Opportunities to integrate, synthesize, and apply knowledge are essential to ensuring deep, meaningful learning experiences,” writes the National Survey of Student Engagement’s Jillian Kinzie in her article appearing in this issue of Peer Review. “The senior culminating experience provides an opportunity to cap off the undergraduate years and prepare students to take ownership of the diverse strands of their educational journey and transition to the next phase in life.”

By completing a culminating project or capstone—which may take the form of a thesis, creative project, performance work, research project, or combination of these—students in their senior year have the chance to connect academic work from their majors and general education courses and create original scholarship. Capstone projects are one of the educational experiences identified as particularly effective educationally by George D. Kuh in High-Impact Educational Practices (2008). In his 2010 foreword to Five High-Impact Practices, Kuh, from his own experiences, reflects upon why certain undergraduate experiences enhance the learning and personal development of students. He writes that his own project “demanded high-quality work under pressure in real time, in a collegial setting where feedback was plentiful. Equally important, the quality of the project was judged by others (often peers)... and was later evaluated by public opinion.” Most capstones share a number of these qualities.

Recently I had the chance to witness the power of such learning experiences when my son Adam, a May 2013 New York University (NYU) graduate, completed a capstone project. As a drama major who studied at the Tisch School of the Arts’ Stonestreet Studios film and screen acting conservatory, Adam, with a creative partner, decided to create a web series called “Dorm Therapy” as a way to bring together lessons learned from his undergraduate classes with his love of writing. This project challenged him on all levels. With each step bringing the project closer to completion, he was forced to use different skill sets. For example, funding the production—from the large expenses of paying for filming locations and equipment rental to minor costs such as buying the cast a pizza lunch—required a deep dive into budgeting and fundraising. Building buzz for the show meant reviewing and learning new marketing and public relations strategies.

With the advice and guidance of his faculty members, Adam was able to write, direct, and launch the seven-episode series. At the series premiere at the NYU Cantor Film Center last March, as the audience laughed appreciatively, it was gratifying for him to see his vision come to life. “I took all of the skills that I gained from my educational experience and then used and expanded upon them in one project,” he told me as he reflected on his capstone. “It was worth the lack of sleep and weeks of hard work. I created a lasting project that I can share with the world—especially potential employers.” As a result of his capstone, Adam discovered his passion for working on the other side of the camera, so he is now pursuing a career as a comedy screenwriter.

In this issue of Peer Review, authors have shared insights and experiences similar to Adam’s from students on their campuses who were equally affected by their capstone participation. Through participation in these culminating experiences, students have the opportunity to integrate and apply their knowledge and skills as they march out of the campus gates into the world. As AAC&U President Carol Geary Schneider wrote in an earlier Peer Review issue, “Integrative and applied learning is a truly twenty-first-century liberal art. This emphasis on integrative and applied learning is helping to build capabilities that we need as a society facing some of the most difficult challenges that we have faced in recent history—fundamentally issues about survival. These critical times will define the future that we will create together and our students’ capacity to integrate will be the key to our success.”

—SHELLEY JOHNSON CAREY
How Students, Faculty, and Institutions Can Fulfill the Promise of Capstones

recently, a senior at a selective liberal arts college mentioned that he was not looking forward to his last year because of the mandatory senior project, and he knew his friends shared this anxiety. He was not sure he could find a topic that would sustain his interest and commitment for the full year. Despite being a double major, he was unclear about the appropriate research methodology needed to produce a thesis that contributed new knowledge. Although an excellent writer, he was uncomfortable about the oral defense. And he had not yet determined which faculty member would be the best mentor for his thesis. Of course, the very elements he worried about are exactly what make capstones—whether history theses, student teaching, business internships, engineering projects, or original dance choreography—such powerful culminating experiences.

In the past, only a few campuses, such as The College of Wooster, Reed College, and Princeton University, required capstone experiences of all students. Many other campuses used the senior project to determine which students would graduate with honors and left the choice of trying for honors up to the students. Now institutions of all types, as exemplified by those featured in this issue, are recognizing the extraordinary learning experience that a capstone provides and are designing them in all majors and for all types of students. The intention is for students to be able to demonstrate in their final year their best work—the result of focused, intense, meaningful, and integrative intellectual activity. Underlying this independent but faculty-guided work is the belief that a successful capstone is essential preparation for a successful transition to work and lifelong learning. This recognition is not only based on experience but also grounded in research indicating that capstones are a high-impact practice because of the students’ deep investment in the purposeful activity and how much they learn about themselves through the experience (Kuh 2008).
Bates colleges offer good examples of this type of alignment, where faculty intentionally emphasize from the very first day the key values of high expectations, intellectual achievement, and personalized learning. Faculty members communicate and collaborate to promote integrative connections across courses and years. As the institutions in this issue illustrate, this alignment can also be expressed and encouraged through curricular structures and requirements (Hampshire College’s “Division III,” Grand Valley State University’s “Themes” program, the University of La Verne’s “La Verne Experience”).

Integrative work takes many forms. Institutions such as Bard College and Duke University are utilizing new strategies to integrate written and oral communication, information literacy, and quantitative reasoning across the curriculum to raise the levels of proficiency needed for quality work in the capstones. LaGuardia Community College’s and La Verne University’s cluster courses for beginning students (described in this issue) likewise help develop the writing and research skills necessary for a successful capstone. As more and more institutions emphasize applied culminating projects, faculty members are finding innovative ways to provide sequenced, experiential learning in preparation for more nuanced inquiry of consequential issues at the senior level. In fields such as philosophy, where classroom-based discussion, critical reading, and analytical writing assignments were once the primary learning activities, students are now also participating in public debates on the ethical issues behind health care reform and sitting in with patient advocates in hospital settings. Greater attention is being paid to pedagogical approaches across the whole range of undergraduate experiences—including service learning, study abroad, community projects, and independent study—to better understand how these opportunities contribute to the preparation for a successful capstone. Portland State University’s and La Verne University’s community partnership capstones are a good illustration that this kind of applied work is so valued that partnership work is now being encouraged before the capstone.

The institutions highlighted in this issue illustrate that this kind of integrative and developmental work toward and in capstones can occur in many contexts. Professional programs are also good examples of the type of alignment that leads to top quality capstones. Guided by specialized accreditation standards, as well as a clear understanding of the requirements of professional practice in a competitive economy and complex society, disciplines such as engineering, education, and social work have carefully aligned developmental and practical curricula. Similarly, the institutions reporting in this issue illustrate the range of contexts for doing integrative work, from community college students developing a museum exhibit (LaGuardia) to community- and problem-based work on biology and health issues (Grand Valley State) to developing a women’s writing workshop (Hampshire). In each case, personalized feedback, problem-based pedagogy, integrative teaching, supervised experiential learning, and interaction in professional settings prepare students for culminating work closely comparable to post-graduate expectations. Both the values and the tools these campuses and programs use to prepare students are relevant to all fields and institutions.

Often underutilized tools to guide this work are the various indirect and direct assessment strategies that can track the progress of students and help both students and faculty plan appropriate learning experiences. Student discussions of their experiences, from reflection papers and student interviews, provide clues to what kinds of experiences students find valuable about the process, “the skills and strategies I learned,” applications to “outside life,” and intellectual “epiphanies” in which their perspective and understanding radically shifts. La Verne University’s use of a portfolio in assessing work is a good illustration, as is Portland State’s, even as the latter also demonstrates some of the limits of formal assessment, e.g., measuring individual student progress in the context of a group project. As assessment tools continue to develop—such as AAC&U’s VALUE rubrics, which address many of the capacities and skills relevant to successful capstones—institions will understand better how students progress and how to improve both student and faculty efforts.

**REFRAMING THE FACULTY–STUDENT RELATIONSHIP**

Understanding how to prepare students for the capstone is essential, yet it is equally important to consider what it takes for more faculty members to be prepared to oversee capstones. To a great extent, a successful capstone involves reframing the faculty–student relationship such that faculty become mentors, and students are both comfortable with coaching and highly motivated as they take on primary responsibility for their work. Just as for students, faculty plans for a successful capstone experience begin well in advance. Time needs to be devoted to advising, course design, curriculum mapping, identifying potential community projects, and mastering supervisory skills. Both experienced and new faculty can benefit from sharing ideas about student development and ways to provide the kind of personalized support that will bring out the best in each student. Ultimately, the most important contribution faculty can make is to model the joy of discovery in their own intellectual life and the value to be gained from honest critiques. Although such careful preparation and personal investment are time consuming, the rewards for faculty are clearly described in several articles in this
issue. The experience of being challenged in your own research, attending an undergraduate research day, or helping a student get published underscores the learning value of capstones for both the student and the faculty member.

Good will, hard work, and intellectual stimulation, however, are not enough to encourage more faculty to participate and ensure that faculty do capstones well. The kind of integrated, intentional effort described in this issue needs institutional and administrative support. Funds for faculty development are necessary to provide workshops and informal meetings around the elements that lead to high-quality capstones—curricular design, sequenced assignments, attention to research methods, applied work, supportive feedback, and a wide variety of assessment strategies. Grand Valley’s faculty development materials and LaGuardia’s teams of faculty are two of many examples in this issue of how faculty can be supported in this work. Such support also must be complemented by recognition that this work “counts” in the personnel processes for evaluation, merit pay, and promotion.

As or more important than this kind of material support is the development of a broader culture that celebrates the work that faculty do in preparing students and supervising capstones. Campuses that value this work weave it into their traditions, for example, taking a whole day to celebrate and share projects, handing out awards to the first students who turn in their theses, or as Reed College does, leading the campus admissions tours to the library to show off where all the theses are kept.

Administrators may also want to take every opportunity to convey the notion of the shared responsibility for student learning and development as not just personal gain but also as a public good; successful capstones can be less about doing “my work” than about fulfilling “our mission.” Encouraging the integration of the knowledge and skills developed through general education and the major to serve not only intellectual development but also civic responsibility can extend the reach of the campus. Helping departments explore numerous ways to responsibly interact with the larger community on applied projects helps students see early in their education that they can make a difference. Opening doors with alumni for internships and mentoring can give students perspective and guidance as they set their course. Administrators need to be persistent, respectful, strategic providers of both material and symbolic resources for these efforts. Namely and above all, the focus of “our mission” is the intellectual and personal development of the student reflected in the capstone in which the student becomes an independent learner or actor and demonstrates his or her capacities and readiness for addressing significant challenges, whether in work or the community. Good examples of such life transforming and community transforming projects are well described in the Hampshire, Portland State, and La Verne articles in this issue.

The examples above and the key elements of promoting successful student learning and development around capstones—integrated and sequenced curricular designs, ongoing interaction with faculty involving engaging pedagogy, intentional administrative support for faculty development, and a broader sense of mission—implicitly assume students going through a more or less traditional four-year experience. However, the traditional four-year experience on a single campus is less and less common among undergraduates. Significant numbers of students transfer from two- to four-year institutions. Increasingly, students build their degree in pieces through online work and adding a course or two from various sources to complement their work at the institution from which they seek the degree. It is important to note that the students who are most likely to “swirl” or need to build a degree out of a variety of pieces are nontraditional and come from underserved populations.

SCALING THE CAPSTONE EXPERIENCE

These shifts in the nature of students’ undergraduate experiences raise some questions about our ability to provide capstone experiences (or for that matter many of the other high-impact practices) for a growing segment of the student population. If students cannot have the kind of integrated and developmental experience culminating in a capstone at a residential institution like those highlighted in this issue, are there ways to address this inequality? If increasing numbers of students attend multiple institutions or otherwise piece together their education in different settings, are there common learning experiences that could be provided to support capstones?

Adapting the Capstone Experience

There are no clear answers to these questions, but we can look at places and ways the elements promoting successful culminating projects might be adapted for working with students across settings and through different modalities.

Transfer policies and curricular pathways. As students “swirl” through different institutions, even within the same public system, interpretations of requirements and policies on transfer credit have often delayed completion or even discouraged students from continuing altogether. States are now mobilizing to create shared “pathways” for general education and the majors. This movement for alignment involves institutions and systems making clear what courses will transfer in fulfilling graduation requirements. It is possible to imagine that alignment policies might also involve speci-
fying in more detail the competency level or proficiency that qualifies for transfer beyond the grade or credit for the course. For example, student products that demonstrate proficiency in writing or critical thinking might be required for transfer to more advanced studies. Currently WICHE (Western Interstate Commission for Higher Education) is experimenting with a “passport” for transfer credit within and across states that is based on assessment of demonstrated student competencies (WICHE 2013). This kind of qualitative evaluation of transfer credit might be a vehicle for determining how to prepare students for a significant capstone experience.

“Signature assignments” and core curricula. Similarly, as we think about consistency in transferring credit through demonstrations of skill, it is critical that the assignments actually call for and result in challenging and intellectually engaging student work. Over the past few years there has been some experimentation with the idea of a “signature assignment” to facilitate meaningful assessment. Such assignments serve to ensure consistency in standards within institutions as well as between institutions. For example, Salt Lake City Community College’s general education program requires each student to complete such an assignment that includes reflection and application to a real-world problem, elements that can be integral to building toward a successful capstone.

Common assessment rubrics and e-portfolios. In addition to locally developed assessment to allow students and faculty members to track student development and coach/mentor accordingly, campuses could make use of the VALUE rubrics in order to make comparisons across institutions (Rhodes and Finley 2013). If assignments and assessments were part of students’ e-portfolios, faculty working with transfer students might more easily and productively work with them, and students would have a better idea of their own developmental path and needs. Similarly, portfolios might also include (assessed) instances of student work on projects, internships, material from online courses etc. that can be used to fashion a suitable capstone for a student. Currently, several state systems are cooperating on an initiative in which student work and VALUE-based assessments are being shared and compared (Berrett 2013). AAC&U’s VALUE rubrics are well suited to integrating learning experiences from several sources based on common descriptors of both the outcome and the level of accomplishment. Some rubrics might be more germane to high-quality capstones than others; for example, the integrative learning rubric should be widely applicable to many capstones, except those that involve highly specialized, disciplinary work.

Admittedly, we are a long way from seeing how the above ideas and experiments might actually be put into widespread practice to support preparation for an effective capstone experience for “swirling” students. Nonetheless, we note a growing trend toward greater consistency within and across institutions in terms of curricular design, improved pedagogy, and common assessment of desired outcomes. The elements of pathways, intentional and developmental assignments, and systematic assessment are potentially parallel between and across institutions.

CAPSTONES FOR ALL?

It is also true, however, that we still have a long way to go in the traditional settings for full-time and residential students if the underlying aim is that all students have the benefits of working up to and completing a capstone—a significant project integrating their intellectual, social, and personal learning experiences. Just as greater consistency and intentionality is sought across institutions, so too are efforts to be more intentional within institutions. The cultural shift within institutions from “my student(s)” to “our shared responsibility” reveals a tension between faculty and students working in individualized ways toward their highest aspirations and a culture of more shared responsibility of higher education that all students, not just honors students, have the developmental opportunity of working toward and completing a capstone.

This last element, a broad sense of shared mission on behalf of and responsibility for student development, may be the most important of all. Achieving a broader sense of and agreement on more consistent and intentional practices that lead to students having the educational experience(s) leading to a successful capstone could help institutions be more efficient and effective in working with all students. In a time of constrained resources, suggesting that faculty and students just work harder to achieve high-level learning outcomes is short sighted. Institutions that thoughtfully redeploy resources and redesign learning experiences will be well positioned to accomplish their goals. Happily, some of the developments described above and the work of institutions like those featured in this issue suggest that it is possible to develop this more collective sense of purpose and put it into practice.

REFERENCES


Hampshire College’s Division III: To Know Is Not Enough

In my current job doing research, I am responsible for running several projects. I make all of the day-to-day decisions about the experiments I run—how to troubleshoot problems, and how to best organize the data collected. It is my responsibility... to keep my supervisors updated, and to know when to make a judgment call vs. when to seek out help. My Division III at Hampshire... put me in this exact same position—in fact, I’d argue that my responsibilities and independence were even greater for my Division III than they are for my current job.

—Lyndie Wood, Hampshire alum

For over forty years, every student at Hampshire College has completed a yearlong senior capstone project, the Division III. Although it is common to have a required capstone for an honors program, it is unusual to have a universally required project of the magnitude of the Hampshire Division III. The Division III project is the central activity of a Hampshire student’s final year of study and comprises a major piece of independent research or creation in the form of a written thesis, artistic production, or both. It demonstrates a student’s ability to handle complex concepts and questions using research or production skills in the student’s area of concentration. Students are required to take only one advanced course, internship, or teaching assistantship each semester of their Division III year, devoting the rest of a full academic year to their project.

Hampshire was conceived to change the way undergraduate students are educated. Its program requires students to take greater responsibility for their learning, and so, the curriculum leads very purposefully to a large independent project. A Division III project grows out of students’ questions and interests and is mentored by a committee of two faculty members who often represent different subject matter domains. The frequent committee discussions and feedback on student work push students to consider the theoretical underpinnings and practical applications of their work.

Hampshire’s motto—Non satis scire or “To Know Is Not Enough”—is an articulation of the institution’s commitment to having students develop a critical analysis of the ideas they encounter, to understand their own position relative to knowledge and power, to develop an interdisciplinary perspective, and to apply their learning and take informed action. In Division III, we want students to take risks in thinking creatively. We want them to become a part of an intellectual community.

In the best and most successful cases, students complete Division III projects that not only push their own abilities and boundaries but those of their faculty committee members as well. The yearlong independent project becomes a collaborative endeavor and invites faculty into the process of creation not only as supervisors and mentors, but as active participants as well. Hampshire faculty have often mentioned how personally meaningful the Division III process is as students will challenge them to rethink and reimagine their own fields of research. Norman Holland, associate professor of Hispano literature, says, “The best students push me to think differently, to see new connections or possibilities.” And Nell Arnold, associate professor of fiction writing, comments, “In most cases I think a Division III’s quality is a reflection not only of the student’s work but of the committee’s ability to really listen to the student and to help them.” Student interest and interdisciplinary committees have led to the development of new co-taught courses and even cross-school programs at Hampshire.
In this paper we describe the relationship of the Division III project to the rest of the Hampshire curriculum, discussing the aspects of our system that we believe foster a rich and unique capstone experience. We demonstrate the role the Division III plays in student learning through examples of student work and share faculty insight into student gains. We hope the Hampshire experience helps to shed light on the capacities that students can develop during a college capstone year.

WHY A CAPSTONE FOR ALL STUDENTS?
Hampshire students progress through three levels of study—Division I, II, and III—each with an important role in the development of independent thinkers. The rationale of Division I is *distribution*, and students pursue courses in their first year in which they learn the approaches to scholarly inquiry in four out of five broad domains. Arts, Design, and Media; Culture, Humanities, and Languages; Mind, Brain, and Information; Physical and Biological Sciences; and Power, Community, and Social Justice. The purpose of Division II is *concentration*, sometimes equated with an individualized major. Students negotiate a four-semester concentration with their faculty committees, pursuing coursework, internships, independent studies, and other learning experiences. The concentration gives students depth of understanding and breadth of context, as well as practice in the methods appropriate to their field(s) of interest. The principle undergirding Division III, or the entire fourth-year *experience*, is integration (Patterson and Longworth 1966). Students pose questions and address problems that cause them to put together their own ideas, often across disciplines and often integrating theory and practice. Although we call Division II “the concentration,” the learning in Division II leads to unanswered questions and new learning goals that drive Division III work, deepening students’ engagement with the central ideas of their concentrations.

How does every student get to the point of developing an individualized capstone project in which they are expected to integrate their thinking? One answer is through close advising. Students have committees of two faculty members that help them develop their concentration and articulate a Division III project. But a successful project depends as much on what has come before it. Leading up to the Division III, faculty work with students to develop the capacities and experiences that they will need to complete a successful capstone project—the college-wide experience. The college-wide cumulative skills are built through individualized programs of study.

In the best and most successful cases, students complete Division III projects that not only push their own abilities and boundaries but those of their faculty committee members as well. Half of Hampshire alums go on to achieve advanced degrees and one in seven holds a PhD or terminal degree in her or his field. Hampshire is consistently in the 1 percent of all schools in the US in terms of the rate at which our students go on to obtain doctoral degrees across all disciplines. Our graduates regularly tell us that their Hampshire education prepared them to hit the ground running in graduate school, and that compared to their peers, they were far more prepared to formulate a question and design a methodology for answering it.

The best way to understand the Hampshire Division III project and the wide range of student accomplishments experienced is through example. These are but a few; there are more featured Division III projects posted on our website at www.hampshire.edu/news.

DIVISION III EXAMPLES ACROSS THE DISCIPLINES
In the arts, students’ Division III projects often entail a creative piece—an original novella or collection of short stories, a
film, a play, paintings or sculptures, installations and multimedia projects—paired with a critical paper or reflection. These two components ideally complement and inform each other, and provide a rich picture of the student’s research process and creative journey.

Theater student Adelind Horan created a show about mountain top removal in Appalachia and the devastation it is creating in people’s lives. The playwright, who is originally from West Virginia, was also the solo performer in the piece. She wanted to create a show based on transcribed interviews with miners, their families, the public relations people in the mining corporation, and local ecology activists. Avoiding caricature and stereotypes, the student wrote and performed each character with dignity, a point of view, and a tragedy to explain and come to terms with.

Aimee Aubin, another creative writing student, wrote short stories about mothers and daughters, exploring puberty, sexuality, motherhood and body image, as well as a short one-woman play about body image. An important part of her Division III project was a women’s writing workshop, which she designed, led, and documented in an essay that was also part of the overall project. In this case, Aubin had thought deeply about her own commitment to the art form and to its importance in forging and strengthening communities “off the page.”

Camilla Flores D’Arcais’s Division III project consisted of a video essay, “Welcome to Italy,” and a twenty-five-page manuscript, both of which examined Italy’s position as a country with a long history of both emigration (particularly to the US) and immigration (from the Philippines and Albania). D’Arcais developed a bilingual approach that proved to be integral to the context and tone of her final script about the histories and experiences of displacement, immigration, and belonging.

In the humanities and literature in particular, the Division III project often takes the form of an analytical paper that ranges between fifty and one hundred pages. Students are asked to demonstrate that they are capable of sustained research and writing, close reading and historical contextualization, and a familiarity with theoretical approaches.

Danya Maloon’s Division III project grew out of her Division II concentration on national identity and historical trauma in contemporary literature. She produced a comparative study of two postcolonial novels, Zimbabwean Tsitsi Dangarembga’s Nervous Conditions and Jamaican Michelle Cliff’s Abeng. Maloon analyzed these two texts through the dual lens of psychoanalytic theory and postcolonial studies to discuss female adolescence as a bodily and psychic experience that has particular political implications for the female postcolonial subject and the formation of nation states in the wake of colonial rule in Africa and the Caribbean.

In the sciences, many students engage in empirical research, sometimes conducting their research in the field, other times in labs at Hampshire or across the globe via internships and the Research Experiences for Undergraduates program, funded by the National Science Foundation. Still others pair their empirical work with creative productions or the design of new technologies.

For example, Emily Ryan studied public health and medical ethics. On a January Term trip, she accompanied physicians into rural villages in El Salvador where cervical examinations were done without the high-tech equipment of a typical diagnostic setting in the United States. She realized that an examination table doctors could carry with them—through terrain sometimes too rugged for anything but travel by foot—would make their jobs easier and the procedure more comfortable for the women. She designed a portable gynecological exam table and tested it on a second trip. Two other Division III students continued this work, improving the design. A course was developed around the project, examining the manufacture and marketing of the portable table.

Lyndie Wood explored memory and learning at the molecular level using Caenorhabditis elegans (a nematode commonly used as a model organism). While designing her experiment, she wrote a substantial literature review that ensured that she had both a solid grasp of the current understanding of the cellular processes underlying associative learning and the ability to convey the important ideas to a broader, general audience. Wood produced a write-up of her experiments in a style designed for publication. Complementing her research, Wood completed advanced courses and an internship in a lab at the University of Virginia.

In the area of social sciences (or critical social inquiry at Hampshire), students often engage in ethnographic research, oral history, library and archival research. They produce critical analytical works, policy papers, historical treatises, or combine these with creative representations. Liz McGourty conducted a piece of current history, producing an analytical paper as the product. She used the college’s archives and conducted extensive oral histories to examine community formation at Hampshire College. Developing three case studies, McGourty insightfully points to the intellectual and cultural practices that have shaped community at Hampshire since the college’s opening in 1970.

**WHAT STUDENTS SAY ABOUT THE VALUE OF THE DIVISION III**

Lyndie Wood reflected on how her Division III project contributed to her learning in this way: “The most important part of my Division III, for me, wasn’t the
experiments I ran or the techniques I had to learn... It was the process of making a plan on paper and turning it into a series of actions, adapted for the particular space and the particular tools I had available... Hampshire's Division III is so valuable because it gives students an opportunity to do something big, where the emphasis is on the process and not the final product.”

Liz McGourty concurs: “For me what feels the most important about my Div III experience was the process. I spent an academic year pursuing research questions that really interested me and from that work I produced a big paper. But the paper isn’t what feels important. What is useful, and feels really personally satisfying, are the skills and strategies I learned. I learned how to manage my time to meet deadlines. I learned a lot about the value of revision, and how much stronger it will make my work. Employers don’t necessarily care about the formation of community at Hampshire, but when they see that I can work independently, they like that.”

A third student, Parimal Satyal, said, “I had to pick a topic that interested me, condense it down to a realizable project, seek out resources and turn an idea to something whole, complete and of academic (and practical) value. I learnt as much from this process and my missteps as I did from the actual content of my research and experimentation.”

**WHAT FACULTY SAY ABOUT THE VALUE OF THE DIVISION III PROJECT**

Faculty members echo many of the students’ sentiments, citing a wide array of benefits that students reap from focusing their attention on a single project from concept to completion throughout their final year. Whatever shape their Division III project might take in the humanities, cognitive and natural sciences, arts or critical social inquiry, the students’ dedication to a research, writing, or arts project affords them the opportunity to go through a crucial process of knowledge creation that teaches them lifelong skills in self-directed learning as well collaboration and negotiation with others. Students learn to take responsibility for their own work, project planning and time management, and working through inevitable setbacks and tough spots they encounter in the course of this yearlong project.

In the end, the Division III experience is different for each student, depending upon the context of their work, the scope of their research, and the technical and creative demands of the medium or field they are working in. Not every Division III project is as stellar as the examples we put forth in this paper. However, all students go through the process of outlining and conceptualizing their project to drafting and revising their pieces, listening to and incorporating, after careful consideration, critiques from their peers and advising committee when they are useful. The Division III as final “product” is often only a portion of the work that students have completed in the process. Students all learn a great deal about managing a project and adjusting in the light of new information or even dead ends—skills that lead to adaptive flexibility and resilience. The final narrative evaluation allows the chair and member of the committee to comment on both the quality of the final project as well as a variety of other aspects, such as how the student handled the process, what they learned about writing or their craft as well as the subject matter, how they connect their Division III project to prior learning experiences, and how they see their work in relation to other work out in the world.

**IN SUMMARY**

The complex dimension of the Division III projects in these examples demonstrates that Hampshire College encourages its students to go well beyond traditional senior thesis project expectations. Our students experiment with multiple forms of expression; reflect carefully on their own role as artists, scientists, and community members; and think about how to present their work to a wider public. Hampshire College’s Division III is such a successful capstone project model because we don’t confine students through disciplinary boundaries and requirements. We set high expectations and actively encourage students to play and experiment with new forms, new approaches, and new ways of seeing and thinking. Some students clearly come to Hampshire College already primed to take advantage of the opportunities we offer and are open to the journey of exploration and experimentation, but the Division III process requires all students to explore, explain, and create. Completing the Division III also provides them with the tools and understanding of how to develop larger independent projects that set the stage for their later careers and work in a variety of fields.

Hampshire’s motto, *Non satis scire* (to know is not enough), invites students (as well as faculty and staff) to go beyond the passive acquisition of received knowledge to extend and augment knowledge through the student’s own creation, inquiry, critique, invention, and informed action in the world. We believe that a Hampshire education creates active learners for life.

**REFERENCE**


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Going Beyond the Requirement:  
The Capstone Experience

Peggy Redman, director, The La Verne Experience, University of La Verne

For many years, University of La Verne students have completed capstone projects that build on their primary academic focuses developed in their junior and senior years and allow for greater understanding and clarity about their intended professional focus post-graduation. Today, the University of La Verne is working to take capstone courses to the next level, preparing students earlier than ever before to begin thinking strategically about their areas of study, their professions, and the values they would embody long after graduation.

The University of La Verne is located in the town of La Verne, 35 miles east of downtown Los Angeles. The university is a Carnegie doctoral/research university that enrolls more than 8,600 students across four colleges (business, education, arts and sciences, and law), at the main campus in the city of La Verne and at ten off-campus sites throughout Southern California. With a strong heritage emphasizing caring, rigorous academic programs, and commitment to a diverse student body, the University of La Verne prepares students to be ready to face the world upon graduation.

THE LA VERNE CAPSTONE
In 2009, the university implemented a Capstone Assessment Project. It was the purpose of this project to evaluate the extent to which students were meeting and exceeding learning outcomes related to writing and the university’s mission. Undergraduate, master’s, and doctoral level capstones were examined. A total of 127 capstone projects were collected, 41 of them undergraduate senior projects, representing three colleges. The study concluded that empirical and applied projects best reflected the elements of the institutional mission. Writing in the capstone projects was effective in mechanics, organization, and formatting, with room for improvement in thesis development and citations.

Rubrics were then developed as a part of this study, and the colleges were encouraged to use the rubrics to continuously evaluate the learning outcomes and their relationship to the values of the institution.

As a result of this research, reflection has been embedded throughout the four years an undergraduate student studies at the University of La Verne. Students are challenged to look within themselves for a sense of their efforts and their academic work in the context of their own values and lives. Students are to ask themselves the questions, “What is it?” “Why do we do it?” “Is it important?”

Through the La Verne Experience, each first-year student participates in a First Year La Verne Experience (FLEX) learning community composed of three linked courses (two discipline-based courses and a writing course). Through the FLEX, students in the writing courses reflect on the connection between the two disciplinary courses and community engagement activities that bring the theory of the course to the practice in the community.

The capstones culminate students’ academic journeys. Each capstone is curriculum-based, yet represents the uniqueness of the program for which it was designed. Today, this capstone is wedded with the final opportunity for students to reflect on their total program at the University of La Verne, both curricular and cocurricular. Each senior student is part of a one-unit course designed to facilitate students’ reflections over their time at the university. Through these two activities, the students are preparing to thrive either professionally, through a career, or academically via graduate school. Student reflection continues through the four years, concluding with a final autobiography essay that includes contemplation on the La Verne Experience and its connection to the university values.

CONNECTING CAPSTONES TO CORE VALUES
The University of La Verne has a long history of embedding the values of the institution with the capstone experience of its students. These four core values have been a part of this institution since its inception in 1891:
THE LA VERNE EXPERIENCE

As soon as an undergraduate student sets foot on campus, his/her La Verne Experience begins with the FLEX program and continues through graduation. Each student becomes a member of a community dedicated to making connections, to communicating effectively, and to reflecting on learning.

Hayley Hulin, now a sophomore student, shares the following reflection on her introduction to the La Verne Experience. “Before I started classes as a freshman, I participated in Community Engagement Day with nearly 600 of my freshman peers and La Verne faculty,” she said and described her experience volunteering at a domestic abuse shelter for women and children in Los Angeles. “I helped paint houses for these families and spent time gardening. I really appreciated watching the faculty (some of whom were subsequently my professors), who spent the day working alongside us.

“I was able to talk to my professors before I experienced them in the classroom. We had the chance to be human together, working toward the same thing, and that created a respect and admiration in me for them. The chance to talk personally about what we were doing meant so much to me and it made me reflect on the person I am today and also the person I hope to be after my time here at La Verne.”

In the sophomore year, each student takes a one- or two-unit Sophomore La Verne Experience (SoLVE) class connecting curricular with cocurricular experiences. In this class, the students explore the richness of La Verne life beyond the classroom. This class focuses on La Verne values, diversity, and the e-portfolio.

During the junior year, participation in a learning community includes two or three major classes. These classes include an integrated curriculum and feature reflective learning. As a part of the senior year, each student completes a capstone class in the major plus a one- or two-unit class focused on completing the e-portfolio and reflecting on the total La Verne Experience, La Verne values, and curricular and cocurricular experiences.

Community engagement is linked with the La Verne Experience in many ways. Each first-year student participates in a community engagement day as part of orientation. During the sophomore, junior, and senior years, students complete internships and then link those experiences to classroom content, always with the reflective eye toward learning.

Community partners are an important link to this part of the La Verne Experience.

First-year student Jacob Pavlovics is an example of one student who has benefitted from this program. After recently volunteering to serve ice cream to the homeless...
For students, reflection is promoted; for faculty, evidence of student learning is collected and assessed; and for the university, progress toward institutional goals is evaluated.

All successful initiatives, faculty acceptance and participation in the process is essential. A faculty and staff committee representing all four colleges collaborated to find the best way to integrate the e-portfolio into the La Verne Experience, and developed a vision for the student e-portfolio: “The e-portfolio is a collection of evidence that demonstrates the integration of university values through curricular and cocurricular experiences.” This vision helps to benefit all groups at the university. For students, reflection is promoted; for faculty, evidence of student learning is collected and assessed; and for the university, progress toward institutional goals is evaluated.

In concert with the development of the e-portfolio project, the university adopted baccalaureate goals for all undergraduates to further integrate reflection into the learning process throughout the student’s academic journey. Every student from the university is expected to graduate with

- broad knowledge and appreciation of the liberal arts integrated with a depth of knowledge in a specialized discipline;
- the ability to think critically and creatively, and apply those skills toward resolution of local, national, and global problems;
- excellence in written, oral, and creative expression through a variety of traditional and contemporary media;
- effective leadership and teamwork skills with cultural competence;
- a commitment to ethical, environmental, and social responsibility, accompanied by civic and community engagement.

These goals undergird the e-portfolio project. As the assessment structure for the e-portfolio is finalized, the baccalaureate goals, the university values, and the program-specific standards provide the means for robust evaluation.

Students, in their reflections, address one of the university’s core values each year, culminating in an autobiography of their years at La Verne and the effect of the values on their growth. First-year students provide a reflective piece for their portfolios under the guidance of the writing class as part of their FLEX group. As a part of the SoLVE class in the sophomore year, students receive training on how to manage the portfolio. Staff from the university’s Learning Enhancement Center and library help provide ongoing support for student technology needs and support. This reflective process culminates in a course where each student presents his or her portfolio to peers under the guidance of either a curricular or cocurricular mentor.

COMMUNITY PARTNERSHIPS

Currently the university is involved in a program with the city of Pomona (located a few miles from the La Verne campus) to explore mutually beneficial projects that create learning opportunities for our students, academic partnerships for faculty, cocurricular interest, and support for the important work of our community partners. At the heart of these partnerships are the Association of American Colleges and Universities’ Liberal Education and America’s Promise (LEAP) Essential Learning Outcomes.

After all, the integration of curricular and cocurricular aspects of the student experience in the capstone activity is the key to developing effective graduates who go on to integrate the LEAP goals into life after the university. These goals encompass (1) knowledge of human cultures and the physical and natural world, (2) intellectual and practical skills, (3) personal and social responsibility, and (4) integrative and applied learning.

Last year, faculty met with educators in the community in a meeting cosponsored by the superintendent of schools from nearby Pomona Unified School District. The Pomona associate superintendent and La Verne’s director of community and civic engagement were charged with developing a plan of action from the data gathered at
this meeting. It proved to be an excellent exchange of ideas, and the participants developed ways to promote the ideas for future projects. The day clearly addressed the LEAP goal of supporting students in integrative and applied learning.

The event with educators was followed by a session on business and economic development, also attended by faculty and community partners. Again, the goal of the meeting was to foster partnerships and develop clear follow-up objectives. This year, there will be meetings on social justice and community empowerment and health and wellness. These facilitated meetings bring together representatives from the university’s community partners for conversation and action. University representatives include faculty who are interested in integrating community engagement as part of their courses, research, and scholarship and diverse Pomona community partners who have an interest in linking community-based opportunities to curricular and cocurricular projects.

INTEGRATION AND THE CAPSTONE

When a student completes a degree, the power of integration between what they have learned and their capstone experience should be evident. At La Verne, from the beginning of the student experience, with the FLEX linked courses, to the completion of the capstone experience, the student is asked to reflect and comment on his/her experience. Each student describes and integrates the experience in a unique way. The marketing student may identify growth through the complexities of developing a marketing plan in partnership with a local business or nonprofit organization. The education student sees learning in the development of a unit including lessons that cut across many disciplines, preparing him or her for the multiple-subject classroom. A student in psychology completes a senior project that takes the student and faculty member to a conference where they are major presenters. All of these pathways can be part of the capstone, a critical force in integrating classroom learning and practical application.

Recent alumna Desiree Vera, a biology major, completed a capstone course at La Verne. In addition to developing her thesis, “The Effects of Insulin and Cortisol on a Young and Older Population,” Desiree also received one-on-one preparation from faculty members on how to best prepare for a career outside of school.

“I was shown how to build a resume, how to utilize what I learned and express it through my writing,” she said.

“In fact, it was my capstone course that brought to light my passion for research, which I did not know existed until I was in my junior/senior year. The faculty worked hard to thread the curriculum and the university’s core values together where I could identify my strengths and focus more on what I hoped to do post-graduation.”

Desiree has since applied to nursing school, where she hopes to study to become a registered nurse. She credits La Verne and her capstone experience for the skills she has and believes that her capstone and La Verne experience has provided her with the skills necessary to succeed. Desiree is just one example of how the capstone is the culmination of a student's experience at the University of La Verne. As a student completes this portion of the La Verne Experience, we see the emergence of a developed person who has integrated all the experiences and merged them, becoming one who, upon graduation, is not only competitive in the job market, but also one who is ready to face the world. Armed with the skills, the theory, and the ability to form and nurture relationships, she represents the growth and maturity shaped by her experience at La Verne.

AAC&U MEETINGS

NETWORK MEETINGS

General Education and Assessment
Disruptions, Innovations, and Opportunities
February 27–March 1, 2014
Portland, Oregon

Diversity, Learning, and Student Success
Policy, Practice, Privilege
March 27–29, 2014
Chicago, Illinois

SUMMER INSTITUTES

Institute on General Education and Assessment
June 3–7, 2014
University of Vermont, Burlington

Institute on High-Impact Practices and Student Success
June 17–21, 2014
Vanderbilt University, Nashville

Institute on Integrative Learning and the Departments
July 9–13, 2014
California State University, Fullerton

PKAL Summer Leadership Institute for STEM Faculty
July 18–23, 2014
Pendle Hill, Wallingford, Pennsylvania
July 25–30, 2014
Baca Campus of Colorado College, Crestone, Colorado

www.aacu.org/meetings
Two decades ago, a group of Portland State University faculty began an intentional process to reform the institution’s general education curriculum. To study in depth how college students learn best, the faculty task force attended national conferences on trends in higher education and emerging pedagogies, including community-based learning. Through this process, faculty became open to abandoning the model of general education as a series of isolated courses and moving to one based on coherence for students. The result was an innovative curricular approach to general education spanning all four years of the college experience that positions civic engagement, application, and integration as central tenets. This reform brought Portland State into the era of University Studies, a nationally recognized general education program. The culminating required course of this curriculum is the senior capstone.

The focus on the University Studies goals in each capstone and the requirement that they all involve collaborative community-based learning gives the program a firm sense of identity and essence at Portland State, while also providing enough freedom for faculty and students to engage in a wide range of interdisciplinary topics. Faculty with expertise from every school and college at the university participate in teaching these courses, including faculty from the College of Liberal Arts and Sciences and schools of education, engineering, urban and public affairs, fine and performing arts, and social work.

EMPLOYING BEST PRACTICES OF ASSESSMENT
The capstone program has a deep commitment to assessment as a way to improve student learning, support individual faculty devel-
opment, and inform program improvement (Kerrigan and Jhaj 2007). At the course level, experienced faculty lead small group instructional diagnostics (SGIDs), mid-term focus groups with students. These feedback sessions are facilitated in courses taught by new capstone faculty in order to provide formative feedback on their course and provide potential ideas for improvements while a course is still running; SGIDs are conducted in 20 percent of all ongoing capstones, as well, to maintain a cycle of continuous improvement throughout the program. Summative data across capstone courses come through comprehensive course evaluations, which focus on the learning goals of the program and pay particular attention to integrative learning aspects of the course. These assess the degree to which students connect course content to the work in the community, work with students from multiple academic backgrounds, and apply skills from their major to the project at hand.

Historically, capstone course evaluations have revealed that students believe their capstone courses help them make connections between academic course content and the required community experience. However, these indirect measures did not provide examples of how our capstones encourage students to make these connections. The very nature of these courses make it difficult to capture direct evidence of student learning. It is challenging to “see” students applying the content of the course in community settings and difficult to isolate individual student learning in a course that emphasizes group work and collaborative final projects. After several attempts at collecting and analyzing student work and final products, the program settled on a course e-portfolio approach to assessment. This e-portfolio includes a syllabus, an assignment related to the particular learning goal being assessed that year provided by the instructor of the course, student responses to the assignment, and a faculty reflection on how the goal is explicitly addressed in their course. Through these course e-portfolios, we are able to assess direct evidence of student learning by analyzing individual assignments within a more nuanced understanding of the contexts of these complex courses.

As this practice has emerged and evolved over the last five years, we have learned a great deal about the student learning experience and how it is facilitated in capstone courses. The juxtaposition of faculty and student voices with other course materials provides a glimpse of the inner workings of these courses and provides insight into the methods used by our most successful faculty. Our exemplary courses intentionally and incrementally weave course content and the community experiences together. As a result, students see connections and applications between the classroom and community engagement even as they sometimes struggle with the real-world issues they are encountering. The transformation of their own perspectives regarding social issues becomes a critical source of learning for students.

When faculty describe the design of the learning spaces in capstone courses, they report asking students to grapple with course materials, apply that learning to a community situation in new ways, and draw their own conclusions about the meaning and value of that work. Faculty encourage students to apply theory as presented in the course into practice as they initiate actions that address the societal issues faced by their community partners. One faculty member describes her students’ grappling with the larger social structures in the issue they were examining:

[Students] examine societal roles … and begin to contemplate explanations as to why such practices arose in the first place and continue to this day. Following a thorough examination, the students develop their own ideas further to understand and challenge how such structures and processes can be altered in the future.

Another faculty member makes explicit that the goal of enhancing students’ “appreciation of human diversity” is not simply an academic construct, but rather a lived experience in the context of the capstone:

Thus for capstone students in this course,
conclusions as a group, separate from the rhetoric of political ideologies, about how effectively our limited resources are being used in the criminal justice system.

Through work samples collected via our e-portfolio assessment, students reveal how they are challenged to stretch themselves through the application of academic skills in a new context and come to new understandings of themselves. One student reflects on her initial reaction to the idea of doing a project for a real community partner:

*For a moment it was as if all my previous experience meant nothing and the weight of the project really took its toll.* … Applying the skills I have learned throughout my education was trickier and less straightforward. I had to challenge myself to think outside the box and in a way that used the skills and knowledge best fitting to this type of project.

Another student reveals a new understanding about his own background after taking a capstone that focused on grant writing for an animal shelter:

*I now recognize that my original sentiments toward animals was a result of my privilege. I’ve never had to depend on animals for affection or support because I’ve always had supportive humans fulfilling those necessary functions in my life.*

While the explicit connection to a student’s major in these general education capstones varies, many students are glad for the chance to explore topics outside of their major in this culminating course:

*Being an accounting major, my focus has been on business issues and numbers. This class gave me the opportunity to learn about a very human process and reach out to those around me and share what I have learned. I developed my communication skills as well as my thirst for topics beyond that of my major.*

Other students report expanding their understandings and application of previous coursework:

*Having taken the women’s studies cluster, I feel I have had an advantage in developing an understanding of the interlocking systems of oppression and the damaging effects they have on society. This class has helped me to take this understanding to the next level by allowing me to combat one of these dominating structures by helping the local Latino community.*

As we have completed reviews of these course e-portfolios, we are also able to identify some areas in which we need to improve as a program. As we assessed our diversity goal, we identified a distinct difference between courses where students performed direct service to a population (such as tutoring or refugee resettlement) and those that provide indirect services (such as grant writing or creating marketing materials). We also determined that we could work with faculty to design and assign better reflective prompts so that students better connect their lived experiences, the populations they are serving, and the course content in deeper ways.

The following year, we were surprised to discover that the University Studies communication goal was difficult to assess in the capstone context. We knew students were not producing traditional academic papers, but we did not adequately define the types of communication we expected to see in capstones and what exemplary performance related to those types of communication would look like. This is something we will tackle in the upcoming academic year as we get ready to reassess this goal.

In addition to the formal programmatic assessment that the capstone program implements each year, faculty and administrators at Portland State have conducted several studies to assess how our specific form of capstone courses impacts our students and graduates. Throughout these studies, students and graduates consistently report that capstones are transformational learning experiences. They refer, literally, to “epiphanies” that they experienced as a result of their capstone courses. Many of these deep learnings are reported to take place in relation to engaging with populations they had been less familiar with, confronting the harsh realities of poverty, and learning lessons related to their deepened appreciation of human diversity.

In our largest capstone community partnership, for example, students engage in an immersion experience for two weeks at a Kiwanis camp for persons with disabilities (http://capstone.unst.pdx.edu/courses/learning-from-persons-with-disabilities-mt-hood-camp-kiwanis). The twenty graduates interviewed in a qualitative study reported their capstone as one of their top three most significant learning experiences in college. Graduates from this capstone reported profound learning about people living with disabilities, especially related to their abilities, their capacities, and their ability to communicate in unexpected ways. Students
reported having deepened their sense of social responsibilities to others and gained a sense of efficacy that they could serve as an ally and an advocate to an underserved population.

Students reported enhancing their own communication skills, including profound realizations about their own capacity to listen in new ways. For many, the capstone informed their career development, as they reported powerful insights about their own strengths and weaknesses. Graduates reported a greater sense of empathy and understanding of people they formerly described as simply different from themselves. Students reported new feelings of benevolence and patience, as well. Their language resembled that of Parker Palmer (1998) when he writes of a “live encounter” (37) with another person across difference that is not mitigated by the unexamined privilege that so often distances us from others.

Throughout our formal assessments and our scholarly research, PSU researchers consistently find that students make meaning of their academic coursework by integrating course content with their practice in the community through required reflective assignments and classroom discussions. We use the information collected in our assessment processes to continuously inform our faculty development efforts and the ways we support our faculty as they hone their own pedagogical practices.

NEWEST CURRICULAR CHALLENGE IN CAPSTONES

For the better part of twenty years we have implemented interdisciplinary capstones. There are scores of important pedagogical reasons for these rich interdisciplinary courses, but one perceived challenge was that our program couldn’t take on a large number of heavily technical projects that required discipline-specific expertise (such as advanced business and computer science projects). As a result, PSU attempted to adapt a 400-level discipline-specific business course to serve as a University Studies capstone. In theory, the course would address each one of the University Studies goals and conduct the discipline’s application project. In practice, we have seen from our initial assessments that students aren’t reporting the same depth of transformational learning in the University Studies goal areas, given the course’s disproportionate emphasis on business content (which at the moment seems necessary to prepare students for their in-depth work with a small business). Our next step is to explore ways of shifting some of the academic content to courses earlier in the business curriculum, so that the capstone can be preserved for true application of knowledge and reflection on practice. As with all capstone courses, we will continue to thoughtfully experiment with a refreshed course design and to assess the outcomes of that experimentation.

LOOKING TOWARD THE FUTURE

As we approach the milestone of our program’s twenty-year anniversary, we celebrate the strides we have made in creating and assessing over 240 capstone courses annually. As we look to the future, we take great pride in using these data to inform faculty development and instructional resource provision at Portland State.

Our next grand innovation is the development of a program called Continuing Engagement for Social Change: At and Beyond the University. The goals of the program are to intentionally engage a larger number of students in the community before their senior capstone and to facilitate the continuing community involvement of our students and graduates after the completion of their capstone (details may be found at http://socialchange.pdx.edu). The concept is to connect thousands of our students and alumni as we collaborate to create meaningful social change in our communities.

One of the central features of this project is a two-credit Skills for Social Change seminar that any student or alumni can take to support their continued engagement in fostering social change. The course intentionally builds a learning community of participants to support each other in the challenging work of community engagement. Students can take it before their capstone as a way to explore engagement in the community or after their capstone to receive support in their continued community work. Alumni participate in the course as a means to intentionally connect with other community activists.

The program is a natural extension of the work we have been doing these past two decades at Portland State and a perfect way to further the engagement that we actively foster at the University. The program includes strategies for creating alignments between our various capstones along thematic areas, such as educational equity, sustainability, and community justice. The program leverages synergetic partnerships between students and alumni, through both face-to-face convenings and digital communities. We have great hope that this work will advance our mission to “Let Knowledge Serve the City” as it empowers our graduates to deepen their civic agency in our communities. We look forward to partnering with AAC&U and Bringing Theory to Practice to bring to fruition this vision of strengthened communities and enhanced graduates’ sense of their possibilities as change makers in our world.

REFERENCES

Designing and Implementing an Integrative, Collaborative, Problem-Solving-Based General Education Capstone

C. B. Griffin, director, General Education Program; professor, biology department, Grand Valley State University
Wendy Burns-Ardolino, chair and associate professor, liberal studies department, Grand Valley State University

Liberal education has remained at the forefront of Grand Valley State University’s (GVSU) mission since its founding in 1960. GVSU is a public institution and Carnegie classified as Masters Large, comprehensive in nature, with an enrollment of nearly 25,000 students. Over 40 percent of GVSU students are first-generation college students. Our commitment to liberal education is embedded in our values and our mission to “educate students to shape their lives, their professions, and their societies.” The institution strives to create lifelong learners that will continually draw on the knowledge and skills of a liberal education.

GVSU is in its second generation of having a required upper-division general education capstone experience. Although integration remains a central focus of both versions of the capstone, the structure of the capstone requirement and how we teach integration has changed over time. This article will discuss the two approaches that GVSU has used to embed a capstone in the general education program. Next it will describe how several faculty members teach the capstone courses. Finally, we’ll conclude with some of the lessons we have learned about designing and implementing the integrative capstone courses.

MODEL 1: INTEGRATION AMONG GENERAL EDUCATION CAPSTONE COURSES

Grand Valley State University has had a required single-course capstone for senior-level students in each of the majors since 1987. These capstone courses were designed to provide students with a broad and comprehensive perspective on the fundamental assumptions, issues, and problems of the field.

In 2000, GVSU revised the general education program to include an upper-division component called Themes. It was critical to faculty that we continued to emphasize the centrality of liberal education and one way to do this was to have the general education program not be something students “got out of the way” in the first two years. In essence, we wanted to create a general education capstone.

Faculty from across the university—from engineering to liberal studies, nursing to philosophy, and management to biology—developed twenty-one upper-division Theme courses. Students had to take three courses from three different disciplines from one of the thematically designed cluster of classes.

Integration was the defining goal of Themes. The original intent of these Themes was to have students integrate the knowledge they had learned among the three courses. One of the challenges for faculty was that they never knew if their Theme course was the student’s first, second, or third course, so they didn’t really know how much material from other Theme courses they could expect students to integrate. We knew anecdotally—from both faculty and students—that students were integrating the material from one Theme course into another, but it was difficult to systematically ensure that all students were developing the depth and breadth of integration skills we wanted for all students in all Themes.

A second challenge was that some of the Theme courses were too popular (over 100 percent full) while others suffered from low enrollment, which forced departments to cancel classes. Both of these situations created problems for students as they sought to complete their degree. As the university continued to grow,
ultimately it became a challenge to provide enough seats in the 181 courses that were distributed across the twenty-one Themes. As concerns mounted, in fall 2011 the Theme course requirement was changed from three to two courses.

MODEL 2: INTEGRATION WITHIN CAPSTONE COURSES
The second generation of general education capstones began in 2006. The general education committee (GEC is the faculty governance committee that administers the general education program) embarked on a strategic planning process. One of the components of the 2006 plan was to begin a course-based assessment of each of the nearly 300 courses in the general education program. While a major undertaking in its own right, the plan also included two other main components: changing the goals and the structure of the general education program.

Changing the Goals of the Program
The first component of the plan was for the GEC to determine if the goals of the program were consistent with best practices. After a host of workshops and campus forums, the committee adopted nearly all of the Association of American College and Universities’ LEAP Essential Learning Outcomes as skills goals to be taught in the general education program. Problem solving, collaboration, ethical reasoning, and quantitative literacy joined the existing goals of integrative learning, oral and written communication, information literacy, and critical and creative thinking. In some cases, the Essential Learning Outcomes were adopted as knowledge goals that described the structure of the program (i.e., civic engagement partially describes our new upper-division general education program).

To deal with the problems of integration among courses, the integration goal was changed to focus on having students integrate all of their knowledge—from the major, other general education courses, cocurricular activities, work, volunteering, and other experiences—within a single course. Faculty also helped students learn to integrate other students’ experiences plus the faculty member’s disciplinary knowledge into their conversations, projects, and assignments.

The other main component of the strategic plan was to analyze the current structure of our general education program to determine if it was the most efficient and effective way to help students attain proficiency in each of the goals. Although there had been a lot of campus conversation about changing the structure of the upper-division general education capstone requirement, the committee steadfastly pursued the “form follows function” approach; they would focus on the goals before developing the structure to deliver the goals. The committee knew there were a variety of ways to structure the program to achieve whatever the goals are, but they found that the process was anything but linear; the GEC often had to address both the goals and the structure of the program at the same time. For example, even if there was conceptual support to add a goal, faculty wanted to know where in our current or proposed structure the goal would be taught.

Changing the Structure of the Program
The structural revision of the general education program focused on the capstone-like Themes program. While the committee was deliberating on how to design the program, the institution had changed the requirement from three to two courses. This set the stage for the revision: the GEC considered a one- or two-course capstone experience. The committee rejected the idea of a one-course capstone requirement because they thought one exposure to the integration goal was not enough. They also debated on what to call the new program, ultimately deciding on Issues.

The overarching language that defined the Issues requirement is that Issues courses are designed to have students develop an understanding of how academic study connects to issues in the world. Preparing for responsible citizenship requires that students become conscious of both complementary and competing viewpoints and recognize that any issue or problem can be viewed from multiple perspectives.

We developed six Issues categories: globalization, health, human rights, identity, information-innovation-technology, and sustainability. These categories aim to include all disciplines and engage our students to think deeply and with the necessary skills to find solutions to problems at every level—local, national, and global. Students can also study abroad to fulfill the capstone requirement.

Like Themes, all Issues courses have few or no prerequisites, which helped ensure that the course would be open to all or virtually all students. To ensure that students have the academic expertise to address the problems they were going to explore in class, all courses have a junior standing prerequisite. As had been the case with Themes, the GEC maintained the requirement that students must take two Issues courses from two different disciplines.

To alleviate some of the bottlenecks caused by the Theme program, the new program allowed students to mix and match the two courses between two Issues categories. In summary, the focus of the upper division changed from a thematically based to an issue-based organizing structure. Integration changed from being something that happened among courses to within a course and it expressly acknowledged that integration was about more than just a student’s academic expertise.

All Issues course had to teach students the skills of integration, problem solving, and
collaboration. After months of deliberation, the GEC released the definition of the goals as well as the rubrics that more fully describe the goals (we used modified versions of AACU’s VALUE rubrics). The final definitions were as follows:

- **Integration** is the process of synthesizing and applying existing knowledge, past experiences, and other perspectives to new, complex situations.
- **Collaboration** is the process of working together and sharing the workload equitably to progress toward shared objectives.
- **Problem solving** is the process of designing and evaluating strategies to answer open-ended questions or achieve desired goals.

The new goals and new structure of the general education program were approved in winter of 2012 and began in the fall of 2013.

**Faculty Experiences**

In the next section we will describe several faculty members’ experiences in teaching the first round of Issues courses (specific course titles appear after faculty members’ names). They are Wendy Burns-Ardolino, LGBTQ Identities (liberal studies course); Maria Cimitite, Sex Matters: Feminist Philosophy in the Contemporary World (philosophy course); Dan Giedeman, Comparative Economic Systems (economics course); Shaily Menon, Environmental Ethics (biology course); Deana Weibel, Comparative World Religions (anthropology course).

Collaboration is actively taught in each course through modeling, instruction, and in-class assignments. Giedeman explains how to collaborate through online spaces including chat, e-mail, and discussion boards to engage in deliberation and synthesis. Burns-Ardolino provides students with a collaboration worksheet that each team must complete, with goals including shared team goals for the project, methods for team communication, skills and talents of team members, and projected duties and responsibilities for team members.

In all five courses, students spend at least 20 percent of their time in class working in teams, and the professors frequently check in to troubleshoot problems, refocus teams, and to monitor progress on team projects. The final project comprises 20 percent of the grade in the anthropology and economics courses, 25 percent for the biology course, 30 percent for the philosophy class, and 40 percent in the liberal studies class. Four courses require individual self-assessment at the conclusion of the team project.

Teams are formed in a variety of ways in each of the courses. Weibel creates groups by dispersing anthropology majors and minors among groups. She makes sure each four- to six-person team has an art, computer science, film, or video production major to assist with multimedia presentations. Cimitite makes sure that philosophy and women and gender studies majors are distributed across teams. Giedeman follows a similar plan in terms of team selection of eight groups of five. In contrast, Burns-Ardolino and Menon’s teams are self-selecting based on student-generated problem statements (team sizes are variable).

Strategies for framing the problem(s) to be addressed by teams varied across all five courses. In the economics course, Giedeman provides a variety of complex questions for teams to address, although he also offers student teams the option to develop their own questions. Sample questions include:

- Should the government do anything to try to reverse the increase in economic inequality in the United States which has been occurring over the past several decades? And, if so, how should it do? If not, why not?
- Should developed nations practice debt forgiveness with underdeveloped nations? If not, why not? If so, under what conditions?
- Pick a country of your choosing which ranks in the bottom 10 percent of the world in terms of per-capita income. Suppose the government of that country hired you as a consultant to provide advice on what the country should do to foster economic growth. What would you recommend?

In the anthropology class, Weibel has student teams randomly draw a relatively obscure religion from a grab bag, and the teams address historical, political, and social problems encountered by religions. She guides students through a series of questions that apply to each religion focusing on issues such as rites of passage, equalities and inequalities, and gender roles in religion.

In the liberal studies class, each student constructs a social problem statement and pitches it to the class. Students vote on which problem statements to address during the semester and form into self-selecting teams. Problems included:

- How to address substance abuse issues in lesbian, gay, bisexual, transgender, queer (LGBTQ) populations?
- How to address the need for sex education programs including prevention and treatment of sexually transmitted diseases to LGBTQ youth in schools?
- How to address the issues of inclusion and equity for LGBTQ people in the Boy Scouts of America?

In the biology class, students were asked on the first day to identify any community organizations with which they had worked. Students worked with the community partner to identify a problem for which the five- to six-person student teams—acting as an environmental consulting firm—would provide a solution. Projects have included:

- An interpretive guide/video for nature trails at Blandford Nature Center;
an awareness campaign for reusable bottles versus bottled water for elementary students at West Michigan Academy of Environmental Sciences; and

- the Rush Creek Watershed restoration and mapping project.

In the philosophy course, students were asked to persuade the GVSU community why and how sex matters, (a nod to the title of the course, which purposefully invokes the double-meaning of the phrase), applying philosophical theories to societal problems, such as violence toward women, inequalities in the law, or norming of subjectivity. Students were given latitude on which philosophers and problems to choose, as well as determining how to make their work interesting and persuasive. The students were required to determine roles and responsibilities for each member to ensure accountability and progress within the collaborative work.

Integration occurs on several different levels in all five courses. Many of the faculty thought their particular class was integrative by design in terms of the topic it focused on. Professors discussed how different disciplines approach these complex problems. Professors teach integration through modeling, practice, and assignments.

From the outset of the course, professors explain that the skills goals are tightly linked with the course content. In this way, students know from the start that they will be asked to integrate course content and research from different fields focused on their selected issue to engage in collaborative problem solving. This approach seems unilateral and suggests that although there are multiple ways of presenting problems, teaching integration, and collaborating, stating the goals clearly to students at the start of the course makes a difference in how students engage in the enterprise of capstone learning.

LESSONS LEARNED

There were a host of lessons we learned in designing and implementing a capstone requirement in the general education program. Support from the administration in funding faculty to develop the new Issues courses over the summer was instrumental in getting courses developed quickly. Even with faculty development, some courses needed additional help to get faculty to more clearly articulate how they were going to incorporate the new goals into their courses. Eventually, we put model courses online which helped subsequent faculty when it came time for them to propose a course. Faculty governance was very helpful in expediting the curricular review of the new courses.

There was also a very deliberate effort as we developed out the Issues courses to have faculty articulate how they would teach students the goals of integration, problem solving, and collaboration. It wasn’t sufficient to just provide students the opportunity to work in groups and hope they integrated diverse perspectives. To help them think about how to teach these goals, we provided packets of teaching materials to all Issues faculty. Although we were committed to providing faculty with sample assignments, teaching strategies, and other resources, the material didn’t get to all faculty for each of the goals early enough because of the sheer volume of material we developed. Anecdotal evidence indicated that for some faculty the material was very helpful, while others were overwhelmed with the amount of material we provided. We are planning on a wine and cheese event for late fall semester for faculty to share with each other and with faculty teaching next semester the resources they thought were most effective as well as lessons they learned about teaching the new Issues courses.

The transition from the old Theme course to the new Issues requirement was designed to provide maximum flexibility for the students (the registrar’s office was key). The downside of the transition plan was that it was very difficult for departments to know how many sections of the old Theme or new Issues courses they needed. It is a student-driven model in that courses are competing with each other for students; if enrollment isn’t high enough the class will be cancelled. This was particularly problematic for some faculty who had grown accustomed to a certain enrollment. As we seek to balance the overall number of seats we are offering, we need to continue to move seats from Theme courses to Issues courses.

Faculty members have to make the decision about group composition and size as well as whether they are defining the problem or students are. There are tradeoffs associated with each of the choices. Faculty will continue to learn how to teach the skills goals. Some faculty found the new focus on teaching skills goals unappealing, so much so that they have resisted converting their Theme course to an Issues course.

CONCLUSION

We firmly believe our new two-course—Issues and Themes—capstone requirement in the general education program will ensure that students have the knowledge, skills, and abilities to be successful when they leave GVSU. Putting explicit structures into assignments gives students the necessary parameters to learn how to work collaboratively while integrating knowledge. Without these structures, the courses would not achieve the goals of the general education program. Our challenge is to make certain that faculty are equipped with the know-how they need to structure assignments so that integration and collaboration do occur. Providing a learning environment for students to actively reflect on these skills is what will make the program a success.
Integrative Learning in the Liberal Arts: From Cluster to Capstone

LaGuardia Community College is one of seven community colleges in the City University of New York (CUNY) system. Located in Long Island City, Queens, LaGuardia provides educational opportunities to a diverse student body from over 160 countries, offering over fifty associate degree and certificate programs, as well as noncredit educational advancement through our continuing education programs. To inspire students to achieve their educational dreams, LaGuardia offers students a robust educational experience that includes experiential education opportunities, e-portfolio development, an array of cocurricular activities, and capstone courses. Nowhere are these various elements more important than in our liberal arts major.

THE LIBERAL ARTS MAJOR

The Liberal Arts: Social Sciences and Humanities major is one of the college’s largest degree programs, with over 2,700 students enrolled in fall 2013. The fact that the graduation rate of liberal arts majors is below the college average is indicative of the challenges faced in this program. At LaGuardia, the liberal arts degree is offered among six academic departments (education and language acquisition, humanities, English, mathematics, social science, and natural science), so “ownership” is not focused in one area. Therefore, developing and managing support systems such as advisement has proved problematic. As an additional challenge, liberal arts also functions as the “catch-all” major for undecided students, meaning that students often do not form an identity as—or see the value of being—a liberal arts major.

Within this challenging framework, the college is actively working to foster integrative learning into the curriculum. Structurally, the college has taken the initiative to bring the academic departments together by creating an ongoing working group of the department chairs; through this enhanced communication and relationship building, the college is starting to treat the degree more as a single program rather than an uncoordinated array of courses among six departments. In terms of curricular matters, this group provides guidance in offering the two key required means for fostering integrative learning within the degree program: first-year learning communities (liberal arts clusters) and a capstone course, titled Humanism, Science, and Technology. Faculty-led groups meet throughout the semester to discuss trends in teaching integration in the liberal arts curriculum and to share strategies to link writing, problem-solving skills, and technology from the clusters to the capstone course. By providing our liberal arts students with cluster and capstone courses at each end of their curriculum and supporting these courses through regular cross-departmental collaboration and discussion, we provide our students with a rich integrative experience.

In their first semester, all full-time liberal arts students are required to take the liberal arts cluster—a full-time schedule comprised of courses in their program. Students take two English courses (composition and research) and two other courses drawn from the social sciences and humanities departments. These courses revolve around a theme selected by faculty that is designed to enable students to examine a concept from mul-

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multiple perspectives, with one hour of the schedule being team-taught by two faculty members to further enable integration between the subjects. At the end of the semester, students produce an assignment that demonstrates their ability to integrate methods, concepts, and terms from the various classes. This assignment can take a variety of forms, including films, performances, research papers, and exhibits.

One of our recent course offerings combines the two English classes with Latin American Philosophy and Introduction to Art in a cluster centered on the theme of hybridity and identity. In the composition class, students are invited to examine the concept of gender and how it plays out in our writing, speech, dress, and behaviors. By examining their own writing and the texts of others (fiction and nonfiction), students learn about composition, audience, and subtext while examining the concept of self-performance. In their philosophy class, they focus on issues of identity as hybrid—that an individual can be formulated by the negotiation between different sociopolitical, ethnic, or geographical groups. Their art class, meanwhile, focuses on representations of identity seen in portraiture, public art, murals, and performance, and students consider overt and coded identities, the interplay of truth and fiction, and the role of artist and audience.

Assignments for each of these classes draw on concepts and information learned in students’ partner classes for support and insight. For example, an advertisement analysis paper for the composition class draws from readings on conquest in philosophy; study of conquest in the philosophy class draws on students’ ability to “read” an image learned in their art class; discussions of how an identity can be seen in a piece of art draws in turn upon discussions of self-performance in students’ English classes.

At the culmination of this class, students work in teams to devise original pieces for exhibition to the college community. After brainstorming what they are doing in each of their classes and locating points of intersection, students must devise an assignment that demonstrates integration. Photographic exhibits, documentaries, and dance pieces are among the various formats proposed by students for this integrative assignment.

After completing their learning community, students choose their own classes. Course selection is based on guidelines devised by CUNY to ensure breadth of study while maintaining their freedom to choose specific courses. After they have completed at least thirty-three credits, liberal arts students have an opportunity not typically afforded to community college students—they take a capstone course.

Making sense of the diverse courses they have taken by the time they are preparing to graduate is not easy, but our capstone course provides students a forum in which this can happen.

A SPACE FOR STUDENTS TO MAKE SENSE OF THEIR LEARNING

In a writing-intensive capstone course, students build upon what they have learned while at LaGuardia in a unique interdisciplinary course. Taught by faculty from all six of our liberal arts departments, this course creates a space for students to make sense of their learning, in and out of the classroom. Drawing on the capstone principles of reflection, integration, closure, and transition, this course is a pivotal moment in their LaGuardia career. It allows students to bring the strands of their diverse academic careers together at the end of their two-year degree by making connections between seemingly disparate courses and subjects, and prepare for their next steps (which for the vast majority of our graduates means transfer to a four-year school).

Themes for this course have varied from genocide to mapping to madness, which has allowed faculty to deliver an integrative learning experience based on their research interests. One section of this course approaches the capstone course by focusing on American museums. The readings are drawn from fields that are in and of themselves interdisciplinary, including American studies, museum studies, and visual studies, exposing students to subjects removed from traditional disciplinary divides. In terms of the content of class discussions, students consider questions related to the ethics of displaying human remains and religious artifacts, how scientific theories are treated differently in different cities and states, how peoples of other countries and eras are recorded, how curators shape our understanding, the desire to learn, and the impact of space and layout on the reception of knowledge.
In addressing such issues, students apply knowledge gained from specific courses in traditional disciplines. In a recent discussion in the museum-themed section about how we categorize animals and people using systems of taxonomy, for example, a student currently taking a biology class introduced the system of “domains” and argued for its superiority over the more well-known Linnaeus system (kingdoms, classes, etc.). This sparked debate over the need to classify and find order in scientific fields and how that relates to religion, individuality, and prejudice. The debate focused on how to classify people, animals, and plants based on what can be seen with the naked eye versus how something came to be versus structural features or abilities. Students volunteered examples that were drawn from classes they had taken (including anthropology, philosophy, biology, math, and art), and from their lived experience, including census forms and surveys they had completed, the designs of uniforms, and their observations of grocery store layouts (why we place tomatoes with vegetables but with canned fruit in a different aisle). They then apply these ideas to museums in New York City that they visit during the semester. Readings, discussions, and assignments such as these allow students to critically examine what they see around them by drawing upon their educational experiences (past and present), their lived experience, and the interplay between their understandings and the views of others.

At the conclusion of this course, students develop an original museum exhibit for display in New York in a real (present day or historical) museum and create an advertisement for the exhibit. In creating this exhibit, students are applying what they’ve learned about museums to a subject of particular interest to them. In doing this, they are not only furthering their integration of the various pieces of knowledge they’ve accumulated over the prior year and a half, but are also focusing that knowledge and critical thinking on a specific topic of interest to them. Indeed, students reported in recent reflection papers that this assignment has “challenged [them] intellectually,” helped them “draw connections between earlier classes,” allowed them explore the importance of their “future major,” and to apply knowledge and skills to their “outside life.”

**FOSTERING INTERDISCIPLINARY THINKING SKILLS IN ALL STUDENTS**

Each capstone’s theme is secondary to the principles behind it—courses are always interdisciplinary, require critical thinking, and draw upon students’ lived and learned experiences. LaGuardia’s liberal arts students have a diverse and amorphous array of courses, as there is no prescribed sequence. However, the cluster and the capstone courses that frame LaGuardia’s liberal arts curriculum foster interdisciplinary thinking skills in all students, which they will use to make connections between their classes (past, present, and future), their future careers, and their lived experience outside of the classroom.

As we move forward with trying to enhance the program’s success rates, the challenge is to link clusters to the capstone course in ways that continually engage students from their first semester through graduation, fostering even greater integration, curricular cohesion, and sense of community. LaGuardia continues to innovate in this regard. Faculty recently created our Community 2.0 program: online learning communities that link students, for example, in a first-year composition class with the capstone course. Students in the advanced course may give feedback on the writing of first-year students, and often become informal mentors and role models for success. Faculty are also now considering if it is possible to sequence the courses in the liberal arts curriculum, potentially creating more of a cohort model that can foster more peer interaction and community.

As part of an ambitious redesign of the college’s academic advising system that is now underway, faculty have joined with professional advising staff from the division of student affairs to create a liberal arts advising team. In addition to providing direct advisement (such as course selection), the team will encourage students to participate in cocurricular activities and advising events. For example, this past semester liberal arts students were invited to hear a panel of diverse New York City professionals talk about how a liberal arts education prepared them for their careers; beyond being a presentation, the event was set up for networking, so that students could have the opportunity to articulate what they have learned in our liberal arts program and begin to draw their own connections between their learning and its possible application to a future career. The touchstone for creating all such events is that they reinforce our integrative learning philosophy, dovetailing with a key approach of the clusters and capstone: making connections between students’ lived and learned experiences, between their learning and its application in the world.

**REFERENCE**

Culminating experiences provide graduating seniors a course, program, or activity designed to cap off the integration of educational experiences, and foster transition to work or further education beyond the bachelor’s degree experience. Founded in the early 1900s as courses taught at the end of a program to integrate philosophy and religion, senior capstones are generally considered mastery experiences, the final opportunity to instill the values, knowledge, and skills expected of graduates; they are, ultimately, a rite of passage (Gardner, Van der Veer, and Associates 1998; Hunter, Keup, Kinzie, and Maietta 2012). Recently recognized as a transformative learning experience because of their positive contributions to desired learning outcomes, capstones are considered a “high-impact practice” (Kuh 2008). Capstones have grown in scope and importance in undergraduate education, yet we know little about the nature and value of the experience for student learning, and in particular the extent to which they contribute to one of their central purposes: fostering integrative learning.

The culminating experience is considered the final opportunity to bring a holistic understanding to students’ educational journeys. However, as Brownell and Swaner (2010) concluded, research on capstone experiences is largely descriptive, and while there is some evidence that capstones foster students’ abilities to apply and integrate knowledge in the major, such outcomes-based research is limited. This article highlights extant research on culminating experiences, relying primarily on results from multiple years of the National Survey of Student Engagement (NSSE), supplemented by findings from institutional surveys of senior capstone experiences, and independent studies of culminating experiences. The article closes with a discussion of capstones and integrative learning, and suggests further research on the outcomes of capstones.

**CAPSTONES: NATURE AND SCOPE**

Culminating experiences take many forms, including senior seminars, capstone courses, field-based experiences and internships, senior projects, and comprehensive exams. Since 2000, the National Survey of Student Engagement (NSSE), an annual assessment of students’ exposure to educationally purposeful activities, has measured students’ experiences in culminating experiences. Although response options were altered in 2004 to clarify the state of students’ experience (indicating completion, in process, expectation, or no plans to do a capstone experience), the proportion of students reporting senior culminating experiences across more than 1,500 NSSE participating colleges and universities is remarkably consistent (Kuh, O’Donnell, and Reed 2013; NSSE 2011). About one in three seniors report having completed such an experience. Among the high-impact practices measured on NSSE, culminating experiences rank third in terms of participation, behind the more frequently experienced internships and service learning.

Participation in capstones varies across institutional type, with students attending baccalaureate liberal arts and private institutions much more likely to have such experiences. Findings from the 2011 National Survey of Senior Capstone Experiences (Padgett and Kilgo 2012) mirror NSSE results about institutional type, and also show that capstones are more likely to be found at institutions with senior enrollments less than 1,000 students. It also shows that most capstones (85 percent) are discipline-based courses. Unlike several of the other high-impact practices, such as study abroad and research with a faculty member, in which participation differs significantly by student characteristics such as first-generation status and race-ethnicity, NSSE results show that culminating experiences are fairly evenly distributed across student characteristics. Some differences across majors exist—students majoring in arts and humanities, communications, and engineering are more likely to have a culminating experience, while education majors...
were the least likely. Equity across student characteristics and small differences by major field is explainable, in that senior culminating experiences are typically built into the curriculum. In fact, dissimilar from elective experiences like study abroad, culminating experiences are educational opportunities that can be made available to all students.

To examine more closely the nature and impact of senior culminating experiences, in 2007 and again in 2009, NSSE appended a series of questions to the core survey. These items reflect responses from seniors at institutions who had completed a culminating experience or capstone. Results from the 2007 item set show that the most common form of culminating experience was a major paper, project, or thesis, and that most students had the experience in the context of their major. Three quarters (77 percent) of respondents indicated that their culminating experience was required for graduation. Students reported that senior projects required a varying amount of time, with a third of seniors reporting five hours or less per week, and nearly another third reporting between six and ten hours per week. Faculty members were essential to senior projects, with more than 60 percent of seniors reporting frequent meetings with faculty supervising their work.

Most senior culminating experiences aim to address specific educational outcomes. Padgett and Kilgo (2012) identified the three most important goals for the capstone course: development of critical thinking, analytical, or problem-solving skills. Other objectives—including the ability to conduct scholarly research, career preparation, professional development, and proficiency in written communication—were identified as important, but far less than the aforementioned higher-order learning skills.

The most frequently reported teaching practice implemented in capstone was integrated learning (60 percent), followed closely by communication of high expectations (57 percent), and academic challenge (55 percent). These findings suggest that institutions are incorporating vetted effective teaching practices within the capstone.

**CAPSTONES: EDUCATIONAL GAINS AND OUTCOMES**

Capstones are designed to address a range of important educational processes and outcomes including integration and closure, application, reflection, and transition (Gardner et al. 1998). While the evidence indicates that capstones are educationally beneficial, most of the research is lacking in terms of scale and the specification and use of robust measures of valued outcomes such as integrative learning.

As a high-impact practice, capstones provide students a host of opportunities to be engaged in educationally purposeful practice. In fact, participation in a culminating experience is positively associated with the extent to which students interact with faculty, collaborate with peers on academic matters, and experience higher-order learning and perceive their environment as supportive of their learning. Quite simply, seniors who reported a culminating experience were more engaged in educationally purposeful activities than their nonparticipating peers (Kuh 2008; NSSE 2009).

Career preparation is often an objective of capstones. As a result, it’s not surprising that seniors who participated in a senior culminating experience were more likely to report gains in job- or work-related knowledge and skills than their peers who did not participate (NSSE 2011). However, an examination of the relationship between seniors who participated in any of the high-impact practices and perceptions of gains in job- or work-related knowledge and skills revealed that seniors who participated in internships and service-learning projects perceived greater gains in work-related knowledge than students who participated in capstone experiences.

Educational gains associated with culminating experiences vary by capstone emphasis. NSSE’s in-depth examination of capstone experiences revealed that capstones characterized as a field placement or experience were associated with the greatest number of educational gains (fourteen of fifteen common gains), including working effectively with others, acquiring job- or work-related skills, solving complex, real-world problems, applying theory, and synthesizing and organizing ideas. In comparison, students whose capstone experience was a comprehensive exam, a thesis, or presentation were associated with only about half of the specified gains, and these gains were in the expected areas of writing, thinking imaginatively, and synthesizing (NSSE 2007). Similarly, Rhodes and Agre-Kippenhan (2004) found that the community-based experience in Portland State University’s capstones were associated with significant educational gains, including leadership ability, tolerance of others with different beliefs, knowledge of people from different races or cultures, and the understanding of social issues, among others.

The extent to which faculty and students interact in the culminating experience matters. The more students reported meeting with their supervising faculty member, receiving clearly explicated expectations, and receiving helpful feedback, the greater the gains (NSSE 2007). Finally, there is value to capstones that place significant demands on students’ time. The more time and effort demanded of students, the greater their perception of educational gains.

The experience of deep learning—or sophisticated cognitive tasks rather than rote memorization, aligning with employer demands for creativity and problem-solving skills—is a desired outcome of substantive educational practices like culminating experiences. Deep learning requires the acquisition of knowledge, skills, and competencies across a variety of academic and social activities, and integration of these diverse experiences into a meaningful whole. NSSE’s deep learning measure includes scales of higher-order and reflective and integrative learning, including such activities as incorporating ideas from
variou sources into a paper, including diverse perspectives in class discussions or writing projects, putting together ideas and concepts from different courses, and trying to better understand someone else’s views by imagining how an issue looks from another person’s perspective. Seniors who reported a capstone experienced greater gains in NSSE measures of reflective and integrative learning than their nonparticipating peers (Kuh 2008; NSSE 2007).

An in-depth investigation of capstone experiences at four liberal arts institutions revealed detailed information about the benefits and practices associated with effective capstone experiences (Schermer and Gray 2012). Although the capstones across these four institutions differed in terms of purpose, the experiences shared a common emphasis on a culminating, sustained, independent act of research or inquiry, centered in the students’ major, with a focus on critical thinking and communication skills, and a thesis or paper. Results of a pre-post capstone survey design revealed increases on eight educational scales (exhibition of scholarly skills, need for cognition, project management, academic ability self-rating, collaborative skills, independent voice, strive to achieve, and research orientation). However, no change was found in civic orientation, status career orientation, and satisfaction with instruction, and declines resulted on the following scales: higher-order cognition, satisfaction with support services, and use of multiple perspectives. The increase in the scales, particularly the substantial effort on scholarly skills and research orientation, suggest that the capstone is an effective educational practice, with students performing at a higher level on critical thinking, research, and communication skills. Yet, while the capstone is a culminating experience that is intended to bring together an array of liberal arts outcomes, the largest gains were associated with the skills needed to successfully complete a narrow project within a discipline. This finding suggests that capstones that involve very focused questions in the discipline may not contribute to desired outcomes including integration across disciplines and ideas, use of multiple perspectives, or synthesizing and applying learning to a wider context.

One of the most prized objectives of culminating experiences is their role in bringing coherence to students’ educational journey through the integration of academic experiences and ideas. Although NSSE results demonstrate positive associations between culminating experiences and integrative learning, Schermer and Gray’s (2012) investigation raises questions about the potential for capstones, particularly those within the major, to foster the level of integration many envision.

**FOSTERING INTEGRATIVE LEARNING**

Believing that the undergraduate experience is fragmented and not preparing students for the world’s complexities, educators across campuses are investing in integrative learning to help students put the pieces together. Borrowing from the AAC&U VALUE rubric, integrative learning is defined as understanding and a disposition that students build across the curriculum and cocurriculum, from making simple connections among ideas and experiences to synthesizing and transferring learning to new, complex situations within and beyond the campus (Rhodes 2010). Well-designed educational experiences such as learning communities or linked courses, integrated assignments, and interdisciplinary curricula can help students achieve integration by connecting their learning across fields and linking coursework with experiences in larger campus and community contexts (Huber, Hutchings, and Gale 2005). Integrative learning demands intentional effort by the student and deliberate pedagogical and curricular moves by educators.

From their inception at the beginning of the twentieth century, capstones were intended to foster integration. Yet, this purpose is not always well-specified in today’s capstone experiences. To achieve greater integration, capstones must explicitly declare integrative learning outcomes and then require students to draw on learning from earlier courses to explore a new topic or solve a problem, involve students in substantive experiences that combine academic and community-based work, and demand reflection on the meaning that students are making towards integration.

The predominance of capstone courses as the final course to cap off the major, and extent to which projects frequently require narrow explorations within students’ major field, limit the likelihood that students will be challenged to connect ideas across their coursework and transfer learning to wider contexts. The fact that most culminating experiences are rooted in the discipline may simply preclude opportunities for integrative learning. The design of interdisciplinary capstone courses or projects is an obvious way to expand connections. Instructional and curricular scaffolding are essential to the promotion of deeper levels of learning. The intention of scaffolding is to provide extensive structure and graduated support to assist students in accomplishing complex tasks. The complexity of integrative learning, combined with the intensity and importance of culminating experiences, makes it crucial to scaffold learning experiences to help students experience integrative learning early in their academic program, and to participate in simple capstone preparation experiences that will help them make deeper connections later when they actually begin their culminating experience. For example, learning communities that link courses around interdisciplinary themes are opportunities to help students connect concepts across courses. When experiences like these occur in the first year, students can develop habits of connection-making that can be cultivated and refined in subsequent years. Integrative learning is too complex to only address in the senior capstone. Rather, integrative experiences and connections to the culminating experience
should be introduced to students as early as the first college year, and be intentionally reinforced throughout the curriculum.

Another way to increase integration in the capstone is to develop meaningful opportunities for students to connect curricular, cocurricular, and experiential education. Outside-the-classroom activity in which students are confronted with new perspectives and challenged to integrate insights from different perspectives, and experiences that connect course content with applied contexts and demand that students tuck back and forth between the classroom and the outside world, represent critical steps toward intentional, integrative learning.

Integrative learning and reflection go hand in hand. Whether called reflection or metacognition, the idea of making students more intentional, self-aware, and purposeful about integrative learning is powerful. Reflection assignments that invite students to consider how capstone experiences have prompted them to reevaluate their views and take on new perspectives, as well as classic reflection activities that ask students to deepen their understanding of what and how they are learning, are vital. Strategic prompts or assignments guide students through a systematic reflection process that can weave potentially fragmented learning experiences into a clearer and more meaningful tapestry. Culminating experiences that incorporate portfolios as a formal vehicle for students to document, connect, and reflect upon their integrative learning experiences, and rubrics for self-assessment such as the AAC&U integrative learning VALUE rubric (Rhodes 2010), can serve integrative purposes in capstones by making students more self-aware. Whatever the approach, culminating experiences should have a mechanism to encourage students to reflect on and make meaning of the many facets of their collegiate experience.

Finally, the capstone can be a rich source of information on the quality of undergraduate instruction and students’ achievement levels in both skills and knowledge. It is an excellent and frequently employed site for student learning outcomes assessment (Berheide 2007). In addition, the evaluation of capstones for educational effectiveness and specifically for their contribution to outcomes like integrative learning must be enacted. Assessment of integrative learning—via pre-post designs, surveys of students experiences, application of AAC&Us integrative learning rubric to senior projects and presentations, and alumni surveys of career preparation—can help inform capstone practice and guide program improvement.

**CONCLUSION**

The critique that undergraduate education must be more than a collection of separate, disconnected experiences suggests that we must enhance opportunities to connect, deepen, and generalize learning beyond the immediate setting where it occurs. The increase in the number of institutions that offer culminating experiences and the press for greater institutional investment in integrative learning and experiences that bring coherence to undergraduate education makes it incumbent to be more intentional about ensuring the integrative potential of capstones. Yet, while the scant research on capstones shows positive outcomes for students who participate, there is more to learn about the quality of these experiences and their contribution to integrative learning.

Opportunities to integrate, synthesize, and apply knowledge are essential to ensuring deep, meaningful learning experiences. The senior culminating experience provides an opportunity to cap off the undergraduate years and prepare students to take ownership of the diverse strands of their educational journey and transition to the next phase in life. Institutions need to better understand the extent to which students experience integrative learning and the aspects of the culminating experience that make this happen. Research findings on culminating experiences, combined with institutional assessments, could help institutions maximize the potential for culminating experiences to function as the definitive site for integrative learning and educational coherence.

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A scholar is a trusted and accomplished expert, a creator of knowledge who can integrate disparate data and concepts to innovate and reach new conclusions. But how does one become a scholar? And why do we need them?

Naturally, these were not questions that had crossed my mind as I entered college. Like many first-generation students, I came to higher education on a nontraditional path without a map. But for me, this journey ended with far more than a degree; it culminated in an identity that integrated my life experiences and culture with the confidence and skillset of a scholar.

I did not always understand my “undergraduate experience” as a single, cohesive entity. By the end of my third year—my first year at an urban university following community college—I had grown tremendously and often extolled the value of college to my friends and family. However, I certainly didn’t understand how what I experienced would fit into my future as a professional or citizen. I, like so many underserved students before me, felt like an impostor. In fact, my own insecurity about belonging in academia fueled my determination to achieve, to memorize, and to know. I still lacked the courage to take the next step to integrate, to create, or to innovate.

The catalyst that changed this mindset came from two connected learning experiences: my undergraduate research experience and my senior capstone. Both were concerned with medieval works of art or writing, and both were facilitated by the same dedicated professor, Anne McClanan. More substantively, both were opportunities that shifted my position from passive knowledge bank to knowledge producer.

My undergraduate research traversed the humanities and social sciences; I delved into art history, medieval history and government, historiography, hagiography, theology, and mosaic-making. I read, synthesized, analyzed, wrote, revised, and started over again. Less than a year later, my senior capstone course, a combined research and service-learning curriculum, pushed my critical thinking and entrepreneurialism to the next level. My charge was to uncover the origin and cultural significance of two medieval objects to enrich their value to the community and contribute to a growing public repository of local artifacts.

As a result of these connected experiences, I integrated and fortified a range of skills and disciplinary knowledge to solve problems for which there was no answer at the back of a book. Engaging in integrative learning taught me to see my own generative potential. Somewhere in the course of expending tremendous intellectual and emotional energy to complete these tasks, I had become more than a good pupil or star test-taker: I had become a scholar. I had reached new and original conclusions, and done so with the mentoring necessary to feel confident in my expertise. In doing so I learned there was nothing about me—my gender, my ethnicity, my class, my educational path—that prevented me from adding another layer to my identity: that of innovator, professional, or scholar. The confidence and entrepreneurship associated with this revelation has translated directly to my capacity as a professional.

Years later, working as a professional in higher education, I see how urgently our collective future needs a daring cohort of scholars to rise out of every neighborhood, culture, and class in order to reenergize the fatigue of our planet and our communities. We need to believe it is possible to empower students from every background, educational path, and level of preparedness to do more than know or learn, but to become the creator and the questioner, to know and accept themselves as scholars who can and must answer the big questions in both their civic and professional lives. And the sooner, the better. •
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