Supplement 1. A Comprehensive listing of connections between experience elements and participant actions that connect to outcome categories. The connections presented in this supplement were found in at least two different participant's responses and were connected to participation in at least two types of co-curricular activities (e.g., research, design teams, internships).

	EXPERIENCE ELEMENT	PARTICPANT ACTIONS
Business Competence	Independent Project Work	Performing Business Analysis
	Participants performed cost analysis activities such as making decisions about cost versus quality tradeoffs in research and internship opportunities.	
Career Direction	Mentorship from Skilled Other	Soliciting or Receiving Career Goal Advice
	Participants most commonly described development through opportunities in research to receive career advice from their mentors themselves, and also gain access to other BME professionals who could give advice.	
	Participation in Multiple Similar Projects	Reflecting on Experience
	Participants who used reflection on multiple experiences to inform their career direction sometimes compared experiences in the same type of co-curricular, while others made connections between different types of co-curricular activities, or even between co-curricular and curricular experiences.	
Communication Competence	Regular Organization Meetings	Establishing an Agreed Upon Organizational Structure
	Participants described establishing an organizational structure (e.g., meeting minute notes, expectations for starting each day in the lab) as a group (e.g., in research projects, internships, and MDE teams) which built communication competence through the activity and supported communication throughout the collaboration.	
	Mentorship from Skilled Other	Participating in Broader Organization Functions
	Participants described development through opportunities in research, design project work, the MDE in this study, and internships to perform activities like observing communication norms in realistic settings or presenting their progress to a larger part of the organization.	
	Networking Opportunities	Practicing Elevator Talks + Reflecting / Receiving Feedback
	Participants credited networking activities (e.g., in internships, at career fairs) where they could give elevator pitches or brief summaries of their work and receive feedback to building communication competence.	
	Academic Participation	Publishing and/or Presenting
	Participants discussed their prioritization on performing activities in academic spaces (e.g., conferences, symposia, etc.) that allowed them to publish or present.	
Cultural Competence	Collaboration with Culturally Focused Discipline	Reflecting on Experience
	Participants described opportunities to collaborate with a culturally focused discipline through multiple co-curricular opportunities (e.g., MDE, research outside of engineering).	

Cultural Competence	Experience with 'Other' Culture	Reflecting on Experience
	Participants described opportunities to experience another culture through multiple co-curricular opportunities (e.g., MDE, instructional aide positions, and design challenges).	
	Formal Training through University	Reflecting on Experience
	Participants described opportunities to connect their co-curricular experiences (e.g., MDE) to cultural competence development through their elective engagement with formal training available at the university (e.g., design centers, minors coursework).	
Design Competence	Independent Project Work	Making Design Decisions
	Participants discussed multiple forms of independent projects (i.e., in research, internships, design challenges) that gave them the autonomy to make design decisions.	
	Early-Stage Project Work	Participating in Project Set-up
	Participants discussed the opportunity to participate in the setup of the projects' goals and constraints for their design competence development.	
Disciplinary Competence	Disciplinary Contextualization	Connecting Course Material to Project Work or Vice Versa
	Participants credited opportunities to connect concepts and skills back and forth between their co-curricular (e.g., MDE, research, and internship experiences) and curricular experiences for solidifying conceptual understanding.	
	Participating in Broader Organization Functions	Presenting Disciplinary Material
	Participants described development through opportunities in research and internships to present disciplinary material that supported their understanding of concepts.	
	STEM Education Opportunities	Teaching Peers Disciplinary Concepts
	Participants engaged in STEM education positions across a spectra of levels (e.g., grader, or course material design), and emphasized its utility for reinforcing disciplinary concepts.	
Interdisciplinary Competence	Project Work That Engages Multiple Disciplines	Explaining and Learning Material with Others
	Participants discussed multiple co-curricular opportunities (e.g., in research, internship, and MDE projects) to explain and learn material from people in other disciplines.	
	Project Work That Engages Multiple Disciplines	Recognizing Tradeoffs of Disciplinary Approaches
	Participants in MDE, internship, and research projects had opportunities to hear disciplinary tradeoffs presented and consider disciplinary tradeoffs in their decisions.	
Leadership Competence	Independent Project Work	Engaging Multiple Stakeholders in Implementation
	Participants described a variety of project opportunities (e.g., in MDE design teams, MDE travel teams, and internships) that necessitated engaging multiple stakeholders to implement.	

Leadership Competence	Peer Team Participation	Practicing, Failing, Reflecting on Leadership
	Participants talked about how peer team settings (e.g., in MDE or other university sponsored design challenges) gave them opportunities to practice, fail, and adjust their leadership approaches.	
	STEM Education Opportunities	Teaching Mentees Disciplinary Concepts
	Participants engaged in STEM education positions across a spectra of levels (e.g., k-12 outreach or tutoring, BME instructional aide), and acted in a leadership position throughout that task.	
Personal Attribute Outcomes	Repetition or Exposure to Disciplinary Practices	Applying through Experience
	Participants discussed self-confidence development over time through repetition and exposure to disciplinary practice in spaces like internships and research opportunities.	
Teamwork Competence	Team Hierarchy or Roles	Establishing a Shared Understanding of the Project
	Participants discussed the value of having a team hierarchy or stated roles (e.g., in MDE, internships, and research) for establishing a shared understanding of a project's goals and milestones.	