

Integration, Reflection, Closure & Transition Advancing Capstone Learning at LaGuardia

Report of the Faculty Research Team on Capstone Education

Nov. 15, 2008

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INTRODUCTION:

Over the past two decades, colleges nationwide have focused increased attention on capstone courses. A recent survey of more than 700 colleges revealed that 75% of them offered capstone courses designed to facilitate synthesis, integration, and transition (Henscheid, Breitmeyer, & Mercer, 2000). One study defined the capstone in this way:

The capstone course typically is defined as a crowning course or experience coming at the end of a sequence of courses with the specific objective of *integrating* a body of relatively fragmented knowledge into a unified whole. [...] [T]his course provides an experience through which undergraduate students both look back over their undergraduate curriculum in an effort to make sense of that experience and look forward to a life by building on that experience. (Durel, 1993, p. 223)

Capstone courses are increasingly common across a range of institutions. Research shows that selective private colleges, such as Boston College and Case Western Reserve University, demonstrate a strong commitment to capstones. Capstones can also be found at a growing number of comprehensive public institutions, including Portland State and Pennsylvania State Universities. Moreover, there are signs of increased interest among professional programs and colleges. The National Center for Research on Vocational Education reported that “capstone courses and projects demonstrating a student’s ability to plan, execute, and present a work-like product [...] are valuable instruments for communicating to students themselves and to potential employers what they know and are able to do” (Badway & Grubb, 1999).

While capstone courses vary across disciplines and institutional categories, an analysis of the proceedings of four National Conferences on the Senior Year Experience by Joseph Cuseo (1998) identified common benefits of the capstone course:

- fostering synthesis within the academic major
- promoting connections between general education and the academic major
- developing important student skills initiated earlier in the college curriculum
- improving career preparation and facilitating transition from academia to professional life
- enhancing seniors’ preparation for postgraduate education (p. 22)

Finally, capstones provide crucial opportunities for comprehensive assessment. “By its very nature,” one recent study suggests, “the capstone course is a method of summative evaluation.” Such a course “not only assesses previous cognitive learning in the major, but also provides a forum that allows an instructor to assess the student’s overall collegiate experience” (Moore, 2005, p. 440).

Despite their educational advantages, capstone courses have yet to be widely integrated into community college curricula. Capstones can be found at some community colleges, but they are not common, and often lack the well-developed quality of capstones in baccalaureate settings. Until recently, LaGuardia was no exception to this rule. While LaGuardia departments have identified a capstone course for every major, the College community has only begun to consider the ways that capstones should help students synthesize knowledge and skills across the college experience. A recent Title V grant from the U.S. Department of Education has enabled the college to investigate best practices in capstone education and support new faculty development initiatives attentive to the broad pedagogical issues surrounding capstone courses.

In January 2008, with support from Title V, a group of LaGuardia faculty assembled to form a faculty research team to explore emerging and best practices in capstone education. Prof. J. Elizabeth Clark of the English Department and Assistant Dean Bret Eynon co-chaired the team, which brought together a wealth of teaching expertise and diverse disciplinary perspectives. Craig Kasprzak of the Center for Teaching & Learning helped to coordinate the workings of the team and drew upon his teaching experience at Boston College, York College/CUNY, and elsewhere. The team included:

- Prof. Debra Engel, Department of Natural & Applied Sciences, Director of the Physical Therapy Assistant Program
- Prof. Michael Rodriguez, Department of Humanities/Fine Arts Program
- Prof. Michael Napolitano, Department of Business & Technology, Chair
- Prof. James Richardson, Department of Humanities, Director of the New Media Program
- Prof. Carolyn Sterling-Deer, Department of Education & Language Acquisition.

All faculty members on the research team regularly teach capstones in their respective programs, had previously taken part in WID, and taught writing intensive courses. Each team member brought with him or her a conscientious, purposeful, and evolving approach to capstone pedagogy, and contributed knowledge and experience that illuminated both the strengths and the limitations of capstones as they are currently configured across the college.

The research team worked diligently from January through June, 2008, researching best practices in capstone pedagogy, studying the literature, and examining case studies from four- and two-year schools, as well as MA programs. This report summarizes their findings. It documents their preliminary recommendations for ways to strengthen capstone courses at LaGuardia. And it lays important groundwork for necessary additional work on this issue through a sustained faculty development program that will push forward with the process of research, experimentation, and reflection. Led by Prof. Clark and supported by Title V, this expanded faculty seminar launched in September 2008.

METHODOLOGY:

The research team met regularly and conducted independent research in the Fall II and Spring I semesters of 2008. At team meetings they shared the curricula and practice of their programs' and departments' capstone courses. To broaden their perspectives and prepare to make informed recommendations, team members also reviewed the available literature on capstone courses, explored best national practices in capstone course and program design, and interviewed representatives from campuses with well-established capstone curricula.

Reviewing the Literature: The faculty research team's work was substantially informed by Jean Henscheid and Lisa Barnicoat's (2001) overview of capstones, "Senior Capstone Courses in Higher Education." Henscheid and Barnicoat summarize the four major studies of the senior seminar: a) an early 1970s study by the Carnegie Council on Policy Studies in Higher Education; b) a 1990 study by Joseph Cuseo; c) a 2000 review of capstone literature in ERIC, also by Henscheid; and d) a 2000 study by the National Resource Center for the First-Year Experience

and Students in Transition at the University of South Carolina. Additional recommendations were offered in the Boyer Report (See Appendix A). Reviewing these resources, the research team then turned their focus to the authoritative work in the field, John Gardner and Gretchen Van der Veer's 1997 collection, *The Senior Year Experience: Facilitating Integration, Reflection, Closure, and Transition*.

Examining Best Practices: In addition to consulting the published literature, the research team utilized the wide availability of institutional information on the World Wide Web to explore capstone policies and practices at a broad range of higher education institutions. Literally hundreds of universities post information about their capstone practices on their websites. The research team used the Web to examine sample syllabi, departmental and college policies, guidelines for developing capstone courses, assessment practices, and approaches to the use of ePortfolio in capstone settings.

In this process, the research team examined nearly four dozen institutions, including: Agnes Scott College (GA), Arizona State University, Austin Community College (TX), Boston College, Bryant University (RI), Case Western Reserve University (OH), California State University-Channel Islands, California State University-Northridge, Colby-Sawyer College (NH), Clemson University (SC), Colorado State University-Pueblo, Columbus State Community College (OH), Commonwealth College [University of Massachusetts-Amherst], Community College of Baltimore-Dundalk, DePaul University (IL), Edison Community College (FL), Emporia State University (KS), Highland Community College (IL), Indiana University Purdue University-Indianapolis, Ithaca College (NY), Kennesaw State University (GA), Lakeland Community College (OH), Massachusetts College of Art & Design, Miami University of Ohio, Mount St. Mary's (NY), New York University, Northeastern University (MA), Northwestern State University (LA), Pennsylvania State University, Philadelphia University, Portland State University (OR), Prince George's Community College (MD), Rhodes State College (OH), Salve Regina University (RI), San Francisco State University (CA), Skidmore College (NY), Southern Connecticut State University, St. Charles Community College (MO), St. Louis Community College (MO), St. Mary's College (MD), Terra Community College (OH), Truman State College (MO), University of Delaware, University of Iowa, University of the Virgin Islands, University of Nevada-Reno, and Western Nebraska Community College.

Case Study Research: The team's most intensive undertaking entailed interviewing faculty and staff at selected colleges and universities to learn more about their capstone practices. For these schools, initial research conducted in published print sources and on the Web led to telephone interviews. Team members collaborated in the joint development of a detailed interview instrument. Reporting on initial experiences, they refined the instrument and their interviewing approaches to maximize the value of the information gathered. Each team member then reported on their case studies in written form and delivered oral reports to the assembled research team.

Schools studied with this intensive approach included: Arizona State University – Multimedia Writing & Technical Communication Program, Boston College, California State University-Channel Islands – Department of English, Colorado State University-Pueblo – Teacher Education Program, Columbus State Community College (OH), Commonwealth College [University of Massachusetts-Amherst Honors Program], Community College of

Baltimore County-Dundalk, Indiana University Purdue University-Indianapolis, Kennesaw State University (GA), Massachusetts College of Art & Design, Mount St. Mary's (NY), Pennsylvania State University, Portland State University (OR), Rhodes State College (OH), San Francisco State University (CA), Southern Connecticut State University, St. Charles Community College (MO), University of Iowa – Department of Sociology, University of Nevada-Reno.¹

FINDINGS:

The research team began with what seems at first glance to be a pair of simple questions: What is a capstone course? What are the key features that define a capstone experience? Interestingly, the team found that there are different approaches to this question. In *The Senior Year Experience*, Gardner and Van der Veer (1998) focus on four themes commonly emphasized in capstone programs:

- Integration
- Reflection
- Closure
- Transition

According to Gardner and Van der Veer, Integration and Reflection point to the ways that capstones help students synthesize their learning and arrive at new understandings. Closure and Transition suggest the ways that capstones help students use those understandings to plan and prepare for next stages in their career, educational and community lives. Taken together, these four themes serve as an overarching definitional framework for capstone courses at many institutions, and could serve a similar purpose at LaGuardia.

Others have demonstrated different approaches to defining the capstone. In a widely cited article, “Objectives and Benefits of Senior Year Programs,” Joseph Cuseo (1998) lists ten specific “purposes and goals” common to prevailing capstone practice:

1. Promoting the coherence and relevance of *general education*
2. Promoting integration and connections between *general education* and the *academic major*
3. Fostering integration and synthesis *within* the *academic major*
4. Promoting meaningful connections between the *academic major* and *work (career)* experiences
5. Explicitly and intentionally developing important student *skills, competencies, and perspectives* that are tacitly or incidentally developed in the college curriculum (for example, leadership skills and character and values development)
6. Enhancing awareness of and support for the key personnel *adjustments* encountered by seniors during their *transition* from *college* to *post-college* life
7. Improving seniors' *career* preparation and *pre-professional* development, that is, facilitating their transition from the academic to the professional world

¹ All subsequent references within this report to the capstone programs at these schools, unless otherwise cited, derive from telephone interviews conducted by members of the capstone research team between May and July of 2008.

8. Enhancing seniors' preparation and prospects for *postgraduate education*
9. Promoting effective *life planning and decision making* with respect to practical issues likely to be encountered in adult life after college (for example, financial planning, marriage, and family planning)
10. Encouraging a sense of *unity and community* among the senior class, which can serve as a foundation for later *alumni networking* and future *alumni support of the college* (p. 22, emphasis in the original)

The research team used Cuseo's list as a guide for examining capstone programs at colleges nationwide, and for discussing goals of capstone education at LaGuardia. In this discussion, a consensus emerged that items 1, 2, 3, 4 and 7 were most applicable in our context, and that items 5, 6, 8, 9 and 10, while important, were less immediately germane to our focus.

In "Senior Capstone Courses in Higher Education," Henscheid and Barnicoat (2001) look at the issue from a different angle, focusing primarily on issues of structure and institutional location. They identify five dominant models of capstone seminars, three of which are relevant to LaGuardia's context: a) discipline-based courses, b) interdisciplinary courses, and c) transition courses. Their article provides a valuable summary of these different approaches:

Discipline-based courses. The overriding goal of discipline-based courses is to summarize learning within the academic major. These types of classes are also likely to make connections between the academic learning and the professional world. Some institutions use these courses as a means to encourage seniors to pursue postgraduate study. [...] As this type of class is normally offered as the final "piece" of a student's academic major, credit for these classes is typically a requirement of the major. Topics for discipline and department-based courses vary by the academic major; but include issues that are relevant to the professions related to that major. These courses often use a major project and or presentation as a means for communicating and summarizing the student's academic learning.

Interdisciplinary courses. Interdisciplinary [capstone] courses [...] offer students an opportunity to synthesize general education, major classes, and co-curricular learning. [...] Credit for interdisciplinary capstone courses is applied most often as a major requirement, core requirement, or a general education requirement. Presentations and major projects are most often employed as instructional components in these courses. Topics are broad, often involving philosophical issues such as ethics. These courses tend to stress the inter-relatedness of different academic majors and their role within society.

Transition and Career-planning Courses. Transition courses [...] focus on preparation for work, graduate school, and life after college. [...] Topics for transition courses mainly consist of students' transition issues, and students enrolled in them are likely to engage in job search and life transition planning. Discussions center around self-assessment, financial planning, the job search and the first year on the job, relationships, and diversity.

Henscheid and Barnicoat's work adds a new structural dimension to the discussion, complementing the themes identified by Gardner and Van der Veer as well as Cuseo's list of goals and benefits. Together they provided a robust conceptual framework for the research team to use in analyzing the national field.

Using this framework as an analytic tool, the team found that capstone implementation varies considerably across institutions, reflecting local issues of personnel, technological resources, and funding availability as well as institutional mission. But patterns of commonality did emerge, allowing the team to highlight issues of broad significance. What follows is a set of issues that the research team found to be particularly salient in the design and practice of capstone education.

Integrative Learning: No matter what capstone structure an institution uses, most share a common emphasis on integrative or summative learning. As summarized on NYU/Wagner's "Capstone Overview" webpage, the term capstone refers literally to "the crowning piece of an arch, the center stone that holds the arch together, giving it shape and strength" (n.d.). Capstone curricula draw upon this architectural metaphor to represent the degree to which such courses bring integration, coherence, and closure to a student's learning.

Capstone courses sometimes explore new knowledge, but they usually do so as a way of helping students bring their prior knowledge and skills to bear on an issue or problem. An active learning pedagogy, grounded in teaching for understanding and manifested in projects and presentations, prompts students to *use* what they have learned and *demonstrate* their new capacities to their faculty—and to themselves. Meanwhile, a complementary reflective component asks students to engage in metacognitive processes, consciously examining their learning processes and considering the implications for their future educational, career, and personal development.

Disciplinary vs. General Education: The work of the research team confirmed the split in the field identified by Henscheid and Barnicoat (2001) over whether capstones should focus on disciplinary or general education topics. In the pool of schools studied, slightly more than half focused on disciplinary goals; the others focused primarily on general education.

Disciplinary Capstones: The English Department at California State University-Channel Islands, the Communication Skills Department at Columbus State Community College, and the Sociology Department at the University of Iowa offer helpful examples of discipline-based capstones. Their courses aim specifically at helping students in their respective fields to culminate their educations:

- At California State University-Channel Islands, the English Department offers a required capstone course for English majors, using a research seminar model that supports students as they design, develop, and complete a major research project that demonstrates their disciplinary skills and proficiencies.

- At Columbus State Community College, Communication Skills students assemble a portfolio of their best work and write reviews of five journals related to their field of specialization, analyzing in depth at least one article from each journal.
- At the University of Iowa, sociology majors must take a capstone course that reviews their prior course work and connects it to theoretical, methodological, and substantive issues. The goal is to provide a culminating experience in which students synthesize subject matter knowledge they have acquired, integrate cross-disciplinary knowledge, and connect theory and application in preparation for entry into a career.

The teacher education program of Colorado State University-Pueblo provides another example of a discipline-focused capstone. In the CSU program, the capstone is closely linked to the student teaching experience. Students work together in small groups, completing a case study that links research, community and school. The goal is for students to synthesize prior and current learning, using what they have learned in their education courses to examine a real-life case study. A strong emphasis is placed on strengthening students' professional readiness. Linkage to profession and to an internship emerged as a recurring pattern in interviews conducted by the research team.

Interdisciplinary Capstones: Among the colleges studied by the research team, a substantial minority focused their capstones on general education, including: Boston College, Portland State University, St. Charles Community College, and St. Louis Community College. At these schools, the capstones are clearly interdisciplinary in nature.

At Boston College, for example, the capstone is designed to “unify the undergraduate experience, both personal and academic, through a process of ‘reviewing and previewing.’” In its explanation of capstones to students, the program webpage notes, “Every capstone does the same thing: help you review your education, help you preview your commitments to work, relationships, society, and spirituality.” With these guidelines in mind, faculty members design courses that draw on their own disciplinary backgrounds and submit them to a committee that ensures they meet College standards. Students can then select the capstone course they want.

Similarly, at St. Louis Community College, the capstone course has flexible, faculty-designed content, often focused on a topic related to contemporary issues. Faculty have considerable freedom, but must follow guidelines requiring the course to draw on the knowledge students have gained in general education courses and prepare them for a four year school.

Portland State demonstrates a fascinating variation on this theme, offering capstones centered on community-based learning projects. Groups of students work with faculty and community leaders on projects that require them to use their skills to address a community issue. The Portland State website lists nearly 60 capstone courses available in Summer 2008, including these examples:

Volunteer Stream Monitoring. Capstone students will coordinate and implement all aspects of the quality assurance project plan (QAPP) for the Student Watershed Research Project (SWRP)'s volunteer monitoring program. Ensuring data quality for the 25 high

school groups involved in SWRP requires training, classroom and field support, known/unknown sample analysis, verification of chemical, physical and biological parameters, as well as data management. This course will integrate chemical, biological and physical watershed analysis skills, since students will be responsible for verifying macro-invertebrate and plant samples, performing field/lab analysis of duplicate water quality samples, and mathematically determining whether the accuracy and precision goals of the QAPP are being met. Students will also be responsible for data management, auditing of student data, providing feedback to data collectors, and evaluating the impact of SWRP on participating students.

Social Marketing: A Market Segment Application. Participants will learn about social marketing and apply it to a business that imports fairly-traded crafts from women's collectives around the world and targets market segments focused on social justice, personal development and sustainable living. You will learn about the key features of social marketing; how it differs from commercial sector marketing, and critical components to implementing it successfully. You will expand your understanding of customer-centered marketing and the Four Ps: product, price, place and promotion. Participants will bring knowledge from their own field of study, integrate social marketing principles, and support the Community Partner's goals: entrepreneurship, self-reliance and micro enterprise development.

Museum of the City. Museum of the City Capstone students research, design, and create projects—documentary and interpretive—about Portland encompassing aspects of the city's history, planning, and urban design. Our “partner” organization will be the Portland Development Commission (PDC), the City's economic development agency. Students will learn about Portland's past, present, and future plans, particularly through PDC's experience; they will plan and organize a project that will explore and interpret the development of much of Portland over the past 50 years; they will work on a project that will help inform Portlanders of the role their city's development agency (PDC) has played and is playing in the city; and they will help develop the Museum of the City's exhibits program. Design skills are not a pre-requisite; together, the class's students will pool their knowledge and skills to create a project that will serve PDC and Portland, and that they all will be proud of. (“Capstones Beginning...,” n.d.)

Finally, the research team found some colleges with capstones that could not be easily categorized in terms of the distinction between general education and the disciplinary major. At IUPUI and Columbus State, for example, capstone courses organized by departments and majors must also address general education themes and competencies. At Case Western and at Mount St. Mary's, on the other hand, students can choose disciplinary or general education capstones. For example, in addition to the disciplinary based capstone seminars, Mount St. Mary's offers students this option:

GEN 4010 Challenges and Choices (5). An interdisciplinary, writing-intensive capstone seminar that invites students to grapple with individual choices relating to challenges in the local community, the worldwide social/economic/political communities, and the natural world. Topics will cover a range from local to national to global issues and will

be drawn from issues studied in previous courses in the general education sequence and from the student's major. Students will also be required to complete a service learning component related to one of the course topics. Prerequisite: GEN 2020 or equivalent. Students should be in their senior year or the second semester of their junior year. ("Undergraduate Catalog...", n.d., p. 146)

CAPSTONE PEDAGOGY:

The research team sought to identify ways that the pedagogy employed in capstone courses reflected the purposes of capstone education. It found that faculty teaching capstones use many tools from their pedagogical toolboxes to help students in this important course: lectures, readings, discussions, and collaborative learning activities. However, some approaches stand out because of the ways they support foundational capstone emphasis on integration, closure, and transition. These include project based learning (including research projects), internships and service learning, and reflection

Project-Based Learning: Project-based learning emerged as one of the most common pedagogies employed in capstone courses. Many capstone courses center on major projects that ask students to utilize the knowledge and skills developed across their prior semesters. In the English Department at California State University-Channel Islands, for example, the capstone project is a substantial research paper on a discipline-focused topic. At Portland State, the projects are more multidisciplinary and seek to address real community needs—often in a format accessible to the public: museum exhibitions, policy papers, and advertising campaigns. Across the disciplines, the goal remains “teaching for understanding,” by asking students to synthesize and use what they know. St. Mary's College in Maryland gives students some choice in how to perform this work. The center of their capstone is an individualized “St. Mary's Project,” which can range from a research paper to a creative arts exhibition. Students identify a project and work on it under faculty supervision for up to a full year. While choice of topic remains a student decision, all projects must meet certain established criteria:

- ***Student-initiated.*** Students are responsible for proposing a project that can gain the approval and support of the sponsoring department or cross-disciplinary minor.
- ***Methodological Competence.*** The project must demonstrate methodological competence by identifying an area to be explored and proposing a method of inquiry appropriate for the topic.
- ***Achievement, Synthesis, and Reflection.*** The project must draw on and extend knowledge, skills of analysis, and creative achievement developed through previous academic work. The project must include a reflection on the social context, the body of literature, or the conceptual framework to which the project poses a contribution.
- ***Public Presentation.*** The project must be shared with the larger community through posters, presentations, or other means. (“Specific SMP Guidelines,” n.d.)

While the St. Mary's Project is independent study, most of these criteria would be applicable to the capstone projects developed at other colleges, including the important element of a final, public presentation of one's work.

Service Learning: A second prominent theme in capstone pedagogy is the use of internships and service learning. In many professional majors, the capstone runs parallel to, builds upon, or integrates a workplace internship, meant to provide a meaningful clinical experience. For example, in the teacher education program at Colorado State-Pueblo, the capstone accompanies the student teaching experience. Other undergraduate and graduate professional disciplines, such as nursing, engineering, library studies, and business management, target work sites in their particular professions. Meanwhile, capstones that emphasize interdisciplinary or general education, such as those offered at Portland State, tend to utilize service learning. These programs draw on students' intellectual skills to address community needs, introducing students to the idea that scholarship can be used to engage the world beyond the walls of the academy.

Reflection: A third pedagogy frequently found in capstone courses is reflection. This approach is not surprising, given the emphasis on examining and applying prior learning. Reflection supports the process of personal growth and change, the deepening of academic learning, and the development of one's professional goals and identity. In the Sociology Department at the University of Iowa, reflection is focused on the development of an identity as a sociologist and the work that sociologists do in using the tools of the discipline ("The Sociology Capstone Course," n.d.). M.P. Baker (1997), in a study related to the development of a capstone for English majors at Michigan State, argued that the essential, defining element of capstone courses is that students must be given the opportunity to critically reflect on their discipline as well as their lived and prior academic experiences.

PORTFOLIOS AS A TOOL FOR SUPPORTING CAPSTONE LEARNING:

A growing number of colleges use portfolios in their capstones as a tool for reinforcing integration, reflection, and transition. Sociology students at Iowa create portfolios of their best sociology work; English students at Columbus State Community College collect and reflect on their best English papers. At the Community College of Baltimore-Dundalk, students assemble work from across their college education, demonstrating their skills and competencies. At Penn State, art education students create an autobiography and a statement of their philosophy of teaching, learning and art. They combine those efforts with work samples, including artistic works, sample lessons, and videos that show them teaching in an art classroom.

While the Community College of Baltimore still uses traditional paper portfolios, the research team found many colleges interested in electronic portfolios. Even if they had not yet fully implemented them, these colleges cited the advantages of portfolios that could encompass work in different media, and could be easily presented to internal and external audiences. The research team found ePortfolios in regular usage in capstone programs at the University of Iowa, San Francisco State, Austin Community College, Ithaca College, Penn State, Emporia State University in Kansas, the University of Delaware, and Massachusetts College of Art and Design. In some cases, ePortfolio was the central, unifying element of the capstone course; in other cases it was more secondary. Where the ePortfolio is expected to support significant learning, the portfolio creation process receives substantial classroom time and an appropriate place in the grading structure.

Colleges calibrate the ePortfolio to the goals of their programs and capstone strategies. In the Master of Library Science Program at Southern Connecticut State University, for example, students choose a capstone “experience.” Such an experience might take the form of a thesis, or a more traditional capstone course, or a capstone ePortfolio, but increasing numbers of students are choosing the ePortfolio because they appreciate the portability and visibility the it gives them in job hunting. At Clemson University, psychology students create capstone ePortfolios to document their student learning. Rhodes State College links the ePortfolio to their assessment process and capstone courses. Their written materials on the capstone course are directed to students and frame the capstone ePortfolio as a vehicle for assessment.

A small but growing number of colleges use ePortfolio to help students document and examine their growth from the First-Year Experience to the Capstone Experience. In 2005, Ithaca College’s Core Experience Task Force recommended a series of changes that restructured the common experiences for undergraduate education. The task force recommended six courses embedded in a student’s larger education: New Student Orientation, The Ithaca Seminar, Learning ePortfolio, Aesthetic Appreciation, and Capstone Experience. Students create their ePortfolios in the Learning ePortfolio seminar and then add additional materials and reflective essays in subsequent courses, including the Capstone Experience (“Core Learning...,” n.d.).

CAPSTONES & ASSESSMENT:

Based on its interviews with capstone program administrators, the research team found that capstones hold significant promise for programmatic and institutional assessment. By virtue of its definition as a culminating experience, the capstone provides an opportunity to review student development and progress at the highest level achieved before graduation. Assessment linked to the capstone course allows for developmental assessment, measuring a student’s progress in a wide range of general education competencies and programmatic competencies throughout his/her tenure at the university. Yet, only the most advanced programs have implemented clearly delineated assessment protocols.

At the Community College of Baltimore, Rose Mince, Dean of Instruction for Curriculum and Assessment, called assessment “the reason for doing capstone,” and highlighted its usefulness at documenting students’ preparedness for graduation and identifying programmatic areas in need of improvement. Likewise, in the Sociology department at the University of Iowa, the senior capstone ePortfolio currently functions as the “primary vehicle defined for assessment.” Program Director Stephen Wieting observed that, while some other departments at the University have struggled with the re-accreditation process, Sociology’s—which took place during the 2007/8 academic year—“went relatively smoothly” because they already “had everything ready.” In this respect, he called the Capstone a “well-placed investment” in the service of assessment.

At many other colleges, holistic assessment involving the capstone is still in a formative stage. The Commonwealth College Honors Program at the University of Massachusetts is in the process of modeling its own assessment plan after the one at the University of Western Florida. Boston College’s impressive, institution-wide capstone program has yet to figure prominently in institutional assessment, but the Director, Fr. James Weiss, reported that the Dean’s office has

recently asked the program to begin administering a survey of student learning for the purpose of measuring institutional outcomes.

Recognizing the need for national attention to assessment issues and processes, the American Association of Colleges and Universities (AAC&U) has launched the VALUE Project (Valid Assessment of Learning in Undergraduate Education) in order to provide national models for campus-focused assessment of student learning. VALUE, “a research and campus-based initiative designed to make essential learning outcomes central to the educational experience,” seeks to provide national models for faculty-driven assessment of student work. A significant part of the project seeks to “use cumulative assessments, especially e-portfolios, to both measure student progress and improve practices for achieving these outcomes” (“VALUE,” n.d.).

VALUE has developed fourteen rubrics: inquiry and analysis; critical thinking; creative thinking; written communication; oral communication; quantitative literacy; information literacy; teamwork; problem solving; civic knowledge and engagement—local and global; intercultural knowledge and competence; ethical reasoning and action; foundations and skills for lifelong learning; and integrative learning. The breadth and depth of these competencies demonstrate the usefulness of using a significant production, like the ePortfolio, in capstone courses to evaluate a student’s work at the university. A leader in the national landscape of higher education, AAC&U believes that ePortfolios are a promising vehicle for this kind of deep assessment at the capstone level (“VALUE,” n.d.).

CAPSTONES & POLICY

Capstone instruction tends for the most part to follow programmatic need and provenance. At colleges where capstones are still emerging and/or programs are relatively small (e.g., University of Iowa, Indiana University-Purdue University at Indianapolis), capstones may be taught by a single individual—oftentimes the developer who first devised the course—or by departmental chairs. At St. Charles Community College and Arizona State University, capstone instruction falls to full-time faculty exclusively. At Boston College, capstone teaching is reserved for tenured faculty “with strong teaching reputations.” Only on rare occasions of size-based need (Commonwealth College) or curricular appropriateness (Portland State University) are adjunct faculty assigned to capstone instruction. Portland State’s service learning-based capstone program offers an interesting example in this regard, preferring adjuncts to full-time faculty on the grounds that adjuncts possess more appropriate “practical expertise” in their fields and—by virtue of their work outside of academia—stronger ties to the community.

The research team found best practice in capstone education to incorporate focused and sustained professional development support for faculty teaching capstone courses. For example, Commonwealth College a) requires all capstone faculty to attend full-day teaching workshops prior to beginning any capstone course, b) provides Graduate Assistants to help ease the burdens of providing feedback on student writing and research, c) subjects all capstone course plans to a Curriculum Committee for approval, and d) formally assesses all capstone faculty every three years. Portland State University similarly requires all capstone courses to pass an approval process by a panel and supplies “diversity trainers” to assist faculty at working through challenging course projects with their students. Regarding peer review as “the basis for the

[capstone] program's credibility," Boston College maintains a blind peer-review process for all capstone course proposals, requires faculty to present their course plans at peer review sessions, and offers "course development grants" to faculty to sustain their work.

CAPSTONES AT LAGUARDIA

Discussions amongst the members of the capstone research team illuminated the broad potential of LaGuardia's capstone courses. Capstones at LaGuardia have now begun to receive the same level of institution-wide attention as Learning Communities, core competencies, and the First-Year Academies. Based on their national and local explorations, team members welcomed this new college-wide focus.

Team research and discussion found that all majors have identified a capstone course offering. Team members suggested that it would help departments to have a clear, institution-wide definition of what a capstone is and sustained conversations about how capstone content should relate to the core competencies and how capstone courses help students transition into the workforce or transfer to four-year institutions.

The team found that most capstone courses at LaGuardia currently follow the disciplinary model. The major exception is LIB200, an interdisciplinary capstone seminar for all liberal arts majors. Team members were intrigued by the possibilities of interdisciplinary, general education capstones, such as those at Portland State, but recognized the significance of the current structure. The team found that some programs (such as the Allied Health majors) have developed a careful, intentional sequencing of these courses, using pre-requisites. In other areas, students can take a designated capstone course at varying points in the major. Team discussions concluded that where intentional sequencing was in place, the capstone course was much more likely to function as a culminating experience for students.

The research team endorsed the creation of a systematic faculty development initiative aimed at galvanizing a consistent capstone pedagogy and curriculum. While hundreds of LaGuardia faculty have gathered to discuss the philosophy and practice of learning communities, teaching with technology, the first year experience, basic skills education and other issues, there is only now emerging sustained faculty development attention to the broad pedagogical issues related to the development of capstone courses. While Writing in the Disciplines (WID) has worked effectively with many capstone faculty, WID's program has focused on the development of a research paper, not the development of an integrative capstone course incorporating the summative, reflective, and integrative learning features discussed in this report. The team encouraged the use of Title V funds to develop a faculty development process that would focus attention on these themes, help faculty realize the broader potential of the capstone experience, and strengthen capstone courses as a distinctive and cohesive curricular offering.

RECOMMENDATIONS:

The capstone faculty research team recognizes that creating a meaningful and effective capstone program at LaGuardia will require on-going attention and sustained priority in the coming years. Fortunately, over the past six years, the institution has begun a sustained conversation about the definition and defining features of a LaGuardia education. The capstone represents a unique opportunity to build upon and deepen the value of that effort. Capstones should reflect best practices, including an emphasis on synthesis, culmination, and integration. They are an essential place for students and faculty explicitly to pull together the diverse elements of a LaGuardia education, and to culminate sustained work in general education and disciplinary courses. The capstone is also an essential vehicle for supporting a holistic evaluation of student learning at LaGuardia. To help realize the potential of the capstone at LaGuardia, the research team offers a number of preliminary recommendations:

- 1. Capstone courses at LaGuardia should have clearly articulated policies and requirements that reflect best national practice.** There should be clear guidelines for capstone courses, reflected in course proposals reviewed by the Curriculum Committee. Examples of such policies are readily available on the web. The Ohio State University, the University of Central Florida, and Commonwealth College provide clearly stated policies and expectations for faculty, reflective of general education and departmental expectations (“Criteria...”; “Capstone Requirements...”; “Capstone Experience...,” n.d.). While reflecting the College’s institution-specific qualities and mission, LaGuardia’s guidelines should prompt faculty to design courses that respond to nationally recognized best practices, particularly Gardner and Van der Veer’s four themes (integration, reflection, closure and transition) and Cuseo’s list of purposes (particularly items 1, 2, 3, 4 and 7, discussed below, which identify specific elements of an integrative capstone course).
- 2. Capstone courses at LaGuardia should be designed and sequenced to support summative learning that explicitly builds upon previous courses, skills, and knowledge.** Effective capstone courses by definition incorporate both integrative and culminating educational experiences. Cuseo’s items 3 and 4 highlight the value of integration and culmination within the major course of study. This culmination is possible only if the course can depend on the previous acquisition of skills. Accordingly, the capstone course needs to be carefully sequenced in the broader curriculum in order to ensure that students arrive in the capstone course with the necessary pre-requisites. Ideally, capstone courses should be limited to students who have completed 45 credits or more towards graduation.
- 3. Capstone courses at LaGuardia should be designed to effectively integrate both general education and disciplinary learning.** Cuseo’s items 1 and 2 and best practices nationwide highlight the role of capstones in strengthening the coherence of general education and promoting connections between general education and the academic major. LaGuardia’s capstone courses should address both general education and discipline-specific competencies. They should provide significant opportunities for students to draw upon general education skills and knowledge and synthesize them with discipline-based learning, as well as to transition to a course of study in a four-year college or the work force. Departments have begun an effort to integrate core competencies and the program competencies; the capstone course and its assignments can and should be designed to effectively culminate both.

4. **Capstone courses should be clearly identified as “capstone” in the LaGuardia catalog.** Students should know and understand the importance of the capstone course in their education and should enroll in the capstone course understanding its particular value.
5. **Capstone courses at LaGuardia should include the creation of a Capstone ePortfolio that enhances integrative learning and supports the outcomes assessment process.** The ePortfolio is in wide use across the LaGuardia curriculum. A capstone ePortfolio—a final iteration of an ePortfolio launched earlier in the students’ education—represents a key opportunity to review, synthesize and deepen the learning that has taken place across a student’s career at the college, and to prompt students to reflect again on their past and future educational trajectories. A capstone ePortfolio is also crucial to the holistic assessment process, which the college can advance by collecting final coursework and complete ePortfolios. Capstone courses nationwide are moving to utilize ePortfolio; by integrating ePortfolio into its capstones, LaGuardia has an opportunity to strengthen student learning, advance assessment, and extend its leadership of the international ePortfolio movement.
6. **LaGuardia should support capstone students and faculty with a Capstone Studio Hour for ePortfolio production, including the development of a final reflective essay.** The development of a capstone ePortfolio represents a curricular challenge for a course that already carries significant departmental and institutional requirements. To ease this burden and to ensure that students are able to produce high quality capstone ePortfolios, the college should create a Capstone Studio Hour, adapting the model demonstrated in other Studio Hours to meet the specific needs of the capstone experience.
7. **Capstone courses should be taught by faculty who have taken part in a pedagogically-focused capstone professional development program.** Design and teaching of effective capstone courses—courses that address themes of integration, closure and transition—require faculty innovation and effort. To support faculty as they incorporate the best practices outlined in this report—including project-based learning, reflection, ePortfolio—capstone courses should be taught by faculty who have explored capstone pedagogy and practice in a sustained professional development program (as is done, similarly, for Writing Intensive Courses, taught only by faculty who have successfully completed a WID seminar.)

LaGuardia has an opportunity to approach the development and teaching of capstone courses as an opportunity for ongoing learning. The faculty research team is proud of its work and recommendations, but is also aware that much remains to be done and learned. A Title V-funded faculty development process offers opportunities to generate deeper insights and refine our understandings of effective capstone pedagogy and practice. While needing to move ahead now, the college may want to plan to revisit its vision and strategy around capstones in future years. This process might involve the creation of a Capstone Course Committee, as a sub-committee of the Curriculum Committee, charged with updating and formalizing the institutional definitions and meanings of the capstone course. This committee could have representatives from the faculty teaching capstones, from department chairs, from curriculum, from assessment, from capstone faculty development processes, and from the ePortfolio program. Refining institutional definitions of the capstone course, this committee could revise the policies and procedures for capstone courses at the college.

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Appendix A: Excerpt from the Boyer Commission Recommendations for Capstone Courses

Available on-line at: <http://naples.cc.sunysb.edu/Pres/boyer.nsf/webform/VII>

VII. Culminate With a Capstone Experience

The final semester(s) should focus on a major project and utilize to the fullest the research and communication skills learned in the previous semesters.

In order to ensure that the educational experience is drawn together, the student needs a course at the end of the curriculum that corresponds to the capstone of a building or the keystone of an arch. Too many students report a sense of anti-climax in their senior years—just add more to the total of courses, and it is finished! All the skills of research developed in earlier work should be marshaled in a project that demands the framing of a significant question or set of questions, the research or creative exploration to find answers, and the communication skills to convey the results to audiences both expert and uninitiated in the subject matter. When earlier course experience is inquiry-based, the student will be ready for and stimulated by the demands of this course. The nature of the experience will vary widely according to the major discipline of the student, but it should be of value equally to the budding social scientist, bench scientist, artist, humanist, engineer, or business major. The capstone experience needs to allow for collaborative effort whenever appropriate to the discipline, so that undergraduate students can be better prepared for participation in the team projects they will encounter in professional as well as private life.

The Culmination of Academic Effort

The experience should enable the student to bring to a symbolic conclusion the acquisition of knowledge and skills that has preceded this final effort. It should be conducted under the mentorship of a seasoned scholar-teacher who understands the joys and frustrations of a major project. It should allow the student to understand her or his potential for serious work and develop the aspiration to do it well. Ideally, the mentor for the capstone course may be the student's major advisor or a faculty member already familiar with his or her capabilities and experience.

Although each university will find unique embodiments of the capstone concept, ideally the experience will occur within a small community of learners comprising senior researchers, graduate students, and undergraduate peers. This course should be the bridge to graduate education for the holders of research university baccalaureate degrees who immediately enter graduate school. For graduates entering the work force, the course should provide experience in the analysis, team-building, and problem-solving that most professional situations demand.

We hope that many students will conduct these research or creative projects in interdisciplinary groups, choosing topics and using techniques that break through disciplinary barriers. The flexibility that should mark the graduate of a research university should be fully developed in this final, culminating experience.

Recommendations:

1. Senior seminars or other capstone courses appropriate to the discipline need to be part of every undergraduate program. Ideally the capstone course should bring together faculty member, graduate students, and senior undergraduates in shared or mutually reinforcing projects.
2. The capstone course should prepare undergraduates for the expectations and standards of graduate work and the professional workplace.
3. The course should be the culmination of the inquiry-based learning of earlier course work, broadening, deepening, and integrating the total experience of the major.
4. The major project may well develop from a previous research experience or internship.
5. Whenever possible, capstone courses need to allow for collaborative efforts among the baccalaureate students.

Appendix B: Henscheid, J. M., & Barnicoat, L. R. (2001). Senior capstone courses in higher education. In J. Guthrie (Ed.), *Encyclopedia of education*. New York: Macmillan Reference.

“Senior Capstone Courses in Higher Education”

In higher education, capstone courses, also known as senior seminars, offer undergraduate students nearing graduation the opportunity to summarize, evaluate, and integrate some or all of their college experience. The First National Survey of Senior Seminars and Capstone Courses conducted in 1999 suggested that these courses place the highest priority on culminating learning in the academic major. Enrollments in sections of senior seminars and capstone courses are most often kept at fewer than thirty students. These courses are generally treated as academic major or core requirements, most are at least one academic term in length, and most require a major project or presentation.

The earliest capstones can be traced to the end of the eighteenth century when college presidents taught courses generally integrating philosophy and religion. One of the most famous was a class at Williams College in Massachusetts taught by President Mark Hopkins that inspired, among others, future U.S. President James A. Garfield. Since its inception, the senior seminar has appeared and disappeared in colleges and universities throughout the United States.

The goals and methods of senior seminars and capstone courses in American higher education have been studied at least four times. The first was a study conducted in the early 1970s and sponsored by the Carnegie Council on Policy Studies in Higher Education. For this research, 270 catalogs from colleges and universities in the United States for the year 1975 were examined for course type and structure. The study found that only 3 percent of participating institutions sponsored senior seminars. Arthur Levine, the study's author, later concluded that these courses are offered, at any given time and in various forms, at one in every twenty institutions nationwide.

In a second effort, Joseph Cuseo evaluated proceedings from four national Conferences on the Senior Year Experience and two national Conferences on Students in Transition that convened in the 1990s. His work, centering on characterizing the types, goals, and forms of the senior year experience, including capstone courses, suggested the following goals for the senior year:

1. promotion of the coherence and relevance of general education;
2. promotion of integration and connections between general education and the academic major;
3. fostering of integration and synthesis within the academic major;
4. promotion of meaningful connections between the academic major and work and career experiences;
5. explicit and intentional development of important student skills, competencies, and perspectives that are tacitly or incidentally developed in the college curriculum;
6. enhanced awareness of and support for the key personal adjustments encountered by seniors during their transition from college to post college life;

7. improvement of seniors' career preparation and pre-professional development, that is, facilitation of the transition from the academic to the professional world;
8. enhancement of seniors' preparation and prospects for postgraduate education;
9. promotion of effective life planning and decision making with respect to practical issues likely to be encountered in adult life after college (for example, financial planning, marriage, family planning).

In August 2000 Jean Henscheid reviewed modern senior seminars and capstone courses in publication abstracts and presentations available on the Educational Resources Information Center (ERIC) database. The review suggested that these courses are most often associated with a specific academic discipline and coordinated through an academic department or unit. Also in 2000, the National Resource Center for the First-Year Experience and Students in Transition at the University of South Carolina reported results from a nationwide survey of colleges and universities. This survey, in addition to the findings reported above, revealed that coursework and other experiences students have before they enter the academic major are generally not topics covered, at least in the 864 senior capstones or seminars described by these respondents.

Types of Courses

In the early twenty-first century senior seminars and capstone courses in higher education generally fall into one of five types. Varying goals, instructional strategies, and topics separate these course types.

Discipline-and department-based courses. The overriding goal of discipline-and department-based courses is to summarize learning within the academic major. These types of classes are also likely to make connections between the academic learning and the professional world. Some institutions use these courses as a means to encourage seniors to pursue postgraduate study. This subset of courses makes up the majority of the capstone courses offered. These courses are typically offered through the academic department and may be required for graduation. Faculty members within the academic discipline typically teach these courses at the conclusion of the students' academic careers. The classes are taught either by a single faculty member or team-taught by faculty members or staff; three hours of semester credit are normally offered for a letter grade. As this type of class is normally offered as the final "piece" of a student's academic major, credit for these classes is typically a requirement of the major. Topics for discipline and department-based courses vary by the academic major; but include issues that are relevant to the professions related to that major. These courses often use a major project and or presentation as a means for communicating and summarizing the student's academic learning.

Interdisciplinary courses. Interdisciplinary courses, representing a smaller percentage of senior seminars and capstones, offer students an opportunity to synthesize general education, major classes, and co-curricular learning. These courses are more likely to be found at private institutions, taught by a single faculty member. Letter grades are prevalent, and students receive three to four semester hours of credit for completing these courses. Credit for interdisciplinary senior seminars and capstone courses is applied most often as a major requirement, core requirement, or a general education requirement. Presentations and major projects are most often employed as instructional components in these courses. Topics are broad, often involving

philosophical issues such as ethics. These courses tend to stress the inter-relatedness of different academic majors and their role within society.

Transition courses. Transition courses, the third most prevalent type of senior seminars and capstones, focus on preparation for work, graduate school, and life after college. Faculty or career-center professionals most often teach these courses, which typically award a letter grade, although they are less likely to do so than discipline- and department-based courses and interdisciplinary courses. These classes generally earn the participating students one semester of credit.

Topics for transition courses mainly consist of students' transition issues, and students enrolled in them are likely to engage in job search and life transition planning. Discussions center around self-assessment, financial planning, the job search and the first year on the job, relationships, and diversity. Presentations weigh heavily in evaluation of performance in these courses, but rather than major projects, students often develop a portfolio or use the career center.

Career-planning courses. Career-planning courses assist students as they engage in pre-professional development. In some cases career planning is the only goal of these courses. In the 1999 First National Survey of Senior Seminars and Capstone Courses, these courses were the least frequently reported major type. Career planning courses are likely to be taught by career-center professionals, but in some cases academic faculty might teach them. Although students typically receive grades for these courses, they are less likely to receive as many credit hours as students enrolled in other types of senior seminars or capstone courses. The classroom experience in these courses is evaluated most often by the creation of a portfolio, followed by a major project and a presentation. Classroom topics for career-planning courses include current trends in the field, procedures for licensure and job seeking, students' roles in the workplace, and development of a résumé, cover letter, and portfolio.

Other. There are also a small number of senior seminars and capstone courses that do not fit in these four types. These courses often span curricular and co-curricular boundaries and attempt to address institutional goals. These courses do share many of the characteristics of other courses. The primary goals (fostering integration and synthesis within the academic major and promoting integration and connections between the academic major and world of work) are similar to those of most types of the other senior courses. These courses do not generally focus on general education, and are almost always taught by a member of the academic faculty. They tend to be the smallest of the senior courses, often enrolling fewer than nine students. They are most often held for one academic term and students are usually assigned a letter grade.

The Future

As is true with many trends in higher education, senior seminars and capstone courses will likely continue to appear and disappear in various forms. Instructional technologies and the changing delivery of student services will affect the content and character of these courses in the future. This, along with changing student demographics and needs of the institutions offering them, will determine the future goals and structure of these courses.

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Appendix C: Selected Annotated Bibliography: Literature on the Capstone Experience

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Argues for an experiential education capstone course for agriculture programs: “the components indicated in the Model for the Integration of Experiential Learning into Capstone Courses (MIELCC) and the five R’s of receive, relate, reflect, refine, and reconstruct be utilized to continually process and evaluate the learning which takes place. It is often these steps (the five R’s) which are omitted from the learning process. Care must be exercised and precautions taken to ensure that capstone courses are truly the summative educational experience for our students.”

Berheide, C.W. (2007) Doing less work, collecting better data: Using capstone courses to assess learning. *Peer Review* 9.2. Retrieved November 17, 2008, from http://www.aacu.org/peerreview/pr-sp07/pr-sp07_index.cfm.

Explores an initial outline for departmental assessment. Berheide argues for a minimal collection of data with specific goals in the assessment process and concludes: “First, we have learned that at least on these three goals, we are doing a good job. Second, we have learned that our theory and methods goals need some revision. Third, we have learned that we need to create greater ‘sequencing’ within the major, especially around theory and methods. Even our minimal approach to assessment has provided vastly better data than we typically draw upon for making curricular decisions. In short, faculty do not have to spend a lot of time and effort to get very useful data.”

Breuning, M., Parker, P, & Ishiyama, J.T. (2001). The last laugh: Skill building through a liberal arts political science curriculum. *PS: Political Science and Politics*, 34.3, 657-661.

Provides a case study from Truman State University for building a curriculum based on the question, “what do we want our students to know?”

Cameron, J., Stavenhagen-Helgren, T., Walsh, P., & Kobritz, B. (2002). Assessment as critical praxis: A community college experience. *Teaching Sociology*, 30.4, 414-429.

Explores the creation of a new set of assignments and competencies in an Introduction to Sociology course after conducting an assessment of a research-based capstone course in sociology at Tompkins Cortland Community College. On the basis of their assessment, the team discovered that capstone students were not fully prepared to graduate. The result was that they decided to sequence courses and skills earlier.

Clauss, B., & Hawkins, S.T. (2007). Indiana state introduces liberal studies capstone course in FCS. *Journal of Family and Consumer Sciences*, 99.1, 33-37.

Details the establishment of a capstone course for family and consumer sciences at Indiana State. The curriculum reflects general education capstone course curricular goals and the American Association of Family & Consumer Sciences Accreditation Standards.

Durel, R.J. (1993). The capstone course: A rite of passage. *Teaching Sociology*, 21, 223-225.

Explores the ways in which curriculum can be a “rite of passage” within a discipline.

Henscheid, J.M., Breitmeyer, J.E., & Mercer, J.L. (2000). *Professing the disciplines: An analysis of senior seminars and capstone courses*. Columbia, SC: National Resource Center for the First Year Experience and Students in Transition.

Examines discipline-specific capstone courses at 549 institutions with capstone courses (the study looked at 707 institutions overall).

Keith, B., LeBoeuf, J., Meese, M.J., Malinowski, J.C., Gallagher, M., Efflandt, S., et al. (2002). Assessing students’ understanding of human behavior: A multidisciplinary outcomes-based approach for the design and assessment of an academic program goal. *Teaching Sociology*, 30.4, 430-453.

Examines strategies for creating and assessing multi-disciplinary curricular goals.

Schmid, T.J. (1993). Bringing sociology to life: The other capstone mandate. *Teaching Sociology*, 21.3, 219-222.

Explores the need for a capstone course to help students develop a sophisticated sense of sociological perspectives in their present and future lives.