that enhance their learning, workshops give faculty opportunities for reflection and revision, too. In workshops, faculty and administrators are learners, applying those same metacognitive skills. Faculty workshops function as learning communities for teachers: opportunities for us to articulate and clarify deep goals and to reflect on our work together.

One Good Idea Begets Another

At first glance, writing portfolios and quantitative reasoning initiatives may appear to have little in common. But when writing is understood as a medium as well as a learning goal, and when quantitative reasoning is defined as the ability to articulate the analysis and interpretation of data effectively, writing portfolios and quantitative reasoning share a symbiotic relationship. Informal faculty discussions about quantitative reasoning stressed that quantitative skills were not the sole responsibility of the math department; to enable students to reason quantitatively at the levels we desired would require

input across disciplines starting in first-year courses. In other words, we needed a program to foster quantitative reasoning across the curriculum.

As a manifestation of Carleton's commitment to writing across the curriculum, the writing portfolio accepts a broad variety of student work, including technical and data-driven writing.

The quantitative reasoning group sampled writing portfolios to gain a sense of where the curriculum required quantitative skills expressed in writing and to test the presence

and quality of quantitative reasoning among sophomores. Readers then articulated a set of criteria for assessing quantitative reasoning skills at the program level that will be used to inventory the quantitative skills students demonstrate in our current curriculum. In addition, those criteria will guide faculty who plan to employ more quantitative reasoning in their courses. Using this inventory as a baseline, we will be able to sample future writing portfolios to assess the impact of curricular changes on students' quantitative reasoning skills. In this respect, portfolios serve as an integrative learning mechanism

Carleton's participation in the ILP has provided a means of examining multiple curricular objectives that we hope to achieve in an integrated way. Our original purpose when we submitted our proposal to participate in the ILP was to develop an algorithm for taking an inventory of learning skills that might provide curricular efficiencies. However, the ILP has been seized by our faculty as a faculty development opportunity with much more powerful implications. While faculty stress may not be reduced as a result of our participation in this project, student education will be improved as a result of intentional curricular integration. Our comprehensive review of recent initiatives helps dispel any sense of institutional chaos in favor of a coherent set of intentional, measured approaches to learning, teaching, and assessment. ■

Reference

Bransford, J. D., A. L. Brown, and R. R. Cocking, eds. 2000. *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academy Press.

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