



Elon Statement on **CAPSTONE EXPERIENCES**

2020

From 2018 to 2020, twenty-two scholars participated in the Center for Engaged Learning research seminar on Capstone Experiences, co-led by Caroline Ketcham (Elon University), Jillian Kinzie (Indiana University), and Tony Weaver (Elon University). The seminar fostered international, multi-institutional research on capstone experiences.

TERMS

Capstone Experience

Capstone experience has been called many names and has varied definitions across the literature and in practice. Capstone experiences may include culminating projects, signature projects, theses, and many more unnamed in our research. They may be program specific or part of the general education curriculum. The seminar research was inclusive of this wide variety rather than exclusive. We do encourage institutions and programs to add clarity in their operational definitions and consider additional terms like “keystone” or “cornerstone” to add more nuanced clarity to the goals and outcomes of experiences (Ketcham and Weaver 2017).

Diversity, Inclusion, and Equity

Diversity, Inclusion, Equity often have been lumped together, which is problematic on many layers. Buffie Longmire-Avital helpfully differentiates these terms and discusses how they build upon each other in important ways (Longmire-Avital 2018). We use this framing for our presentation of this work and implore institutions of higher education to grapple with these differences in definitions. Creating clear definitions matters to the students and communities we serve and to our faculty and staff colleagues. The simplified definitions are:

Diversity – presence of difference;

Inclusion – identity being valued and welcomed within a given space or place;

Equity – providing resources to position all to have equal outcomes, acknowledging there are different starting points that need to be accounted for.

Equity is the goal for higher education, and this involves acknowledging and accounting for historical and current disparities in access and inclusion.



PURSUIING RESEARCH ON THE CAPSTONE EXPERIENCE

The idea that the undergraduate experience should be capped off with a meaningful integrating and culminating learning experience has been a feature of higher education since the beginning of the 19th century. In the last thirty years, the capstone or senior seminar has taken on greater importance with a call from the Boyer Commission (1998) to reinforce the capstone as an integral component at research universities, and capstone experiences have been further amplified as a valued high-impact practice to advance student learning and success (Kuh 2008). Today, capstones may be required in the major, be multidisciplinary, or be a part of the general education program, and they take many forms, including internships, senior-level courses, service-learning projects, undergraduate research, and portfolios (AAC&U 2015; Henscheid 2000; NSSE 2014).

Regardless of their form or placement, capstones promote a sense of coherence in the college experience by providing an opportunity for students to bring their learning together in new ways in order to explore and solve novel problems and prepare for life post-college. The experiences are considered personally and educationally transformative for students, enriching for faculty who instruct and mentor students, and an opportunity for institutions to assess and showcase students' demonstration of learning.



Research on capstones has focused on their history and purpose in the curriculum, characteristics of student learning that are unique to capstones, and the impact of capstones on student learning (see Bronwell and Swaner 2010; Brooks, Benton-Kupper, and Slayton 2004; Brown and Benson 2005; Dunlap 2005; Henscheid 2000; Kerrigan and Jhaj 2007). Although there is an ever-growing body of literature on the many successful strategies and outcomes of the capstone experience, concerns about access, quality, diversity, and inclusion persist (Kinzie 2013). Recent equity questions about the capstone experience have focused on examining impact, studying design and implementation, tracking the extent to which the experience is available to all students, and exploring if capstones sufficiently prepare students with the values, attitudes, and competencies needed to be successful in life and employment (Budwig and Jessen-Marshall 2018; Kinzie 2018; NSSE 2014). Capstone experiences have been critiqued when they are poorly planned, reflect low academic standards, or are not scaffolded or aligned in the overall curriculum (Budwig and Jessen-Marshall 2018; Tinsley McGill 2012). In addition, concerns have been raised regarding the support faculty receive from the institution to provide the necessary mentoring for high-quality experiences (Kuh 2008). Finally, challenges exist on assessing the experiences, in particular an in-depth evaluation of the capstone across institutions (Padgett and Kilgo 2012; Tinsley McGill 2012).

Research on capstone experiences is a worthwhile intellectual pursuit; however, it is perhaps even more important to probe the practical factors that block student and faculty participation in these high-impact practices or inhibit the transformative power of the capstone, and to discover how to assure capstones positively contribute to student

learning, inclusive excellence, and equitable outcomes. Scholarship must inform needed change in higher education practice. As Carol Geary Schneider admonished during a presentation about CEL's Research Seminar on Capstone Experiences project, we must "help capstones live up to their potential" through improved practice, messaging to students and employers, faculty development, and access and inclusion.

Appreciating that there are numerous facets to explore in the capstone experience, the CEL Research Seminar invited scholars from across the world to conduct evidence-based research from a multi-institutional lens to take a deep dive into:

The current landscape and future directions of capstone experiences

- What are CEs aiming to accomplish/achieve (mission, goals)?
- What are the varying models of CEs?
- How are CE outcomes assessed and integrated into the dynamic climate of higher education?
- What are institutional resources, structures, and policies that influence CEs?

Equitable access to capstone experiences

- Do CEs serve diverse students and student populations?
- Is access to high-impact CEs equitable?
- What are the barriers to participation in CEs?

Research Teams

Responding to these overarching questions, scholars representing twenty-one Australian, Canadian, UK, and US institutions worked in four multi-institutional research teams. Using mixed methods research designs, teams studied:

The landscape of required capstone experiences in the US, UK, and Australia

Janet Bean, University of Akron • **Christina Beaudoin**, Grand Valley State University • **David Lewis**, University of Leeds, UK • **Carol Van Zile-Tamsen**, University at Buffalo • **Tania von der Heidt**, Southern Cross University, Australia

Student diversity and identity in capstone experiences

Sarah Dyer, University of Exeter, UK • **Trina Jorre de St. Jorre**, Deakin University, Australia • **Moriah McSharry McGrath**, Portland State University • **Drew Pearl**, University of North Georgia • **Joanna Rankin**, University of Calgary, Canada

Alignment with student and faculty goals and with institutional missions

- How are CEs meeting student expectations and needs [e.g. transitions, transformation]?
- How do CEs align with institutional missions?
- Are CEs addressing societal expectations for higher education?

Faculty development to support capstone experiences

- Is there effective faculty development and critical pedagogy to effectively meet diverse student needs?
- What components of CEs are assessed, integrated, and lead to faculty training initiatives?

Capstone purposes across disciplines, countries, and institutions

Jenny Hill, University of Gloucester, UK • **Russell Kirksey**, Penn State Harrisburg • **Julie Vale**, University of Guelph, Canada • **James Weiss**, Boston College

Faculty experiences in capstones

Olivia Anderson, University of Michigan • **Caroline Boswell**, University of Wisconsin-Green Bay • **Morgan Gresham**, University of South Florida St. Petersburg • **Matt Laye**, The College of Idaho • **Dawn Smith-Sherwood**, Indiana University of Pennsylvania

ALIGNMENT IN COMMUNICATION ABOUT CAPSTONES MATTERS

Descriptions of capstones across higher education often align around common themes for student learning that position them as premier, high-impact educational experiences (watch for forthcoming publications from the Landscape of Capstones and Capstone Purposes teams on this topic). Unfortunately, the messaging around how capstones address those themes often is inconsistent and lacks clarity, with definitions varying both within and across institutions.

Some of this variation reflects attention to institution-specific missions and goals, reinforcing the fact that capstones can serve as an integrating or culminating experience specific to a student's college career (Landscape of Capstones). Yet the differences also can reflect the variety of assignments and pedagogies used, as well as significant misalignments in how faculty within a single college understand the expectations for a capstone experience in their program or institution (Faculty Experiences). In addition, even when institutions have a unified, consistent understanding of their expectations for capstones on their campuses, the terms used to describe those experiences do not necessarily convey the intended meaning to students, their families, and the general public, which includes employers (Diversity and Identity).

Program websites, academic catalogs, syllabi, and other documents should use the same language to clearly communicate the goals of capstones, how they function as a culminating experience for students, and what their intended outcomes are. Aligning messages supports student learning; informs decisions about associated institutional resources, including faculty development for teaching capstones; and better communicates the value of capstones to audiences beyond academia.



THE IMPACT OF CAPSTONES ON STUDENTS' EXPERIENCE AND OUTCOMES

Research on the landscape of capstones revealed a wide range of espoused purposes and positioning of the capstone experience.

An exploration of capstone descriptions and outcome statements demonstrates the varied expectations for capstones in the undergraduate experience (Landscape of Capstones, Capstone Purposes). Stated outcomes ranged from “integration” as the most popular to “spiritual/religious” as the least mentioned (Landscape of Capstones). Surveys of students and faculty suggest that the articulation of values (with responsibility as the most popular) and skills (with critical thinking most popular) aligned between students and faculty, but attitudinal outcomes associated with capstone experiences varied by discipline and by student and faculty perspectives (Capstone Purposes). Cataloging outcomes allows for the monitoring of educational goals and provides possible models for colleges and universities seeking to develop capstones in order to advance particular outcomes.

Students have qualitatively different experiences and outcomes in capstones depending on the purpose, outcomes, and positioning of the culminating experience. For example, capstones that are discipline-based, or positioned to cap off the major, can carry significant weight in assuring seniors address the types of questions and issues faced by the field and have applied experiences that allow them to demonstrate mastery in the discipline. Engineering, nursing, sociology, and business are known for capstones that focus on “ways of knowing” and desired competencies in the discipline. In contrast, capstones that are part of the general education program might offer interdisciplinary or problem-based opportunities to bring coherence to the college experience or help hone values and skills for citizenship. Other capstones might be positioned as co-curricular, engaging students in projects that serve a civic purpose, promote awareness and action on a social issue, or bridge college and career with an intentional focus on preparation for life after graduation. The purpose and intended outcomes of the capstone understandably influence what students do and what they get out of the experience.

One indicator of the scale of culminating experiences in US education is data from the annual National Survey of Student Engagement (NSSE). This survey shows that about 45% of all college seniors have participated in a capstone experience. Although this may seem like a reasonable proportion given the diversity among US higher education institutions, concerns about increasing students' participation in high-impact practices, enhancing educational coher-



ency, and assuring outcomes for a 21st century workforce might compel efforts to make capstones more widespread or even required experiences. Indeed, one CEL team project explored the extent to which capstones were mandated by governments or accreditors, required via educational policy, or made compulsory for certain fields (Landscape of Capstones). Required or mandated capstones assert explicit outcomes and provide assurances of learning in ways that significantly differ from optional experiences.

Students' experiences in capstones range from intense, individualized integrated projects to team-based, social action, or simulated experiences (Henscheid 2000). Faculty teaching capstones indicated that they designed experiences and approaches with student preparedness and employers' needs in mind (Faculty Experiences).

Employers value capstones for their role in facilitating essential 21st century skills, such as designing and executing a project and solving complex problems, among others (Hart and Associates 2015; Nunamaker, Walker and Burton 2017). Recent trends in higher education advocate for the importance of helping students understand the ways in which they are prepared for employment and for life (NACE, n.d.). To this end, some capstones have amplified the integration of educational experiences with employability outcomes and, in partnership with career services, have helped students capture and lift up what they learned. The link between employability outcomes and employers was hinted at in CEL research team studies. In particular, two CEL research teams touched on the relationship between essential employability skills and capstones purpose and outcomes (Landscape of Capstones, Capstone Purposes), and another identified employers' influence on pedagogical approaches and assignments used in capstones by faculty (Faculty Experiences). The study of capstone features that develop skills valued by employers and that help advance students' confidence and demonstration of workplace skills is important to advancing the design of capstone experiences that support employability outcomes.

While this theme has been described in-depth in some discipline-based capstone research, it's clear there is more to be learned about the relationship between features of capstones and outcomes, and in particular, the focus on capstones' influence on post-college outcomes.



SUPPORTING DIVERSITY, INCLUSION, AND EQUITY IN CAPSTONE EXPERIENCES

There are significant gaps around diversity, inclusion, and equity in capstones particularly between the stated goals and the reality of implementation.

Capstone experiences in many ways are framed to privilege “traditional” students by seeking to engage students with diverse populations and complex problems. There needs to be more attention given to who teaches and participates in these experiences and how the content and structure acknowledges or embraces the complex experiences and identities students bring to these.

The first layer to inclusion is access, and research examining public-facing documents has shown that less than 12% of institutions sampled across the international context require capstone experiences as part of their undergraduate experience (Landscape of Capstones). Another research team identified that only 10% of their sample institutions required capstones (Capstone Purposes). Furthermore, there is some evidence that institutions that traditionally serve underrepresented populations are less likely to have universally required capstones (Landscape of Capstones). While access by curriculum design paints a strikingly stark picture, we additionally need to acknowledge that access alone isn't enough. If the capstone is not inclusive of diverse student identities, then we can't meet the promise and responsibility of delivering a high-quality experience (Kuh and O'Donnell 2013; Kinzie 2018). Additional findings from research looking particularly from the student experience point toward capstone experiences that expect students to fit into an existing model rather than building on diversity, inclusion, and equity (Diversity and Identity), thus not meeting an inclusive and equitable experience for all students.



While institutions need to consider the entry point of access for students, there also needs to be consideration of who is teaching capstones and how implementation decisions are made. A survey across multiple institutions, representing different institution types, found that the faculty teaching these experiences are predominantly white and tenured, with more female identified representation when compared to national averages (Faculty Experiences). This potentially speaks to promotion structures that do not reward diverse untenured faculty participation in these experiences, which reinforces institutional status quo. Furthermore, only about a third of these faculty report including content that encourages students to engage with human diversity (Faculty Experiences). While we acknowledge that capstones come in many forms and at different points in the curriculum, diversity, inclusion, and equity through content and practice should be seen seamlessly across undergraduate education experiences. As we move into 2021 and still grapple with the “isms” of society, a module, a course, an experience that “infuses” diversity or “addresses” equity is not enough. Our students and faculty of all identities should see themselves, at minimum, represented in the halls, classrooms, and sidewalks of higher education. Faculty and students are ready for this reality, invested and eager to engage in the emotional, physical, and cognitive labor needed to make their institution’s undergraduate experience more inclusive and equitable (Faculty Experiences, Diversity and Identity).



EFFECTIVE RESOURCES FOSTER FACULTY MOTIVATION TO TEACH CAPSTONES

Resources for capstone experiences vary across contexts. Institutions or programs with required capstone experiences will create different demands for faculty labor and professional development than those with optional capstone experiences. Similarly, national policies and accreditation requirements also impact the design and resourcing for capstones.

To support high-quality capstone experiences within these contexts, institutions should allocate sufficient resources to the programs and be attentive to the labor demands associated with them.

Faculty teaching non-required capstones may have more access to resources like support from colleagues and chairs, funding, and professional development workshops (Faculty Experiences). Perhaps because these faculty perceive that their available resources are effective, they are more likely than faculty teaching required capstones to use funds to develop teaching and learning initiatives and laboratories (Faculty Experiences). Institutional descriptions of capstones often mention theses, collaborative projects, and expectations for scholarly production that suggest that teaching capstones can be a labor-intensive activity (Landscape of Capstones). Nevertheless, faculty are highly motivated to teach these capstones (Faculty Experiences).

LINGERING CHALLENGES FOR CAPSTONES

Numerous constituents and demands

Pressure to accommodate numerous constituents and demands make successfully implementing capstones difficult. Acknowledging that capstones are not just another course, faculty may encounter challenges designing and teaching these unique curricular experiences. Additionally, junior faculty may be less intrinsically motivated to teach capstones, leading to tenured faculty teaching more capstones (Faculty Experiences). Therefore faculty development for capstone experiences needs to be attentive to career stages and to how the institution values this specific type of teaching in tenure and promotion processes.

Autonomy in implementation

Faculty appreciate having autonomy in implementation of capstones to meet student needs and to be

aspirational in content and context, but simultaneously feel the top-down pressures of institutional and disciplinary forces mandating certain features (Faculty Experiences, Landscape of Capstones, Capstone Purposes).

Inclusive and scaled capstones

Tensions around student participation in capstone experiences reiterate the need for more inclusive capstone designs that appreciate diverse student needs (Diversity and Identity). Providing high-quality experiences while scaling access for all students remains a tension (Landscape of Capstones).

While demonstrating areas for continued research and refinement in practices, these tensions collectively point to promising opportunities to make the capstone experience more equitable and impactful.

NEXT STEPS

Many of the observations highlighted in this work are not necessarily unique to capstones, but capstones are an opportunity for institutions to create change and elevate their missions. Some topics not addressed in our work that need significant attention and consideration are:

- How are these experiences both scaffolded to prepare students and flexible enough to accommodate transfer students? This challenge also infers that faculty align course goals throughout program and curriculum goals and communicate those goals across institutional boundaries.
- Capstones have been valued as a site for institutional or programmatic assessment — assessing student learning and program quality and informing improvement efforts. What mechanisms do we have to do this well and to assure that what students demonstrate informs program and institutional learning?
- Capstones also represent an opportunity to address employability outcomes. In today's practical higher education context, how can institutions attend most effectively to how students are prepared for workplace success?

We as a research seminar have concluded our three-year journey with optimism and hope in the promise of higher education and the opportunity for capstones in undergraduate education. Many of us will continue this work by providing resources for institutions to implement change. While there are challenges and tensions, none of them are insurmountable. We overwhelmingly experienced through this work the motivation, investment, and commitment of administrators, faculty, and students to engage in this work, which creates a climate for individual and institutional change.



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Credits

Icon on title page from the **Noun Project**:

Arch with keystone by Nick Taras

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Elon University Center for Engaged Learning, 2020

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