The 2025 Capstone Survey: Unpacking the Open-Ended Responses

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Abstract
Capstone courses offer engineering and engineering technology (ET) students a culminating design experience, but the structure, logistics, and implementation of capstone courses varies widely. The 2025 Capstone Survey, conducted in spring 2025, continued the decennial census of capstone experiences to catalog current practices, identify emerging trends, and provide historical comparison. The survey reprised many of the questions from its 1994, 2005, and 2015 predecessors, augmented with additional questions on related topics. The survey was completed by 512 respondents representing 498 distinct departments at 301 institutions. This paper focuses specifically on a subset of five open-ended questions from the 2025 Capstone Survey, including longitudinal comparison with the responses to the same questions in 2015. Responses reflected a broad diversity of logistical and pedagogical practices across capstone experiences, while respondents consistently emphasized authenticity, relationship-building, and student ownership. Persistent challenges included time/workload, student engagement, and project/industry sourcing, with 2025 respondents placing greater emphasis on process over product and using a wide range of strategies to secure projects. These qualitative data serve as a useful window into capstone practices through the experiences of those who teach and coordinate it, raising issues and highlighting current practices in engineering capstone education to guide further development in the field.

1. Introduction

Capstone courses in engineering and engineering technology (ET) provide a major design experience for students, usually during the last year of the undergraduate experience. While these courses often share common elements and approaches, they also vary substantially in their implementation across departments and institutions. The first nationwide survey of capstone courses was conducted in 1994 in an effort to better understand current practices at the time [1]. This was followed both in 2005 [2] and again in 2015 [3] as part of a decennial data collection initiative. The 2005 and 2015 surveys intentionally asked many of the same questions as their predecessors so as to allow for longitudinal comparison and capture trends over time.

Additional surveys across multiple institutions and capstone programs have been conducted by a variety of researchers on specific topics such as assessment [4], teaching load and funding [5], content in capstone courses [6], capstone problem statements [7], technical design reviews [8], and faculty experiences about capstone pedagogy [9]. Other researchers have focused their surveys on specific engineering disciplines [10], [11] and across ET in particular [12].

The 2025 capstone survey marks the official continuation of the decennial data collection effort, intentionally expanded to include ET as well as engineering. The 2025 survey included most of the questions from 1994, 2005, 2015 surveys plus a number of new multiple choice and open-ended questions, informed by other survey work and conversations within the capstone community and the author team. The results of these decennial surveys collectively provide an important longitudinal archive to understand, assess, and ultimately improve engineering and ET capstone education.

This paper focuses specifically on a subset of open-ended responses from the 2025 Capstone Survey, including capstone instructors' first-hand experiences and implementation practices. (Comprehensive results from the quantitative data and remaining open-ended questions, including longitudinal and disciplinary comparisons, were presented as the plenary at the 2026 Capstone Design Conference and will be forthcoming in paper form.) Respondents provided personal insights regarding what they enjoy most about capstone, challenges they face, and self-identified strengths in their approaches to teaching and coordinating capstone. Respondents also commented on how they balance product versus process, and what strategies they use to find capstone projects. The qualitative data serve as a useful window into capstone practices through the experiences of those who teach and coordinate it, raising issues and highlighting current practices in engineering capstone education to guide further development in the field.

2. Data Collection and Analysis Methodology

The 2025 capstone survey included ten main sections with a combination of multiple choice, fill-in-the-blank, and open response questions related to capstone characteristics, pedagogy, evaluation, faculty, students, projects and teams, expenses and funding, sponsors, personal experience, and opinion. The collection of questions was informed heavily by the previous nationwide and focused surveys referenced above, as well as discussions at previous capstone design conferences and with the author team. The survey language was expanded in 2025 to reflect both engineering and ET capstones and respondents. The initial set of questions for the 2025 survey was sent to eight engineering educators for feedback and clarification; questions were edited for clarity based on the reviewers' comments before disseminating the complete survey to the broader community.

The survey was implemented using Qualtrics and sent via email to the department chairs of all ABET-accredited engineering and ET programs, the Capstone Design Community mailing list, and ASEE Division chairs. Recipients were asked to take the survey themselves if they were in charge of capstone and/or to forward it to their capstone colleagues. The survey was officially open by mid-February 2025 and responses were accepted through the end of March. A total of 512 respondents, representing 498 distinct departments at 301 institutions (predominantly in the U.S., with a handful from Australia, Canada, and Saudi Arabia), participated in the survey.

This paper focuses solely on the qualitative responses to a subset of five open-ended questions at the end of the survey. All five of these questions were also asked (with the same wording) in the 2015 survey, allowing for a longitudinal comparison of response frequency across themes. (The 2015 open-response data were presented at ASEE 2016 in a separate paper [13]. The collected responses in both 2015 and 2025 represent a rich and extensive set of qualitative data with several hundred separate responses per question.

The authors analyzed the 2025 responses using a deductive protocol coding approach [14] based on the original codebook from the 2015 survey. For each question, all three authors familiarized themselves with themes and codes in the 2015 codebook. One author completed a first pass coding for all responses, flagging any responses that were confusing, unclear, or not easily matched. This first author also suggested possible new codes that could be considered for incorporation but did not directly add them. A second author reviewed all the flagged responses

and notes from the first author, matching responses to existing codes where possible, adding (and mapping to) new codes where necessary, and noting any continuing points of confusion. A third author reviewed all remaining flagged responses, making decisions when in agreement with either of the previous authors, and including additional notes as needed. After working independently, the three authors then collaborated to reach consensus on the coding for the remaining responses. For all new codes added to the codebook, the authors also re-reviewed the full set of responses to identify any additional matches that emerged. This entire process was repeated separately for each question.

3. Results and Discussion

Table 1 lists a set of five open-ended questions in the 2025 survey that were also asked in the 2015 survey. The sections below discuss each of these questions in turn, including both qualitative and quantitative discussion of the broader themes and the more specific codes. Selected representative quotes are included throughout, followed by the respondent ID number in brackets. Comparisons between 2015 and 2025 data, specifically regarding theme frequencies, are also provided.

Table 1 - Open-Ended Questions on 2025 Capstone Survey (partial list)

In your opinion, what are some of the strengths of your approach to teaching/coordinating capstone?
What do you enjoy most about being involved with capstone?
What are your biggest challenges regarding capstone?
How do you balance product versus process in your capstone?
What strategies do you use for finding capstone projects?

3.1 Strengths in Teaching/Coordinating Capstone

Responses to the question “In your opinion, what are some of the strengths of your approach to teaching/coordinating capstone design?” separated into a dozen categories, as shown in Table 2. Note that the codes in Table 2 (and all similar tables for subsequent questions) are listed in descending order of frequency within each theme. The most commonly reported themes and codes are discussed in this section.

The most frequent theme (n=88) from respondents referred to the professional setting of capstone as a strength of their capstone teaching/coordination. Nearly all of these responses noted simulating authentic practice (n=46) and/or real-world projects/clients/applications (n=41): "*Run the program as if the students were associates in a consulting firm*." [R339] and "*Using real active projects with direct impact on stakeholders.*" [R500]

Over a quarter of respondents (n=85) mentioned some type of relationship or interpersonal connection as a strength, whether that be in conjunction with students, industry, faculty, or alumni. The most commonly mentioned relationship (n=37) was through mentoring/advising/nurturing students, followed closely by industry involvement (n=32). "*Hands-on approach providing each team coaching time to achieve their project goals.*" [R39]

and "*The greatest strength is the quality of our industry sponsors and the opportunity for the students to interact with practicing engineers*." [R407]

Table 2 - Themes and Codes Regarding Strengths in Teaching/Coordinating Capstone*

Theme	**# Resp. (n=321)**	**Codes** (in decreasing order of frequency)
Professional Setting	88	simulating authentic practice; real-world projects/clients/applications; interim reports and meetings; keeping up with new and emerging technologies
Relationships	85	mentoring/advising/nurturing students; industry involvement; faculty involvement; sustaining relationships with regional employers/advisory board/alumni; close student-teacher interactions, transparency with students
Resources	84	faculty experience in industry; **faculty experience teaching capstone/design**; faculty experience in research, adequate facilities, **sufficient funding**; location in major metropolitan area
Experience Objectives	80	oral and written communication skills; student professional development; hands-on learning; application of concepts learned in class; entrepreneurship; **prototyping**; opportunities for creativity and innovation; **social/ethical responsibility**; **codes and standards**; emphasis on justifying decisions; analysis and optimization; risk mitigation; sustainability; balancing process and results; open-endedness; balancing challenge and fun
Investment	62	student accountability and ownership; student excitement and engagement; project connection and interest; commitment/willingness to spend time
Organization/ Logistics	45	project management/keeping students on task; organization; marketing and promotion
Design	44	iteration and design process; **design-build-test**; design reviews/stage-gate approach; emphasis on conceptual design
Course Framework	35	multidisciplinarity; adaptability and flexibility; systems engineering approach; two-semester duration; prerequisite curriculum; supportive environment to fail safely
Project Scope/ **Outcomes**	34	scaffolding of project phases; **delivered value and sponsor satisfaction**; breadth of knowledge and variety of topics; emphasis on project framing at beginning
Teamwork	32	teamwork skills; team teaching; team formation; competition between teams
Evaluations	31	**constructive feedback**; high expectations of students; grading rubric; external evaluation
Integration/ Connections	7	connections within/outside of engineering; integration of research/teaching/practice

* Based on the 2015 codebook, items in bold represent new codes and theme definitions for 2025

Resources were addressed in a quarter of the responses (n=84) as well. Of those, the vast majority (n=69) referred to the faculty's experience in industry: "*Ability to bring my real world work experience to the students - I have 'been there, done that' rather than lecturing from a*

textbook I read." [R444] Faculty experience teaching capstone emerged as a new code (n=15) within the resources theme in 2025, sometimes in conjunction with industry experience: "*I have many-years experience both working in industry, and teaching capstone in academia*." [R317]

Throughout the full set of responses, various experience objectives were also noted fairly often (n=80). This theme was subdivided into sixteen different codes, but oral and written communication were mentioned the most frequently (n=17), followed by student professional development (n=16), and hands-on learning/prototyping (n=13) and, as illustrated in the selected responses below:

> *I engage students in ample engineering communication, via calculation reviews, memos, reports, plans/specs, and presentations.* [R255]
>
> *I ensure students stay on track, receive meaningful feedback, and develop both technical and professional skills for their careers*. [R2]
>
> *I try to have every assignment, every in-class activity, be helpful for a future deliverable. I also try to keep lectures shorter and incorporate more in-class workshops to apply the knowledge*. [R377]

Additional commonly recurring codes from other themes related to capstone strengths included student accountability/ownership (n=38): "*Students have significant responsibility in executing the project*." [R236], project management/keeping students on task (n=30): "*Structured format of course with strict deadlines forces student teams to keep on task*." [R451], and iteration/design process (n=28): "*Rapid prototyping and iterative design approach*." [R70]

Regarding capstone strengths over time, Figure 1 provides a longitudinal comparison of theme frequencies from both the 2015 and 2025 survey responses. The general pattern is similar between the two years, with a few themes (e.g., resources, investment, and organization/logistics) being reported as a strength more frequently in 2025 than a decade earlier. Most worth noting is that more 2025 respondents reported more strengths overall than in 2015, which may suggest that capstone educators have strengthened their courses over time and/or are more aware of the strengths of their approaches.

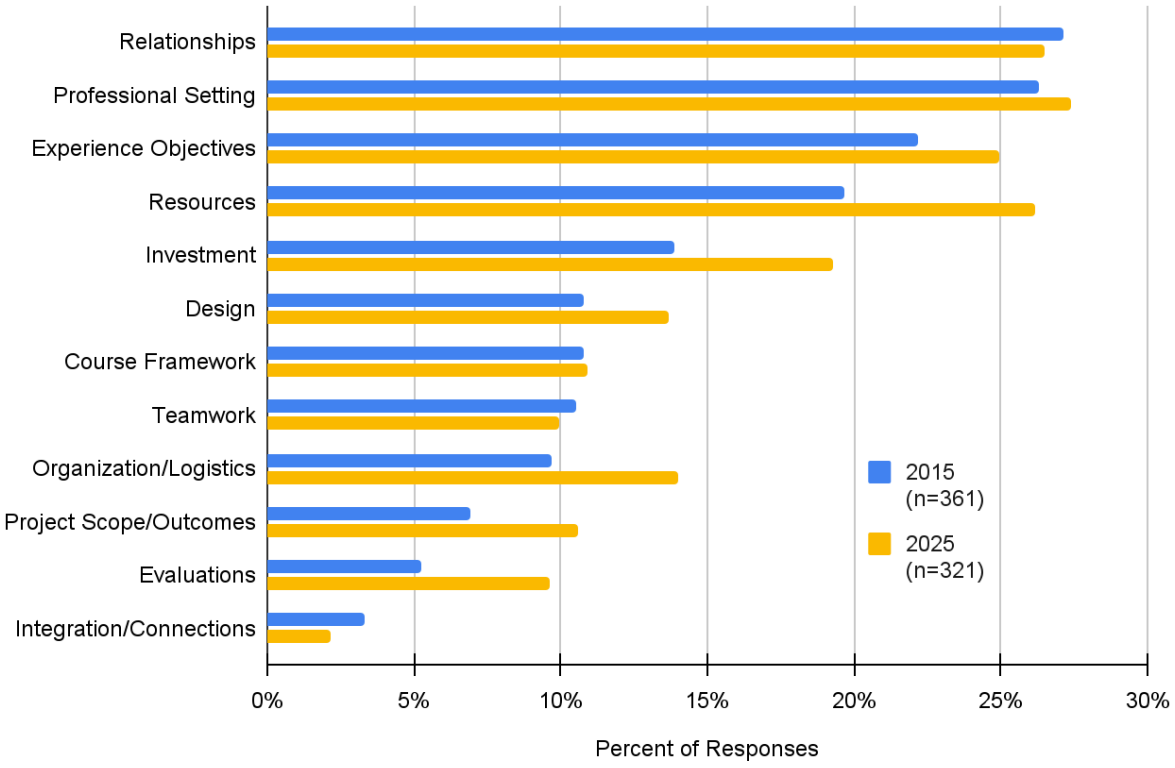

Figure 1 - Comparison of 2015 and 2025 Theme Frequencies Regarding Strengths in Teaching/Coordinating Capstone

3.2 Enjoyment from Capstone

Responses to the question “What do you enjoy most about being involved with capstone?" clustered into eleven themes across a wide range of topics, as shown in Table 3. As is clear from the total counts, responses often highlighted multiple aspects of enjoyment, mapping to more than one code and/or theme.

More than 40% of all respondents to the question addressed the theme of personal success as something they enjoyed in capstone. Of those, responses were most commonly related to student growth and confidence (n=63): "*Seeing the students grow tremendously as engineers and people*." [R454] and "*Seeing the students improve and build confidence in their skills*." [R72] Nearly as many respondents (n=53) focused on student success and accomplishment with comments such as "*Seeing students achieve something they thought they couldn't*" [R197] and "*I am often amazed at how much the students can accomplish within a single semester.*" [R389]

Another common theme of enjoyment related to interactions of various sorts, including, most prominently, interactions with students (n=87) and interactions with industry (n=25): "*Working with the amazing students*" [R109], "*I love the hands-on aspect of the course where I get to work directly with students and help them through various challenges on a variety of projects.*" [R411], and "*Working with the students and sponsors as a means of preparing the students for professional practice*." [R219]

Table 3 - Themes and Codes Regarding Enjoyment from Capstone*

Theme	**# Resp. (n=378)**	**Codes** (in decreasing order of frequency)
Personal Success	156	student growth and confidence; student success and accomplishment; application of previous learning and skills; student joy and excitement; student pride and self-recognition of achievements; student presentations; "aha" moments; **student employment outcomes**; learning from failures
Interaction	102	working with students; interacting with industry clients and sponsors; collaborating with other faculty/departments/schools; faculty learning from students; interacting with community
Professional Development	81	transformation from students to professionals; student motivation and ownership; professional development and applications; **faculty skill growth**; teamwork experience; broad topics beyond just technical skills
Advising	71	advising/coaching/mentoring students; student/teacher relationship; sharing personal experiences and expertise
Real World	59	applied and relevant projects and problems; societal impact and value of projects; staying current with new techniques and technologies; connection between academia (theory) and industry (practice)
Variety	53	variety and variability of projects; new ideas and perspectives; variety of topics and skills
Process	47	progression of projects; design process; building and testing prototypes/hands-on experience; open-ended problem solving
Project Success	44	providing good final outcome/product; overcoming tough and complex challenges; sponsor satisfaction
Creativity	32	creativity/brainstorming/innovation; interesting problems
Uniqueness	13	not a standard course, being part of tradition; proposing and selecting projects
Extreme	2	all of it; do not enjoy

* Based on the 2015 codebook, items in bold represent new codes for 2025

Some of the other things that respondents enjoyed about capstone, as mapped to other codes within other themes in Table 3, included advising/coaching/mentoring/guiding students (n=59), the variety and variability of projects (n=47), the transformation from students to professionals (n=40), and applied and relevant projects and problems (n=33), as reflected in the additional responses below:

> *Meeting in small groups with students, motivating them, helping them overcome challenges, and sharing both technical and project management advice, i.e. mentoring.* [R322]

> *Every year is different with different projects. Always interesting!* [R164]

> *Helping the students transition successfully to their professional careers.* [R258]

It's so real and practical. Almost every single graduate will use the information in their career. It's very rewarding. [R509]

A few respondents (n=7) noted the uniqueness of capstone as something they enjoyed: "... *The course is like no other course and exposes students to so many new challenges that include navigating conflict and not being able to rely on only one "right" answer.*" [R415]

Looking over time, Figure 2 shows the comparison of 2015 and 2025 survey data regarding enjoyment in capstone courses. In 2025, more respondents reported getting enjoyment from aspects of capstone related to personal success, professional development, advising, real-world, and project success. As with the question about strengths, more 2025 respondents also reported more aspects of enjoyment overall, which is a promising sign.

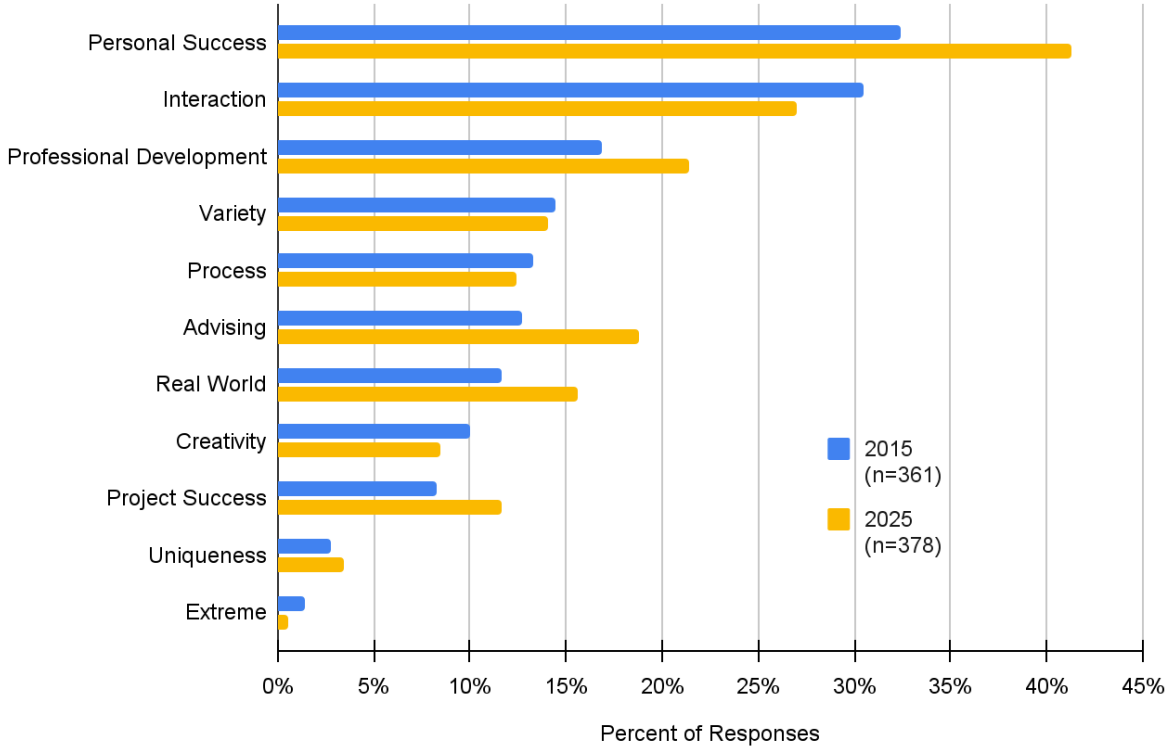

Figure 2 - Comparison of 2015 and 2025 Theme Frequencies Regarding Enjoyment from Capstone

3.3 Challenges in Capstone

Responses to the question “What are your biggest challenges regarding capstone?” mapped to fourteen themes in the codebook as shown in Table 4. The most commonly reported themes and codes are discussed following the table.

Table 4 - Themes and Codes Regarding Biggest Challenges in Capstone*

Theme	**# Resp. (n=366)**	**Codes** (in decreasing order of frequency)
Workload/Time	99	time in general; increasing class size; instructor time needed; workload (especially with respect to a standard course); other student commitments; prototype fabrication and testing; time spent reading and editing
Student Involvement	93	getting and maintaining student commitment and motivation; helping students start and manage projects; encouraging student independence and ownership; student discomfort with open-ended problems; students going beyond the scope of the project; getting students to justify design decisions; getting students outside their comfort zone
Project-Related	90	finding appropriate projects for the given time frame; project funding and financial support; finding enough projects for the given time frame; getting internal project data
Industry Involvement	45	finding industry mentors or sponsors; **sponsors disengaging**; personnel and organizational changes in industry; sponsor distance
Student Teams	42	keeping healthy team dynamics and student teamwork; uneven effort within teams; assigning and balancing teams; underperforming students and teams; getting teams to value non-technical skills in addition to technical skills
No Support	38	lacking infrastructure/equipment/facilities; not enough staffing or admin support; missing institutional support for capstone value; institutional red tape
Course Logistics	34	overall coordination and organization; continuous improvement; collaboration with other departments/schools/institutions
Student Preparation	27	students lacking skills or experience; understanding wide range of student preparation; encouraging application of previous knowledge
Evaluation	27	evaluation (time and/or process); ABET assessment and requirements; teaching evaluations
Meeting Expectations	24	balancing institutional/student/sponsor expectations; ensuring high quality deliverable and student success; ensuring all team members learn as much as their potential allows; ensuring students are ready for industry
Variety/Breadth	17	variety from year to year; mentoring many different disciplines; keeping current in the field; need for diverse set of projects given student interests; translating design terminology across disciplines; incorporating entrepreneurship;
Miscellaneous	16	**mental stress or emotional toll**; **pedagogy challenges**; no challenges; design work with students
Faculty Involvement	10	faculty engagement; faculty without industry experience
Real World	4	leaving the classroom structure and not letting it limit students' design potential; distinguishing between real world and theoretical applications; real world obstacles that limit depth of work

* Based on the 2015 codebook, items in bold represent new codes for 2025

The most frequently reported challenges in capstone (n=99) had to do with workload and/or time in various ways. Time in general was a commonly reported challenge for multiple respondents (n=33), as was the workload associated with increasing class size (n=28) and thus more students and more projects, as well as instructor time needed overall (n=26) for a course like capstone. The responses below highlight some of these workload/time challenges.

> *Time. We have a 1 semester capstone, so some teams don't have quite enough time to build, and others don't have enough time to test*. [R155]
>
> *We need a better way to scale up. Right now, there are too many teams assigned to one faculty.* [R352]
>
> *Time! Advising 6 projects per semester on top of my heavy teaching and service workload.* [R110]
>
> *The time it takes to teach it well*. [R366]

Another prominent area of challenge in capstone was student involvement (n=93), especially getting and maintaining student commitment and motivation (n=61): "*Getting all team members to be fully engaged*" [139] and "*Motivating average to low-performing students in a positive manner*." [R179] Multiple respondents (n=22) also noted the challenge of helping students start and manage projects: "*Trying to make sure students don't wait until the last minute to accomplish tasks*." [R504].

Many respondents (n=90) addressed challenges specific to capstone projects, including finding and scoping appropriate projects (n=46), securing project funding (n=38), and obtaining enough projects each year (n=26). The responses below reflect respondents' sentiments:

> *Finding / developing meaningful projects that encompass the totality of the student learning experience*. [R102]
>
> *Getting companies to sponsor projects. We are a soft-funded organization, and a part of the sponsorship is used to meet program expenses. We are always under pressure to raise enough sponsorships to meet program expenses.* [R158]
>
> *Finding enough clients/projects for the students* [R495]

Continuing the project connection, the most common code within the industry involvement theme was the challenge of finding industry mentors and sponsors (n=36), with comments such as the following: "*It can be difficult to find meaningful projects with engaged industry sponsors*." [R301]

Additional recurring challenges in the overall data set were related to overall course coordination and organization (n=31), keeping healthy team dynamics and student teamwork (n=28), and evaluation time/process (n=21).

Coordinating individual projects with other faculty members and external clients [R353]

Team dynamics. Although you may create teams that align academically, personality differences and collaborative effort are the biggest challenges for any team. This results in a lot of mentoring and guidance by the academic supervisors to help students through these simplistic issues. [R502]

Giving fair assessments can be difficult due to different team/ project experiences. [R428]

A new code that emerged in 2025 reflects the challenges associated with mental health and stress in capstone. Although only seven responses directly map to this code, the emotion they convey is worth noting: "*Dealing with the stress, both my own and of students. Capstone is intense at [Institution]. I often feel drained in a way that I have never experienced in other courses."* [R226]

Figure 3 shows the longitudinal comparison for respondents' reported challenges in capstone, from 2015 and 2025. The relative frequency of themes is largely the same across the two data sets. Worth noting, however, is the increase in reported challenges associated with industry involvement and course logistics in 2025, coupled with a slight drop in both time/workload and faculty involvement.

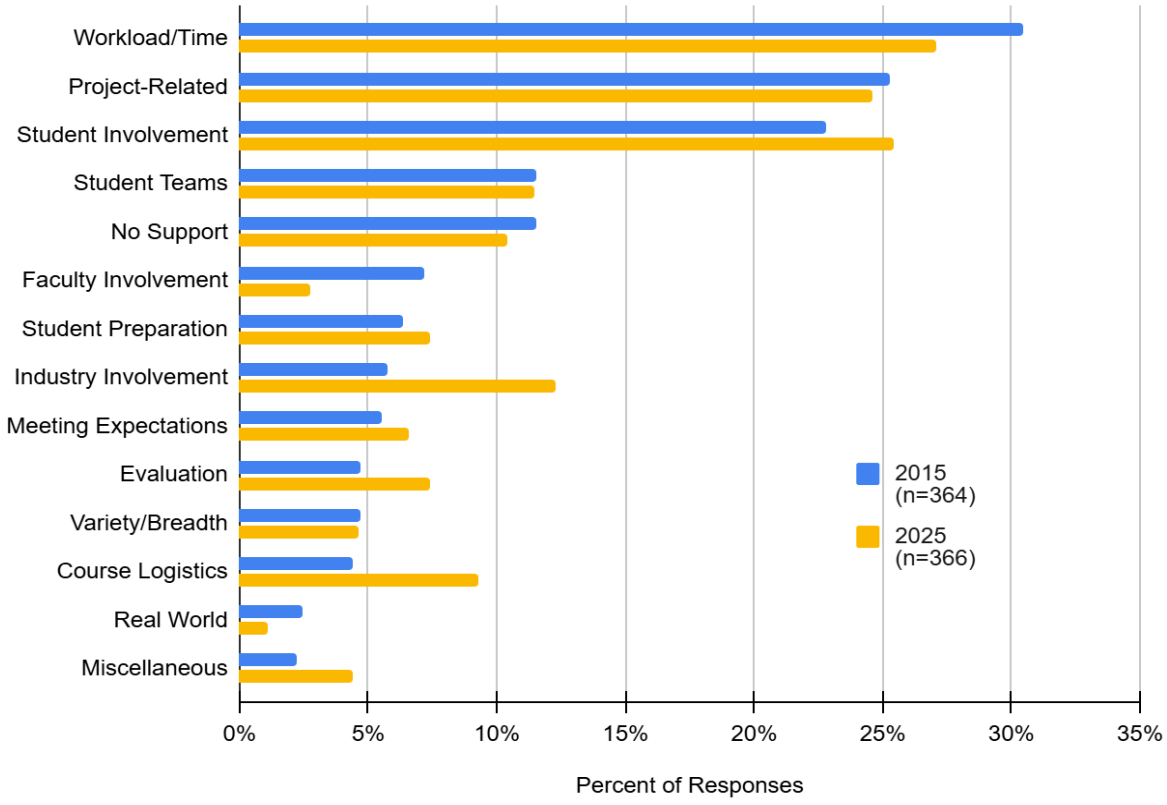

Figure 3 - Comparison of 2015 and 2025 Theme Frequencies Regarding Biggest Challenges in Capstone

3.4 Product versus Process

Continuing the many discussions at capstone design conferences over the years, the 2025 survey asked respondents "How do you balance product versus process in capstone?" Responses fell across the spectrum of emphasizing process on one end to emphasizing product on the other, with some responses reflecting additional themes, as noted in Table 5. Responses within "more process" and "more product" were coded by specific content based on numerical value provided (51-74% = “emphasis”, 75-94% = “heavy emphasis”, 95-100%= “all”) or interpretation of the response by the researchers based on wording and adjectives.

Table 5 - Themes and Codes Regarding Balance of Product and Process*

Theme	**# Resp. (n=274)**	**Codes** (in decreasing order of frequency)
More Process	124	emphasis on process; heavy emphasis on process; all process
Split	78	equally - both important; emphasis on process early and on product later; process = faculty, product = students/sponsor; lectures are process-oriented and projects are product-oriented
Other	46	final product is important for final grade; **final product is not critical for final grade**; product is process - no physical product; **discussed/debated topic**; good projects matter more than either
More Product	32	emphasis on product; heavy emphasis on product
Variable	31	varies (by project, by faculty mentor, by sponsor, by students); instructor's discretion; discussion with students
Interdependent	24	product is necessary but not sufficient; good process (usually) leads to good product
NA/Not Well	7	N/A, not sure; not balanced, not done well

* Based on the 2015 codebook, items in bold represent new codes for 2025

Although there are capstone programs that focus on product, the overwhelming majority of respondents either emphasize process or are split between the two. Representative responses along the product-process spectrum codes are provided in Table 6.

Table 6 - Representative Responses along a Product-Process Spectrum

Code	**Representative Response [Respondent ID]**
all product	[no responses for this code]
heavy emphasis on product	*75% on product 25% on process for most projects* [R34]
emphasis on product	*Definitely weighted more towards product, but they get credit for the process steps as well* [R496]
equally, both important	*We stress both. You can't have one without the other and design something meaningful.* [R470]
emphasis on process	*Our focus is more on process than product. Learning the process is the goal; the projects are a means to that end.* [R443]
heavy emphasis on process	*Very focused on the process....we teach them to fish and don't really care what they catch.* [R109]
all process	*We only do process* [R178]

In addition to responses along the spectrum, multiple respondents (n=21) noted that the emphasis varies by project, by faculty member, by sponsor, and/or by students: "*It depends on the nature of project and its sponsor*." [R437] Other respondents raised the connection between the final product and the final grade, with some (n=15) noting that having a final product is important for a final grade, whereas others (n=13) noting that students can do well in the class even with an unsuccessful final product, as noted in the responses below:

> *We require a functional product in order to receive a "C" grade or better. Process is still highly considered in grading.* [R52]

> *The process is the main objective. Teams could have final products that completely fail, but if they have followed the process and documented their steps and can provide justification for the failure as well as recommendations for success then they will receive a good grade.* [R467]

Other respondents (n=24) referred to the interdependence of the process, with some (n=14) noting that a product is necessary but not sufficient, and some (n=10) suggesting that a good process (usually) leads to a good product. A few respondents (n=6) specifically mentioned that "product vs process" is a commonly discussed or debated topic in their program.

Figure 4 shows the product-process spectrum of responses for both 2015 and 2025. While both data sets represent a rough normal distribution, the 2025 responses show a noticeable shift toward process, with nearly 50% of respondents indicating an emphasis on process in their capstone courses.

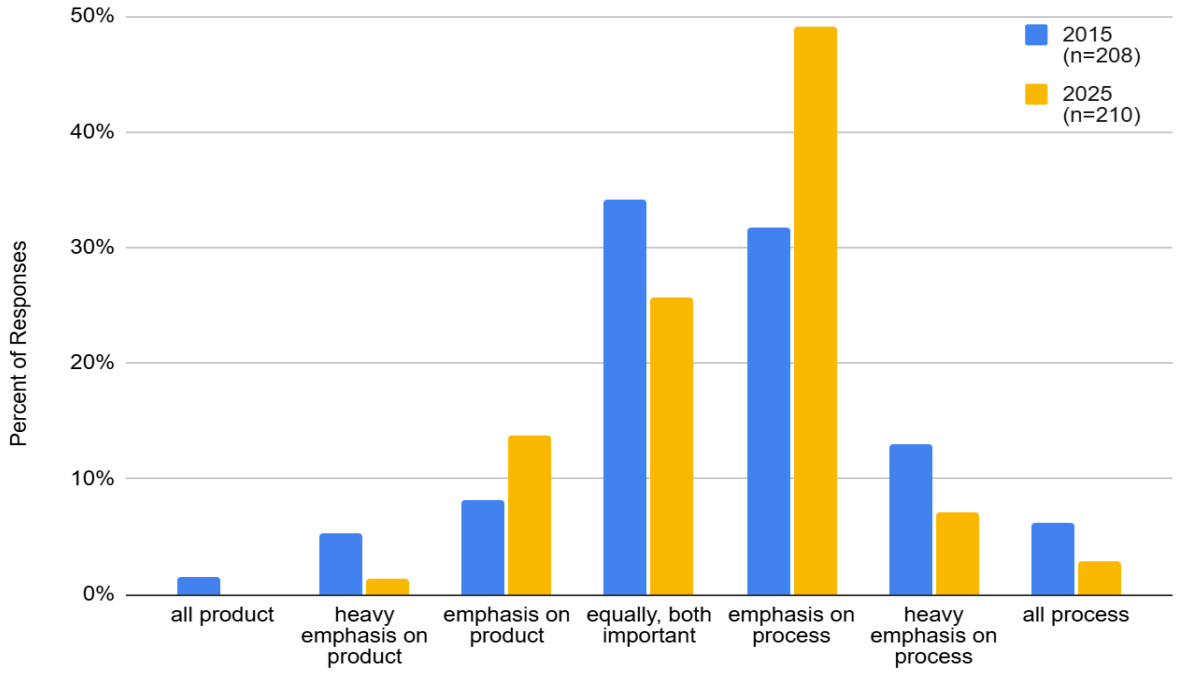

Figure 4 - Responses along a Product-Process Spectrum for 2015 and 2025 Survey Data

3.5 Finding Capstone Projects

A recognized challenge in capstone courses is sourcing projects so as to have enough projects that are also appropriately scoped. The 2025 survey asked respondents "what strategies do you use for finding capstone projects?" Responses map to nine themes, as shown in Table 7. The three most common themes of external contacts, internal sources, and marketing are discussed following the table.

Table 7 - Themes and Codes Regarding Finding Capstone Projects*

Theme	**# Resp. (n=349)**	**Codes** (in decreasing order of frequency)
External Contacts	257	local and regional industries; alumni; previous sponsors; connections in general; personal contacts of capstone instructor; development/university relations office; industrial advisory board; community organizations; faculty and department contacts; word of mouth; co-op and internship contacts; clinicians; **professional societies**; **career services center**; **governmental organizations**; other university's capstone sponsors; student contacts
Internal Sources	130	faculty research/ideas; student proposed; on-campus/internal projects; brainstorming sessions; **staff proposed**; **capstone instructor proposed**; **teaching assistant proposed**; **technology transfer office**
Marketing	79	solicitation and networking; advertising; internet searches
Criteria-based	34	global trends and industry needs
Prefabricated	30	competitions; repeat previous projects; textbooks; **continue previous projects**
Who Finds	27	dedicated capstone personnel; leave to faculty mentor
Events-based	20	career day; other events; capstone demo day or projects day; conferences
Magnet	17	approached externally; reputation
Extreme	10	anything and everything; no coordinated strategy

* Based on the 2015 codebook, items in bold represent new codes for 2025

The overwhelming majority of respondents (n=257) mentioned leveraging external contacts in some form for finding capstone projects. Of the wide variety of external contacts, the most common were local and regional industries (n=95): "*We have good relationships with local industry*." [R301] and "*I maintain a user group of local sponsors. I add member companies tot this user group from referrals and when I hear of a company doing interesting work.*" [R388]

Alumni (n=78) were another commonly tapped contact for finding potential capstone projects: "*Alums are a great source - they are the best advocates!*" [R267] and "*We rely heavily on our alumni to support Capstone through project sponsorship, whether that's our alumni sponsoring directly or connecting us with decision makers where they work*." [R31]

Many respondents (n=55) also returned to previous capstone sponsors to be repeat clients for future projects: "*Our most successful method is contacting old sponsors*." [R455] and "*Try to keep current sponsors*." [R105]

Internal sources were another common strategy (n=130) for finding capstone projects, often in addition to looking externally. In fact, more than 60% of the respondents who mentioned looking internally also referenced external contacts as well, such as "*Network with industry, have faculty projects fill any gaps."* [R26] Of the many possible internal contacts, faculty were the most often noted source (n=87), followed by students (n=57), and sometimes both, as evidenced in the responses below:

> *Faculty research spawns projects*. [R181]
>
> *I develop them myself, often exchanging ideas with other faculty. I try to make them timely or related to current concerns.* [R469]
>
> *Students present ideas. We do not assign or find ideas for them. This is their project, not ours.* [R96]
>
> *Professors provide ideas; students come up with their own ideas as well*. [R48]

Another prominent theme of responses for finding capstone projects revolved around marketing (n=79). Most of the responses (n=64) in this theme mentioned solicitation, outreach, networking, cold calls, email, or pounding the pavement: "*Returning sponsors are nice. Advisory board connections sometimes work. Otherwise it's just feet on the pavement, making the ask.*" [R93] and "*I am ALWAYS networking at social events to fish for projects. My wife hates going to parties with me now, because all I do is schmooze potential project sponsors. I used to be fun*." [R408]

It's worth noting that most respondents reported more than one source for finding capstone projects, suggesting that the process requires a multi-pronged approach. As one respondent summarized: "*TRY EVERYTHING. Look everywhere, internal, external, former sponsors, those with a tie to the school, former students, ties to new companies to the area, TRY just about every connection that you can, it is about 1/3 to 1/4 for a 1st point of contact to being a project. We run back to great sponsors too!*" [R482]

Figure 5 provides the longitudinal comparison for 2015 and 2025 responses about finding capstone projects. Interestingly, while the relative frequencies of the different themes is the same across the ten years, the reported frequencies in 2025 have increased or stayed the same in all but one case. Of particular note is the sizable increase of percent of respondents reporting using external contacts and also internal sources, up to nearly 75% and 37% of responses respectively in 2025.

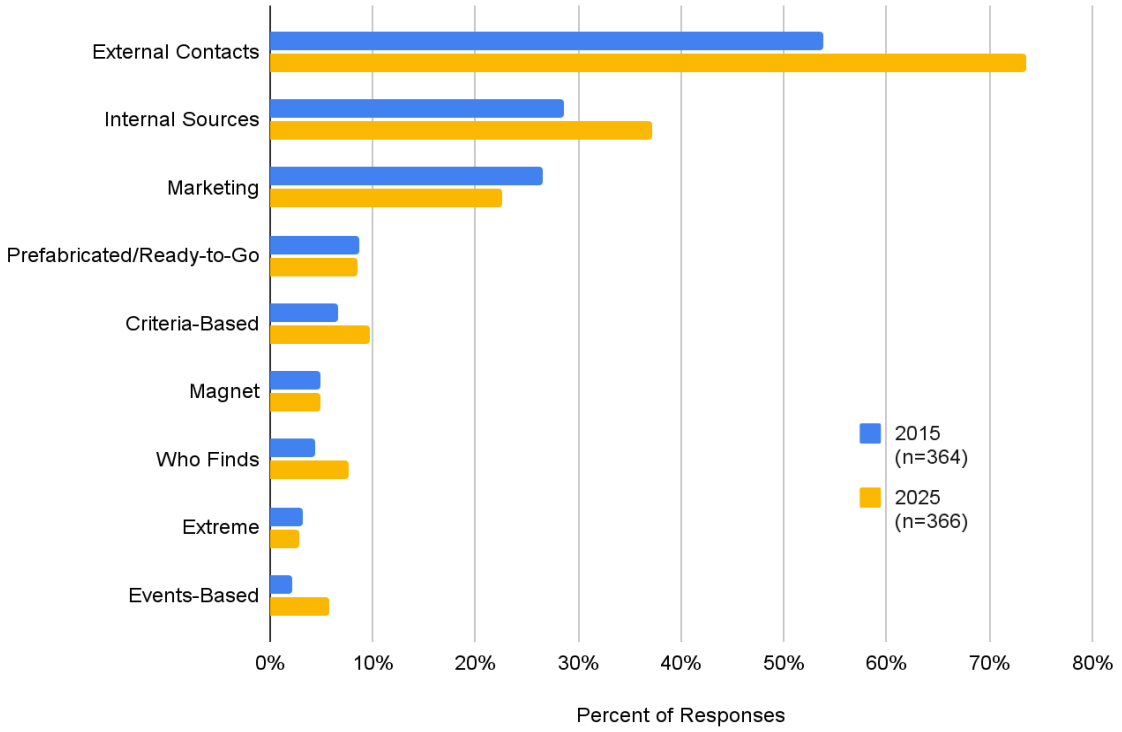

Figure 5 - Comparison of 2015 and 2025 Theme Frequencies Regarding Finding Capstone Projects

3.6 Cross-Question Findings

Looking across the set of questions, a few cross-cutting findings emerge. First, capstone is based on relationship work: relationships and advising are both strengths and a source of enjoyment, and industry interactions are both a project sourcing strategy and a challenge. Second, capstone is anchored in real-world relevance and authenticity: the professional setting (simulated authentic practice, real clients and projects) is a strength, the real world connections facilitate enjoyment while real-world obstacles provide a challenge, and sourcing strategies prioritize external industry contacts. And third, student agency/ownership is both an intended outcome and a persistent friction point: a key strength of the capstone experience is enabling student accountability, capstone educators specifically enjoy student growth and transformation but are challenged to maintain student commitment and encourage independence, even as they sometimes rely on student-proposed projects.

3.7 Limitations

The analysis discussed above has certain limitations worth noting. The authors followed a systematic coding approach both independently and collaboratively, but coding itself is inherently subjective. Moreover, the authors intentionally reused the codebook from the 2015 survey to enable longitudinal comparisons, but this necessarily introduced two additional complications: (1) only one of the three authors was initially familiar with the 2015 codebook and all authors had to learn the base codebook first before applying it, and (2) while most of the 2025 responses could be mapped to codes within the 2015 codebook, an inductive coding

approach might have generated a somewhat different codebook just for the 2025 data. In addition, some of the 2025 responses were simply not codable, either because they were too vague or the respondents seemingly answered the wrong question; the latter was especially true for the "product vs process" question, in which some respondents explained their *strategies* for balancing product vs process rather than whether they emphasized one or the other. The authors collectively identified the uncodable responses; these were not included in the datasets discussed above.

4. Conclusions and Future Work

The 2025 Capstone Survey, conducted in spring 2025, continued the decennial capstone data collection initiative to catalog current practices, identify emerging trends, and provide historical comparison. The survey reprised many of the questions from its 1994, 2005, and 2015 predecessors, augmented with additional questions based on other capstone-related surveys, design education conference topics, and open-ended responses. This paper focuses specifically on a subset of open-ended questions from the 2025 Capstone Survey, including capstone instructors' first-hand experiences and implementation practices. The data were analyzed using the 2015 codebook for the same questions to allow for longitudinal comparison.

The breadth of themes that emerged from the responses for each question underscores the variety of logistical and pedagogical practices utilized in different capstone experiences, far beyond what could easily be captured in a pre-defined multiple choice survey question. According to the 2025 responses, capstone educators' self-identified strengths for teaching/coordinating capstone include the professional setting of the course, building relationships, faculty experience in industry, and student accountability/ownership; these strengths were similar in 2015. Regarding what they enjoy most about capstone, respondents in both 2025 and 2015 highlighted student growth and accomplishment, interactions with students, advising/coaching, student professional development, project variety, and the real-world nature of capstone. Commonly reported challenges included time and workload, student involvement (or lack thereof), finding enough suitable projects, and securing industry connections. Capstone educators in 2025 were more likely to emphasize process over product in their capstone courses, even more so than in 2015. The perennial task of finding capstone projects was most often approached through a combination of external contacts and/or internal sources, with more respondents in 2025 leveraging more different approaches than they had ten years earlier. Emergent capstone characteristics from across the set of questions include the following: relationship work, real-world relevance and authenticity, and student ownership/accountability.

The full set of qualitative and quantitative results from the 2025 survey, plus longitudinal and disciplinary comparisons, was presented at a plenary session at the 2026 Capstone Design Conference; a full paper is in process so as to share the results widely with the capstone community.

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with the broader engineering education community. Above all, the authors appreciate the hundreds of survey respondents who took the time to share their program logistics and personal experiences in the 2025 survey; completing this lengthy survey was no small feat, yet most respondents persisted, providing detailed and useful answers even to the questions at the end.

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