

Introduction

The final year of college is a critical time of development, when students face the end of their undergraduate experience and begin to transition to life after graduation. During this adjustment period, seniors must cope with unique challenges and opportunities that come with the new beginnings that lie ahead. Some of the challenges involve leaving a place of familiarity and structure, finding a job consistent with their interests and values, and finding closure for friendships and relationships they may leave behind (Taub, Servaty-Seib, & Cousins, 2006). The senior-year transition often brings apprehensions related to new social environments, future living arrangements, graduate school, student loan debt, and grief associated with the loss of college friends, college identity, and the security of a familiar atmosphere (Taub et al., 2006).

Notwithstanding, the senior year also produces excitement with the prospect of new beginnings, as students start their careers or further their education (Hunter, Keup, Kinzie, & Maietta, 2012). Seniors also have the opportunity to show their competence with skills and knowledge they have acquired through the investment of time and effort during their educational careers (Boyer Commission, 1998; Gardner, Van der Veer, & Associates, 1998). As seniors demonstrate proficiency in their academics, relationship skills, and leadership abilities, they attain more confidence and gain a sense of improved engagement (Gardner et al., 1998).

Several reasons exist for institutions of higher education to support seniors during this period of closure, transition, and new beginnings. First, the senior year is the last chance for institutions to educate students and inculcate values to ensure graduating seniors leave with the skills, knowledge, and behaviors needed to succeed in the next stage of their lives (Cuseo, 1998; Gardner et al., 1998). Many students will be seeking employment after graduation, which has become an important metric for institutional effectiveness and situates career development as an important consideration for students and administrators. Scholars (Henscheid, 2000; Hunter et al., 2012; Magolda & Denton, 2012) have pointed out the importance of the rituals and rites of passage that help students feel they have fully entered a community of knowers. Finally, when students demonstrate the skills they have gained in college, institutions can assess their own effectiveness and examine the quality of the educational experience (Hunter et al., 2012).

Goals and Objectives of the Senior Year

At the intersection of the needs of students and institutional motivation for attending to seniors, are important goals and objectives for the senior year. These have been outlined by a number of commentators (see Cuseo, 1998; Gardner et al., 1998; Henscheid, 2000, 2008; Hunter et al., 2012) and include bringing closure and integration to the end of the undergraduate journey (Gardner, 1999). A sense of closure and integration is fostered when colleges and universities develop “curricular coherence” (Hunter et al., 2012, p. xiii) by linking the curriculum in the major to the general education (Cuseo, 1998; Gardner et al., 1998) and connecting the lessons learned in the academy to the world of work (Hunter et al., 2012). Integrative learning is deepened as the “connections between intellectual, personal, and social outcomes [are made] more explicit” (Henscheid, 2008, p. 25).

By fulfilling these needs, institutions work to create a stronger alumni network. Alumni support is critical to colleges and universities, with alumni engagement and financial contribution frequently named as an indicator of students' involvement and satisfaction with their institution (Fakas & Childs, 2012; Monks, 2003). Early connection with young alumni is important, as an indicator of future giving is former giving (Akers & McDearmon, 2010; Monks, 2003). Colleges and universities rely on their alumni not only for donations but also to act as ambassadors to communities, fellow graduates, and potential enrollees. Thus, another reason for institutional attention to seniors is that these students are about to become the newest group of alumni and eventual benefactors to their respective alma maters (Gardner et al., 1998; Hunter et al., 2012).

Moreover, colleges and universities are well served to ensure that graduating seniors are engaged and well trained. Multiple benefits are realized when alumni enter the workforce with essential knowledge and skills. First, graduates are served, as they are set up for success in both the short and long term as they secure employment and advance in their careers. Next, businesses and industry are improved, as they are provided a workforce trained to carry out their core functions. Finally, institutions of higher education benefit from improved institution-employer relationships, greater student satisfaction post-graduation, and higher job-placement rates, which are increasingly used as metrics for institutional success for prospective students (Hunter et al., 2012; Maietta, 2012).

This is not to suggest that institutions of higher education should have learning and development objectives for the sole purpose of vocational training. Many of the career competencies employers expect of college graduates are also key outcomes associated with a liberal education (Henscheid, 2008). Two such examples are critical thinking and communication skills (Gardner & Perry, 2012; Hart Research Associates, 2010; NACE, n.d., 2009; Vakos, 2010). Critical-thinking skills are vital, as they allow students to solve problems; analyze, evaluate, and interpret data; and learn continuously. Proficiency in critical thinking is rated among the highest of the skills lacking when graduating seniors enter the workforce. Employers frequently cite an inadequate emphasis on applied learning in the senior year as a cause for critical learning skills deficiencies in entry-level workers (Hart Research Associates, 2015). Additionally, employers highly value critical-thinking skills as they serve as a pathway to other important workplace skills, such as problem-solving and communication (Hart Research Associates, 2015). Similarly, communication skills are integral to students' success as they take the next steps beyond graduation (NACE, 2009). Writing skills are invaluable once students enter the workforce; graduates will be expected to be proficient at multiple forms of writing, ranging from sending company e-mails to writing reports. Further, students applying to graduate or professional school will be expected to write at a high level once admitted to these programs (Handel, 2016). Students in the senior year gain these skills by engaging in authentic writing tasks on which they receive detailed feedback from faculty and peers with the expectation that they will revise their work (Masiello & Skipper, 2013).

Calls for Institutional Support of the Senior Year

Advocates for improving the undergraduate experience have been making calls for focused and deliberate institutional support of the senior-year transition for at least the past 20 years (Boyer Commission, 1998; Gaff, Ratcliff, & Associates, 1997; Gardner et al., 1998). Gardner (1999) described a senior-year experience as a "variety of initiatives in the academic and co-curricular domain that, when implemented in a coordinated effort, can promote and enhance learning, satisfaction, and a successful transition" at the end of the undergraduate experience (p. 7). Moreover, Gardner and others (e.g., Hunter et al., 2012) have suggested that institutions have a moral obligation to deliver a comprehensive, intentionally designed effort to address the needs of seniors; assist them through their transitions with holistic support; provide closure to the undergraduate journey, including opportunities for integration and reflection; and help students graduate with requisite proficiencies for success in the next steps.

While there is evidence that institutions have developed varied initiatives to support senior students, such as career preparation workshops, events celebrating the achievement of senior status, and activities aimed at fostering class cohesion and promoting alumni engagement (Henscheid, 2008), perhaps the institutional effort

that has received the most attention is the senior capstone experience. Senior capstone courses have historically fluctuated between obscurity and prominence in U.S. higher education, with one estimate in the 1970s placing their prevalence at 3% of institutions nationwide (Levine, 1978). More recent estimates suggest senior seminars or capstone experiences are present at more than nine in 10 campuses across the United States (Barefoot, Griffin, & Koch, 2012; Padgett & Kilgo, 2012). Moreover, the culminating experience has received attention as an important component in achieving senior student success, having been named one of 10 high-impact practices by the Association of American Colleges and Universities (AAC&U; Kuh, 2008).

Defining the Senior Capstone

Studies have offered a variety of descriptions and definitions of the elements comprising capstone experiences in the past 20 years, but a prevailing view is that experiences should be culminating and cumulative (Boyer Commission, 1998; Brownell & Swaner, 2010; Gardner et al., 1998; Henscheid, 2012; Levine, 1998). Moreover, descriptions of capstone experiences suggest they should be structured, using pedagogies such as integration, reflection, and application to deliver on outcomes including team-building, employment skills, communication skills, analytical and critical thinking, and problem-solving competencies (Boyer Commission, 1998; Brownell & Swaner, 2010; Gardner et al., 1998; Kuh, 2008; Padgett & Kilgo, 2012). Well-designed culminating experiences include those where students reflect on and synthesize previous knowledge and then bring it to bear on a learning activity or project (Boyer Commission, 1998; Gardner et al., 1998; Kuh, 2008; Levine, 1998).

Multiple formats for capstone experiences have been promoted. Padgett & Kilgo (2012) suggested the senior capstone could be broadly categorized into curricular, course-based experiences and cocurricular, project-based experiences. Capstone courses, also referred to as senior seminars, have been listed as key structures for engaging students in the senior year (Barefoot et al., 2012; Gardner et al., 1998; Henscheid, 2000, 2012; Levine, 1998; Padgett & Kilgo, 2012). Another capstone format to receive attention is major integrative projects (Boyer Commission, 1998; Kuh, 2008; Levine, 1998). Faculty members frequently direct these projects, which can include senior theses and portfolios and present an opportunity to combine knowledge and skills (Boyer Commission, 1998; Kuh, 2008; Levine, 1998). Discussions of culminating experiences have also featured formats, such as field work (e.g., internships, student teaching), comprehensive exams, career certification, service-learning, and exhibitions of performing or visual arts (Henscheid, 2012; Kuh, 2008; Levine, 1998; Padgett & Kilgo, 2012).

Because of the flexibility of culminating experiences, capstones are often created to deliver on multiple fronts (Brownell & Swaner, 2010; Henscheid, 2000) including “to cement the student’s disciplinary affiliation, to provide a rite of passage into the world of work or graduate school as a member of a distinct scholarly community, and to integrate the skills and knowledge acquired in the discipline” (Henscheid, 2000, p. 4). Perhaps it is the flexibility of the approach that leads to the effectiveness of the capstone experience. According to AAC&U, senior capstone experiences succeed in a large variety of environments if they provide settings in which students learn to organize and synthesize knowledge and skills under supervision (Brownell & Swaner, 2010).

Research on Senior Capstone Experiences

Despite the prevalence and the variety of formats of the senior capstone experience as well as enjoying nearly a decade of recognition as a high-impact practice, only a modest amount of research has been done to evaluate its characteristics or effects (Brownell & Swaner, 2010; Padgett & Kilgo, 2012). Research on the features of and the influence of participation in capstone experiences has been conducted at both the student and institution levels.

Student-Level Studies

Research on the relationship between participation in senior capstone experiences and student outcomes continues to be scant (Brownell & Swaner, 2010; Padgett & Kilgo, 2012). However, following the inclusion of capstone experiences on the list of high-impact practices, more attention has been drawn to this relationship in large, multi-institution studies including the National Survey of Student Engagement (NSSE; Kinzie, 2012, 2016; NSSE, 2009, 2013), the Cooperative Institutional Research Program (CIRP; Eagan, 2016), and the Wabash National Study of Liberal Arts Education (WNS; Kilgo, Sheets, & Pascarella, 2015).

Results from the 2013 NSSE illustrate the student participation rates in various formats of the senior capstone. More than half (58%) of students reported participating in a major paper, project, or thesis. The next most frequently named culminating experience was a department-based course (46%). Students also indicated involvement in capstone experiences outside of the classroom in the form of formal presentations, comprehensive exams, field placement, or supervised practice. The capstone format students reported least frequently was a capstone course outside of their major (6%).

Positive relationships have been found between participation in capstone experiences and engaging educational environments, including greater academic challenge, active and collaborative learning, student–faculty interaction, and support on campus (Kinzie, 2012). In addition, student participation in capstone experiences have also been linked to higher levels of positive attitude toward literacy, socially responsible leadership (Kilgo et al., 2015), ethical decision-making, and acquisition of work-related skills (Kinzie, 2012; NSSE, 2009). Moreover, research has shown that gains are cumulative for students who participate in multiple high-impact practices including senior capstone experiences, particularly those from underrepresented groups (Finley & McNair, 2013). Notwithstanding, Kinzie (2016) found that first-generation students reported participating in culminating experiences at lower rates, pointing to concerns about what groups participate and which ones do not have access to these gains.

The emergence of research on this topic has elucidated areas where the effects of participation in capstones are still contested. One such area is openness to diverse viewpoints. Using data from the WNS, Kilgo et al. (2015) found that participation in a senior capstone experience was positively related to a composite measure of students' openness and orientation toward diversity. However, Eagan (2016) reported findings from CIRP that participation in a capstone experience was not a significant predictor of pluralistic orientation, a measure of skills and dispositions needed to interact with people from differing backgrounds. A similar pattern was found for measures of academic engagement. Kilgo et al. (2015) found a positive relationship between *Need for Cognition*, a measure of student disposition to engage and enjoy cognitive effort, and the culminating experience, while Eagan (2016) reported no such relationship between the capstone and a similar measure, *Habits of Mind*, behaviors and traits associated with academic engagement. Perhaps most striking were the contradictory results found for the relationship between capstones and critical thinking. As stated above, critical thinking is one of the more frequently noted desired outcomes of the undergraduate experience, generally, and the senior year, specifically. Self-rated reports of critical and analytical thinking have been positively related with senior capstone experiences in recent administrations of the NSSE (NSSE, 2009; 2013). However, Kilgo et al. (2015) found that a measure of critical thinking (the critical thinking module of the *Collegiate Assessment of Academic Proficiency*, ACT, n.d.) was significantly lower among students who participated in a capstone experience. These discrepancies are likely due to differences in samples, measures, and features of the capstone experiences themselves; more research is warranted to further understand the overall influence of senior capstones on student learning outcomes.

Institution-Level Studies

Another vein of research has been conducted at the institution level and has been concerned with documenting the extent and the features of the senior capstone. One of the earliest efforts was a 1975 study by the Carnegie Council on Policy Studies in Higher Education (Levine, 1978) that documented the prevalence of senior capstone courses in general education. The National Resource Center for The First-Year Experience and

Students in Transition, in response to increased attention to the senior year, carried out the National Survey of Senior Seminars/Capstone Courses in 1999 (Henscheid, 2000). A follow-up administration in 2011 reflected a broadened focus with an updated title, the National Survey of Senior Capstone Experiences (NSSCE; Padgett & Kilgo, 2012). Another noteworthy landscape study that cataloged student success initiatives, including many in the senior year, was the 2010 study titled “Enhancing Student Success and Retention throughout Undergraduate Education: A National Survey” conducted by the John N. Gardner Institute for Excellence in Undergraduate Education (Barefoot et al., 2012).

Institution-level reports have chronicled the growth in the national prevalence of senior capstone experiences over the past four decades. In his count of senior seminars focused on capping the general education by applying disciplinary knowledge to a topic, Levine (1978) found that only 3% of colleges and universities nationwide offered such courses. Later, Levine (1998) updated these figures and reported that 1 in 20 (5%) institutions offered senior capstone experiences while about 40% offered senior theses or summative projects. According to the 1999 National Survey of Senior Seminars/Capstone Courses, 77.6% of responding institutions offered at least one senior seminar or capstone course (Henscheid, 2000). In the follow-up study, the 2011 NSSCE found that 89% of campuses offered one or more senior capstone experiences with a course-based component (Padgett & Kilgo, 2012). Similarly, a survey of student success programs in the same timeframe found that 93.1% of four-year institutions reported offering a senior transition seminar (Barefoot et al., 2012).

In the 1999 and 2011 administrations of the NSSCE, the discipline-based capstone course was the most prevalent format of the senior capstone experience (Henscheid, 2000; Padgett & Kilgo, 2012). In both previous instances of the survey, the discipline-based course was named four times more than the next most frequently named culminating experiences, the interdisciplinary course and senior thesis. Padgett and Kilgo (2012) expanded their definition to include capstone experiences beyond the course, including “project-based” or cocurricular capstones. Among the most common cocurricular formats were senior theses or research papers (64.6%), arts exhibitions or performances (58.2%), and internships (46.6%).

Colleges and universities have offered a varied set of institutional goals and objectives for senior capstone experiences. A major goal was to facilitate learning within a specific major or discipline (Barefoot et al., 2012; Henscheid, 2000). Another frequently named objective of culminating experiences was to conduct, create, and present scholarly activity, such as research or artistic expression (Barefoot et al., 2012; Padgett & Kilgo, 2012). All previous institution-level surveys listed career preparation among the top objectives for senior capstone experiences (Barefoot et al., 2012; Henscheid, 2000; Padgett & Kilgo, 2012). Other frequently listed goals include critical thinking and analytic skills, written and oral communication skills (Padgett & Kilgo, 2012), and integration of general education and the major (Barefoot et al., 2012; Henscheid, 2000).

The 2016 National Survey of Senior Capstone Experiences

The 2016 National Survey of Senior Capstone Experiences (NSSCE), administered by the National Resource Center for The First-Year Experience and Students in Transition, was designed and conducted to gather a current national profile of campus efforts to support student success in the senior year. The 2016 administration of the NSSCE represents the third administration of the institution-level survey and a follow-up to the studies conducted in 1999 and 2011. The aim of the survey was to collect evidence about institutional attention to the senior year and expand knowledge about specific types of culminating experiences.

Building on the results of previous versions of the survey and a review of the research and practice literature, the 2016 NSSCE had three primary differences. The first was the inclusion of a section gathering information on the institution’s general attention to the senior year. The second was to ask about capstones situated in academic disciplines or departments, in cocurricular programs, or in campuswide settings in which any student might participate. While previous administrations of the NSSCE (Henscheid, 2000; Padgett & Kilgo, 2012) gave critical insight into the structures and characteristics of capstone experiences, they also highlighted at least three challenges to understanding the varied formats of these experiences:

- Senior capstone experiences are diffuse throughout campus academic departments and service providers.
- Capstones may be discipline-specific, grounded in general education, or cocurricular in nature.
- The diffuse administration of capstone experiences makes it difficult to assign attributes to any one type. If the largest proportion of students on a campus participated in a department-based course, for example, there is likely to be variation in the goals, strategies, and practices across departments offering the course. Moreover, that variation is probably desirable.

These challenges lead to problems in accurately gathering and interpreting data. To improve collection and representation of results, the survey was restructured to ask questions that could be reasonably be answered for the capstone based on its location on campus. For example, capstones based in academic departments did not ask respondents to identify objectives for all course-based capstones across all academic programs on campus, which would be either inordinately laborious or inaccurate (based on a composite or best guess). However, the survey did ask participating institutions to identify which types of capstones were used in each broad area of study. Similarly, the survey asked about objectives for campuswide capstones, as it is likely that a set of goals for such capstones could be identified. This change allows for an improved understanding of structural features of capstones based on location on campus.

Third, the typology of capstone experiences was reconceptualized. The working typology for this survey is based on five main types of capstones: courses, exams, exhibitions or performances, projects, and experiential learning. The updated typology builds and expands on the groups identified by Padgett and Kilgo (2012). Including an expanded group of types of capstone experiences serves two purposes. The first is practical. Using a literature-guided approach for offering options to respondents ensures that certain types of capstone experiences are not omitted from the results due to not appearing in the response set. The second purpose is that by expanding the conceptual definition of senior capstone experiences, a well-defined typology will guide future research on prevalence and can be used to tease out the conditional effects of participation in specific types of culminating experiences. For a full listing of the typology of senior capstone experiences used in the 2016 NSSCE, see Table 1.

Table 1
Typology of Capstone Experiences in NSSCE 2016

Category of Capstone	Frequency
Capstone course	Department or discipline-based course Department- or discipline-based course General education-focused course (campuswide capstones only) Other capstone course
Exam	Comprehensive exam Exam leading to certification or professional licensure
Arts performance or exhibition	Exhibition of performing, musical, or visual arts
Project	Senior integrative portfolio Senior integrative or applied learning project Senior thesis or independent research paper
Experiential learning	Service-learning or community-based learning project Internship Student teaching Other supervised practice

Organization of This Report

The following sections will describe findings from the 2016 NSSCE and conclude with a discussion of the results, focusing on their implications for practice and future research. In addition, the appendices provide a list of the participating institutions; the survey questionnaire; and the frequency distributions of responses to the NSSCE questions, disaggregated by institution control and size of senior cohort. This report will provide useful information for higher-education professionals looking to identify benchmarks, understand the variety of senior capstone experiences, or recreate existing programs for senior-year students.