1. Definition and Overview

According to the Association of American Colleges and Universities (AAC&U), “Whether they’re called ‘senior capstones’ or some other name, these culminating experiences require students nearing the end of their college years to create a project of some sort that integrates and applies what they’ve learned. The project might be a research paper, a performance, a portfolio of ‘best work,’ or an exhibit of artwork” (https: www.aacu.org/leap/hips).

As defined by the University of Colorado Denver for the purposes of its High Impact Practices (HIP) initiative, a Capstone Course is a culminating, integrated experience that results in the completion of a major project. A capstone creates opportunities for students to integrate, reflect on, and apply what they have learned in their academic programs, and is demonstrated in the form of a project such as a presentation, performance, portfolio, exhibit, research paper, or a combination of these experiences.

2. Best-Practices Guidelines

The minimum standard features of a Capstone course, based upon national best-practices, are as follows:

- **Culminating Project:** In a course that is taken in or close to the final semester or year, students complete a major project, as defined within their discipline(s) or field(s), that draws upon and ideally synthesizes what they have learned throughout their academic program(s).

- **Integration of Knowledge and Skills:** Students integrate the knowledge and skills scaffolded/taught throughout the program, as well as from courses outside their discipline or field and through their co-curricular experiences.

- **Reflection on Learning:** Students engage in significant reflection through written work and/or performance on what they have learned in their programs and through their projects.
3. Learning Outcomes

National best practices recommend that Capstone courses should deliver the learning summarized by the following AAC&U Essential Learning Outcome (ELO), Integrative and Applied Learning.

According to the AAC&U, “Integrative learning is an understanding and a disposition that a student builds 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.”

Capstone course syllabi ideally should reference and use the VALUE rubric for the Integrative and Applied Learning ELO and integrate this general learning outcome into the discipline-specific learning outcomes for the course. The ELO should be expressed in the terms of that discipline or profession and serve the delivery of disciplinary knowledge and skills.

In addition, individual faculty may choose whether or not to incorporate one or more of the other ELOs, as appropriate to the discipline, and integrated into the disciplinary or professional content or used as vehicle for that content. Other ELOs that may be especially appropriate to Capstone courses include: Creative Thinking, Critical Thinking, and Oral Communication.

This concludes the abbreviated Capstone Best-Practices Guidelines. The complete version additionally includes a Suggested Resources or references section and a Sample Courses section.
4. Suggested Resources

Below are a sample of related articles, capstone tools, and resources from the Degree Qualifications Profile (DPQ) (http://degreeprofile.org/resource-kit/capstones).

RELATED ARTICLES AND BOOKS


Examines research on five educational practices: first-year seminars, learning communities, service learning, undergraduate research, and capstone experiences. The authors explore questions such as: What is the impact on students who participate in these practices? Is the impact the same for both traditional students and those who come from historically underserved student populations?


Previous research on capstones in sociology and psychology has suggested that there is a typical capstone experience required by three quarters of all four-year colleges and universities in the United States. This article reports results from a national survey that confirm that sociology and psychology capstone courses conform generally to a common format. The findings further indicate that factors related to student limits and time limits predominate with respect to those variables that produce less successful course outcomes.


A well-defined capstone experience is comprehensive in nature allowing for the assessment of a wide range of abilities. A capstone based assessment method includes mapping project deliverables and other artifacts to specified learning outcomes, establishing a scoring rubric that defines performance criteria, collecting and analyzing data and reporting results. Through this type of analysis, program strengths are revealed and program weaknesses are identified. Subsequently program improvement plans can be developed and ultimately increases in student learning can be realized.


A capstone course is an increasingly common method to measure student learning and assess programmatic and institutional success. We provide concrete suggestions to design a capstone course and assess student learning outcomes. After describing the
structure of the course and four innovative assignments, we present the results of assessment conducted through the capstone. We further the conversation on the development of best practices and how political science departments can align institutional and programmatic goals and lead the way in university assessment.


To enhance students learning and satisfy ABET requirements, the Department of Computer Science and Engineering at Qatar University undertook over the past few years significant enhancements to the senior design project course. This work has produced a framework for managing and assessing capstone design projects. Along with a web-based application named easyCapstone to ease the framework adoption by automating key workflows particularly for managing the project registration, the submission of deliverables, scheduling project presentations, assessing students work and providing timely personalized feedback to students.


This article discusses means by which to encourage active learning within capstone courses. Many schools are moving away from the sage on the stage to the guide on the side model where the instructor is a facilitator of learning. In this model, the emphasis is more on learning and less on teaching, and it requires instructors to incorporate more active and student-centered learning methods into their courses.


This article provides various examples of what a capstone might look like; specifically in universities abroad. Through integrating numerous short case-studies from universities in the U.K., the Netherlands, Australia, and New Zealand, this article delves into the differing forms capstone projects can take, their main purpose, and common characteristics.


The “Global Village Playground” (“GVP”) was a capstone learning experience designed to address institutional assessment needs while providing an integrated and authentic learning experience for students aimed at fostering critical and creative thinking. In the “GVP”, students work on simulated and real-world problems as a design team tasked
with developing an alternate reality game that makes an impact on the United Nations Millennium Development Goals. Researchers employed a qualitative case study approach to evaluate participant reactions to the course, their perceptions of the instructional design methodology, what they learned in the course, and the challenges they experienced during the pilot implementation of this capstone design.


The four private liberal arts colleges participating in this study – Allegheny College, Augustana College, Washington College, and The College of Wooster – are distinctive in that they require all seniors to engage in an intensive mentored experience (“capstone”) that is designed and executed by the student using the theories, methods, and tools of a discipline, resulting in a scholarly or creative work. While we have long believed the experience to be transformative, the evidence has been largely anecdotal. This report presents some concrete findings on the impact of capstones on student learning.


This periodical is dedicated towards understanding what effective capstone programs are for undergraduate students. In particular, the contributors address the nature of capstones as integrative learning, the need for fostering interdisciplinary projects, conducting formative and summative assessments of such programs and requiring faculty involvement. Some of the institutional examples provided includes Hampshire College’s Division III project for their fourth-year students and University of La Verne’s Flex program and use of e-portfolios, among others. The periodical also includes a discussion about some practices that may hinder the success of capstone projects and programs, such as the lack of communication among students and faculty about the goals of capstone learning as an integrative experience and conducting capstones as solely a senior capstone experience, which limits the necessary reflective time needed for effective integrative learning.


Assessing Underserved Students’ Engagement in High-Impact Practices contributes to the national dialogue by building on Kuh’s original ndings from his work with the large datasets of the National Survey of Student Engagement (NSSE). Ashley Finley and Tia McNair’s study asks a new set of questions related to “impact,” employing an inquiry-based model to probe for answers about the cumulative effects of HIPs. Written for campus practitioners, the book makes a unique contribution by developing a methodology to support purposeful and intentional study as well as equitable implementation of high-impact practices on the ground. Perhaps the most valuable
ndings of the book concern equity—the “equity effects” that appear in students’ reports of their learning as their success is boosted by HIPs; the equity-minded perspective that educators can nurture; the principles of inclusive excellence that can guide colleges and universities in providing a liberal education that offers not only equitable access to HIPs, but also equitable achievement of outcomes.

SAMPLE CAPSTONE TOOLS AND RESOURCES

Capstone Projects – An outline to aid students in the development of a capstone proposal, the importance of feedback, and the defense of the final product.

Thesis and Capstone Projects – Examples of what capstone projects might include, the process involved, and templates for both thesis and capstone projects.

Examples of Capstone Projects – American University has assembled a list of top graduate capstones over the years.

Advantages, Disadvantages, and Variety – Skidmore College highlights the advantages, possible disadvantages, and examples of variety in capstone projects.

Strategies for Effective Assessment: Capstone Assessment – Offers a variety of capstone examples (simulations, team projects, portfolios, tests, internships/clinical experiences, etc.) and ideas on how to assess each project.

Capstone Assessment – The Greater Expectations Project on Accreditation and Assessment collected examples of good practice in assessment, most at the senior level. Models were selected in which both major and general education outcomes were integrated during the capstone process. Twelve different models are described.

Sample Evaluation Forms – University of Colorado Denver

Independent Study Capstone Program – College of Wooster

Capstone Curriculum – The website is a resource on capstone curriculum across the disciplines, developed as part of a National Senior Teaching Fellowship funded by the Office for Learning and Teaching (OLT) in 2013-2014.

Types of Capstone Presentations – Montana State University provides guidelines and evaluation checklists for the various styles in which capstones can be presented/submitted (written, poster, or presentation); as well as examples of each from previous years.

Peer Review, Fall 2013 – This issue of Peer Review focuses on capstones and integrative learning; specifically on learning outcomes and best practices for capstone courses and assignments.
5. Sample Capstone Courses at CU Denver

• CRJU 5361-001, “Advanced Seminar in Criminal Justice,” in which students demonstrate their mastery of the knowledge and skills acquired in core courses through the conduct of a client-based project and an oral presentation of the professional paper that reports project findings.

• FINE 4950, “Studio BFA Thesis,” involves the preparation, exhibition and critical faculty response to students’ creative work. Course work focuses on contemporary trends in the arts, the commerce of the arts and the professional practices necessary to an artist’s self-promotion. This course will cover how to write an exhibition proposal, press release, how to price work and create a gallery book and related promotional materials. In addition, there will be readings and discussions, guest artist lectures and public speaking workshops. The primary goal of this class is to prepare seniors for their BFA Thesis Exhibition and Thesis Oral Review; in the process, it provides “real world” experience through researching exhibition opportunities and the planning and installation of a major show in a professional exhibition space at Emmanuel Gallery.

• MGMT 4500, “Business Policy and Strategic Management,” is a final semester integrative capstone course that requires students to draw on all of their business knowledge (e.g., knowledge of economics, management, finance, accounting, production and operations, marketing, information systems). In this project, students identify and analyze the issues involved in integrating the various functional activities of a firm and demonstrate, via a comprehensive term project, their ability to use the tools and techniques of strategic management, along with knowledge acquired in previous functional area courses, to diagnose strategic issues, evaluate strategic options, and formulate and implement a competitive strategy for a firm.