

Capping Off the College Experience: Participation and Effects of Capstone Courses



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Capping Off the College Experience

- First, an assertion: College should be a transformative experience for students
- What experiences transform?
 - High-impact practices
 - Disorienting dilemmas
 - High expectations, high challenge, etc.
- How can we construct more transforming experiences? How do we know that the practices we associate with transformation are effective?

Findings from NSSE and AAC&U

**Growing evidence that
“high-impact practices”
provide substantial
educational benefits to
students**

High Impact Activities

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★



- ★ First-Year Seminars and Experiences
- ★ Common Intellectual Experiences
- ★ Learning Communities
- ★ Capstone Courses and Projects
- ★ Writing-Intensive Courses
- ★ Collaborative Assignments and Projects
- ★ “Science as Science Is Done”; Undergraduate Research
- ★ Diversity/Global Learning
- ★ Service Learning, Community-Based Learning
- ★ Internships

Audience Survey

- Does your institution offer a culminating experience?
- What is the nature of the experience?
 - Capstone project
 - Senior seminar
 - Comprehensive exam
 - Field experience/internship
 - Other?

Session Objectives

- Review research about culminating experiences
- Consider data about culminating experiences and senior capstones and how this might influence the design and sustainability of senior experiences

Culminating Experiences

Experiences in the senior year that represent the culmination of years of intellectual, professional, and personal development that prepares students to transition to the next phase in life in a career or in post-graduate work, and as member of a community.

Forms: Senior seminars, Capstone courses, Internships, Senior projects, Comprehensive exams, field experiences....

Gardner, J.N.; Van Der Veer, G. and Associates. 1998. *The Senior Year Experience: Facilitating Reflection, Integration, Closure and Transition*. San Francisco: Jossey-Bass.

Senior Capstones

- Senior seminar/capstone course is taken near the end of a program, and may integrate or synthesize learning within the major, provide opportunities to reflect on the overall college experience, or facilitate transition to life after college.
- Courses founded early 1900s. College presidents taught courses integrating philosophy & religion
- Since its inception, the "senior seminar" has appeared and disappeared in colleges and universities throughout the United States

Capstone Background

- **National Survey of Senior Sem & Capstones (1999)**
 - course about culminating learning in the major
 - enrollments fewer than 30
 - treated as academic major or core requirements, most are 1 term; require a major project or presentation
- **Other studies of capstones:**
 - Carnegie Council on Policy Studies in Higher Education (1970) – examined academic catalogs for course type -- found only 3% institutions sponsored senior seminars
 - Henscheid (2000) - review suggested senior seminar/capstone courses associated with academic discipline and coordinated through academic unit

Types of Senior Capstone Courses

- **Discipline-and department-based.** Typical; Synthesize learning in major; Offered in academic department, required. 3 credits, letter grade. Topics vary by major; relevant to professions. Major project or presentation.
- **Interdisciplinary.** Small proportion; synthesize gen education, major, and cocurricular learning. Found at private institutions, Presentations & major projects Topics broad, stress inter-relatedness of disciplines, majors.
- **Transition.** Focus on preparation for work, grad school, life after college. Faculty or career-center professionals instruct. 1 credit. Students develop portfolios.
- **Career-planning.** Assist students engage in pre-professional development. Taught by career-center professionals. Portfolios, sometimes major project, presentation.
- **Other.** Courses span curricular and co-curricular boundaries and attempt to address institutional goals.

Purpose of Capstone

- Integration
- Breadth
- Application
- Transition

Levine, A (1998). A presidents personal and historical perspective. In J. Gardner, G. Van Der Veer, and Associates, *The Senior Year Experience: Facilitating Reflection, Integration, Closure and Transition*. San Francisco: Jossey-Bass.

Senior Capstone: One School's Debate about Alternatives

DEPAUW
UNIVERSITY

- "The capstone is this moment of students obtaining and then demonstrating intellectual independence and mastery,"
-Brian Casey, President DePauw University (Dec., 2009).
- At DePauw, two-thirds of departments provide opportunity to do individual research, and a smaller portion require it.
- "I envision an oral exam that shows ability to think, discuss and integrate what you've learned,"
- Faculty member in Philosophy



Senior Capstone: One School's Debate about Alternatives



- Biology professor: An interdisciplinary senior project might be intimidating to the average incoming student...
- Faculty: What is the appropriate forum by which students could showcase senior projects? "What should the appropriate closure event be? A dinner? A presentation? Getting your name published in a book?"
"It seems that sometimes students finish their research, and only a few people will come to see a presentation and appreciate it."

NSSE and Culminating Experiences

NSSE Annual Survey Item 7h.

Have you done or do you plan to do before you graduate from your institution... Culminating senior experience (comprehensive exam, capstone course, thesis, project, etc.)

RESULTS:

- FY "plan to do": 48%
- SR "done": 33%
- SR "plan to do": 31% (11% have not decided??)

NSSE and Culminating Experiences

- Results similar across institutional type, except Bac LACs -- 61% "done" (FY 65% "plan to do")
- Slightly more men have done culminating exp.
- Predictable major differences:

Arts & Humanities	38%
Biological Sciences	33%
Business	34%
Education	26%
Engineering	49%
Physical Sciences	33%
Professional	25%
Social Sciences	35%

Senior Culminating Experiences Results 1

Seniors who participated had higher scores on NSSE's Benchmarks of Effective Educational Practice

	Completed a Senior Culminating Experience?		Sig. ^b	Effect Size (d)
	Yes	No		
Benchmarks of Effective Educational Practice				
Level of Academic Challenge	60.8	55.1	***	.41
Active and Collaborative Learning	55.7	45.9	***	.56
Student-Faculty Interaction	50.2	36.5	***	.68
Supportive Campus Environment	62.2	60.7	***	.08

a Analyses weighted by gender, enrollment status, and institution size.
b ***p<.001

Outcomes Associated with Senior Culminating Experiences

- **Deep learning:** Attend to underlying meaning of information as well as content; Integrate and synthesize ideas, information; Discern patterns in evidence or phenomena; Apply knowledge in different situations; View issues from multiple perspectives
- **Educational Gains:**
 - **General Education** – Writing; speaking clearly; gen ed; critical thinking
 - **Practical Competence** – Working with others, solving real problems, work related knowledge
 - **Personal/Social Development** – understanding self; contributing to community;

Senior Culminating Experiences Results 2

Seniors who participated had higher scores on deep approaches to learning & greater self-reported gains

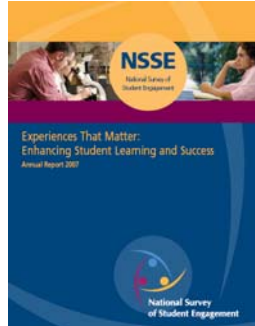
	Completed a Senior Culminating Experience?		Sig. ^b	Effect Size (d)
	Yes	No		
Deep Approaches to Learning				
Higher Order Thinking	76.5	68.9	***	.34
Integrative Learning	65.6	56.8	***	.45
Reflective Learning	65.3	59.6	***	.24
Self-Reported Gains in Learning and Development				
Gains in Practical Competence	72.0	65.6	***	.29
Gains in Personal and Social Development	57.5	53.8	***	.15
Gains in General Education	76.9	70.5	***	.29

a Analyses weighted by gender, enrollment status, and institution size. b ***p<.001

NSSE Additional Questions about “High-Impact Activities”

Activities collected include:

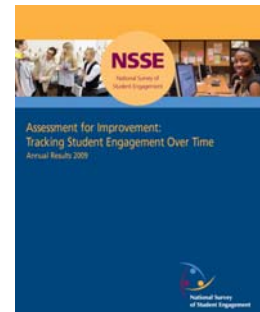
- Learning Communities
- Service Learning
- Research with a Faculty Member
- Study Abroad
- Culminating Senior Experience
- Writing Intensive (2008)
- Senior Seminars/Capstone Courses (2009)



Download: www.nsse.iub.edu
 (“Reports & Services”)

Today’s Presentation

- Culminating Senior Experience (2007)
- Senior Seminars/Capstone Courses (2009)



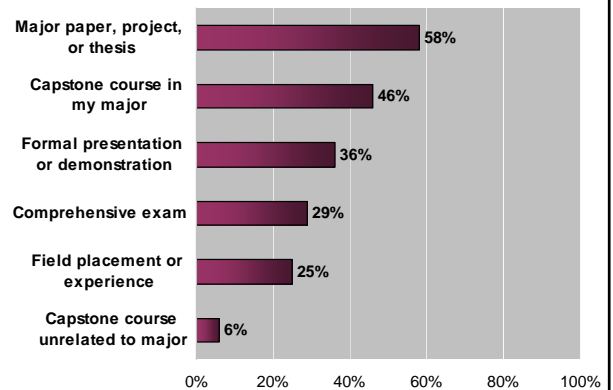
Download:

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Culminating Senior Experience

- Added questions about:
 - Nature of culminating experience
 - Who worked on culminating experience
 - Required experience
 - Time dedicated
 - Clarity of Expectations
 - Supervision, Feedback
 - Contribution to abilities (Tolerating ambiguity, Working with others, Understanding how knowledge is created, Acquiring job skills, Solving complex problems, Taking intellectual risks, Speaking clearly, Writing clearly, Thinking imaginatively, Applying theory, Making judgments, Learning on my own, Understanding key concepts in major, Thinking critically, Synthesizing)

Participation in Selected Culminating Experiences



Culminating Senior Experience

- 50% worked alone; 40% worked with others
- 77% indicated required for graduation
- Amount of time spent per week on project varied; 34% spent 5 or fewer hours compared to 11% who devoted more than 30 hours
- 61% frequently met with faculty member supervising work; only 8% never met with faculty sponsor
- 75% said supervising faculty member clearly outlined expectations and requirements at outset

Culminating Senior Experience

- Students reported that culminating experience contributed “substantially” (quite a bit, very much) to their abilities, varies by experience
- Field placements have impact on greatest number of gains
- Also beneficial:
 - Projects that required greatest investment of time,
 - Working in groups,
 - Meeting often with supervising faculty member, and
 - Receiving clear expectations for the activity.



Senior Capstone Courses

Questions appended to 2009 NSSE annual survey:

- Nature of capstone
- Required for major
- Graded, Credits
- Length of Time
- Contribution to abilities (Thinking critically, analytically; Speaking clearly, Writing clearly and effectively; Learning effectively on own; Developing an understanding of global issues; etc.

Senior Capstone - Data & Sample

47 Institutions

- 36% (17) Bac A & S
- 17% (8) Bac Div
- 19% (9) Master's
- 11% (5) Doc Granting
- 17% (8) Other inst
- 28% (13) Public
- Average size = 3,900

10,500 Seniors

- 36% SR capstone
- 62% women
- 29% first generation
- 69% traditional age
- 46% live on campus
- 38% transfer students
- 88% full time
- 16% Greek
- 78% White

Senior Capstone - Some Quick Facts

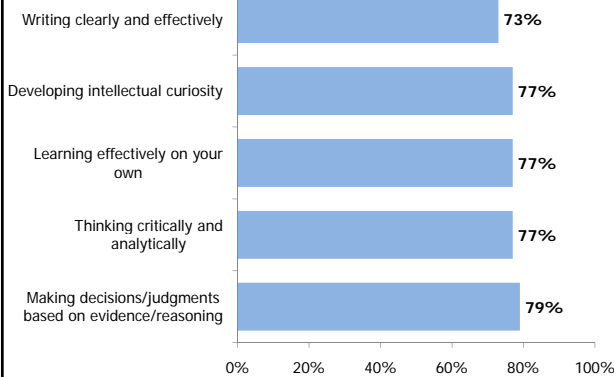
- **87%** of those taking a senior culminating experience indicated taking a seminar or capstone course
- **84%** of capstone takers took the course in their major
- **94%** of capstone takers were required to take the course
- **>50%** of capstone takers reported gaining from the experience across a host of outcomes

Learning Gains

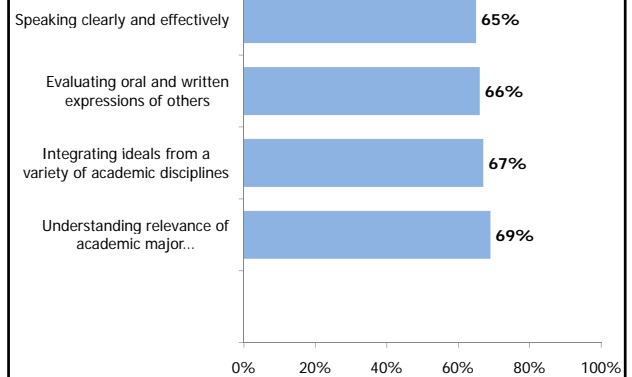
What learning gains should capstone most help students develop?

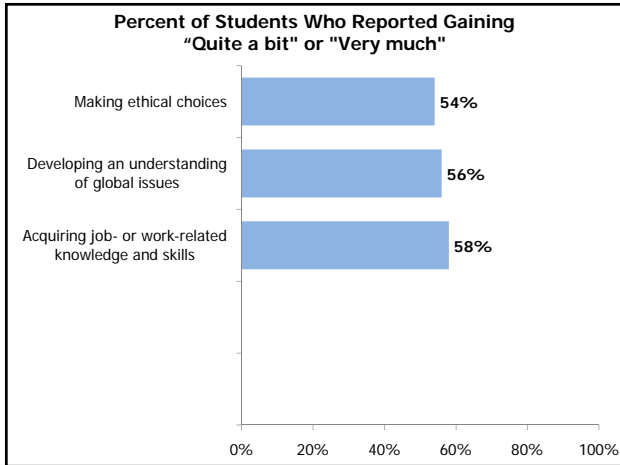
1. Thinking critically & analytically;
2. Speaking clearly;
3. Writing clearly and effectively;
4. Learning effectively on own;
5. Understanding of global issues;
6. Evaluating oral & written expression of others ;
7. Integrating ideas from a variety of disciplines;
8. Making decisions & judgments based on evidence;
9. Making ethical choices;
10. Developing intellectual curiosity;
11. Acquiring job – work related goals;
12. Understanding relevance of major;

Percent of Students Who Reported Gaining "Quite a bit" or "Very much"



Percent of Students Who Reported Gaining "Quite a bit" or "Very much"






Check In

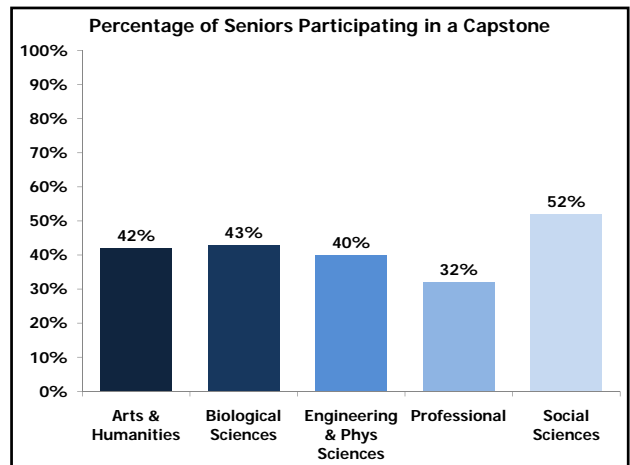
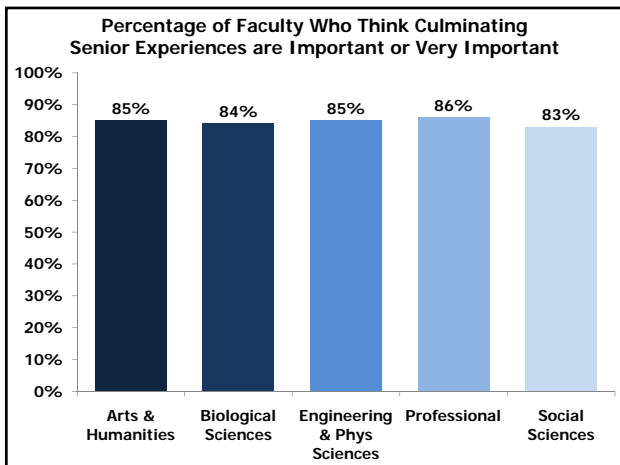
- Does this match your assumptions about what students should gain from a senior capstone?
- Is capstone missing an opportunity to enhance a particularly important student learning outcome?

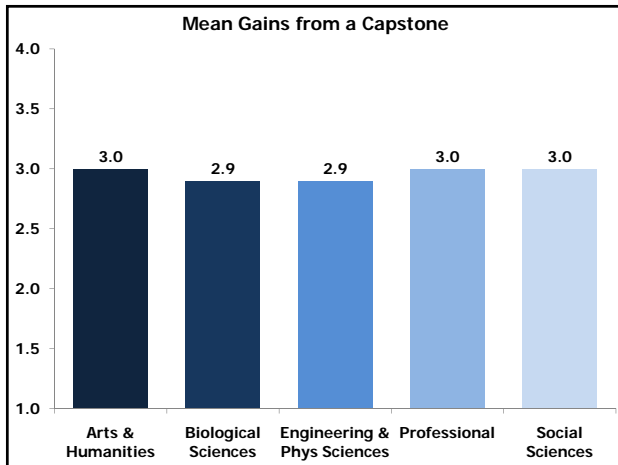
More Likely to Take SR Capstone

- > 10% participation difference
 - Traditional age students
 - Students living on campus
 - Non-transfer students
 - Full-timers
 - Greek members
 - Varsity athletes
 - Social sciences majors

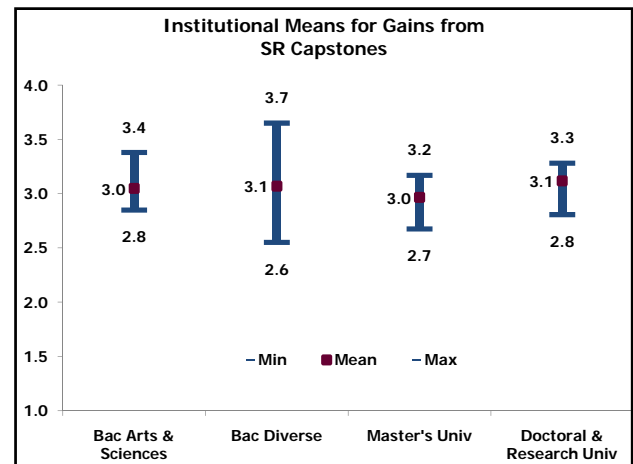
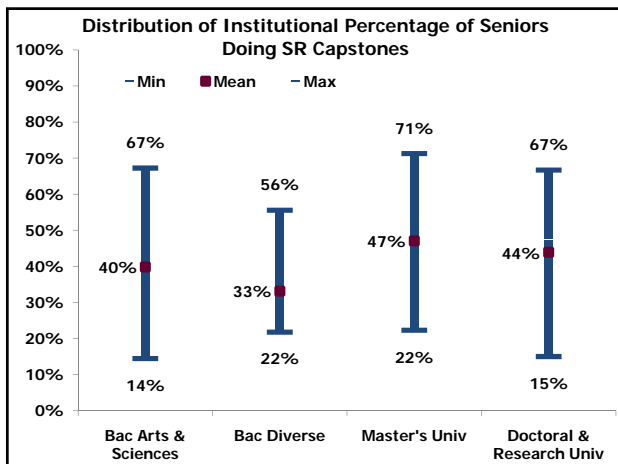


Some Comparisons by Major





Institution-Level Findings



One more finding...

- Our data suggest a small negative relationship between the percentage of seniors participating and the institutional average gain from capstones
- What does this mean?
 - Variation in implementation?
 - Institutionalization?
 - Animosity toward required capstone?

Discussion

- What learning outcomes should we aim to develop in senior culminating experiences and capstones?
- What do these results suggest about designing and sustaining senior culminating experiences?
- Which students at your institution are less likely to experience a culminating experience? Should it be made more widespread?
- What do you know about the qualities of the capstones at your campus?

To Ponder

"We owe it to seniors to provide an opportunity to reflect, plan, bring closure and ensure a successful transition as productive citizens."

Have students embodied the mission of the university that was frequently paraded before them at first-year orientation? Can we confidently turn our graduates loose in the community?



- John Gardner, author Senior Year Experience

Final Word: How can we ensure more students have a meaningful senior culminating experience?



Be Intentional about Exposing Students to Educationally Effective Practice