

Addressing Gaps in Teamwork Education Through Cross-Department Collaboration in Capstone

Zachary Bujnoch
Texas A&M University



TEXAS A&M UNIVERSITY
Department of
Biomedical Engineering

Abstract

- Teaming and collaboration within the academic setting have inherent challenges in preparing students for post-academic teaming and collaboration.
- Students are typically all from the same discipline and in the same role, which is a challenge often confronted and explored in higher education [1], [2], [3].
- Marketing student teams provide a Capstone-like marketing report for select ongoing engineering Capstone projects, with direct collaboration between the two student teams.

Challenge Statement

- **The ABET Requirement [4]:** Engineering programs must demonstrate that students can meet objectives within a team setting
- **The Problem (Homogeneity):** Student teams usually consist of peers from the same major and class
- **The Consequences:** This lack of diversity leaves students unprepared for the real world
- **The Solution:**

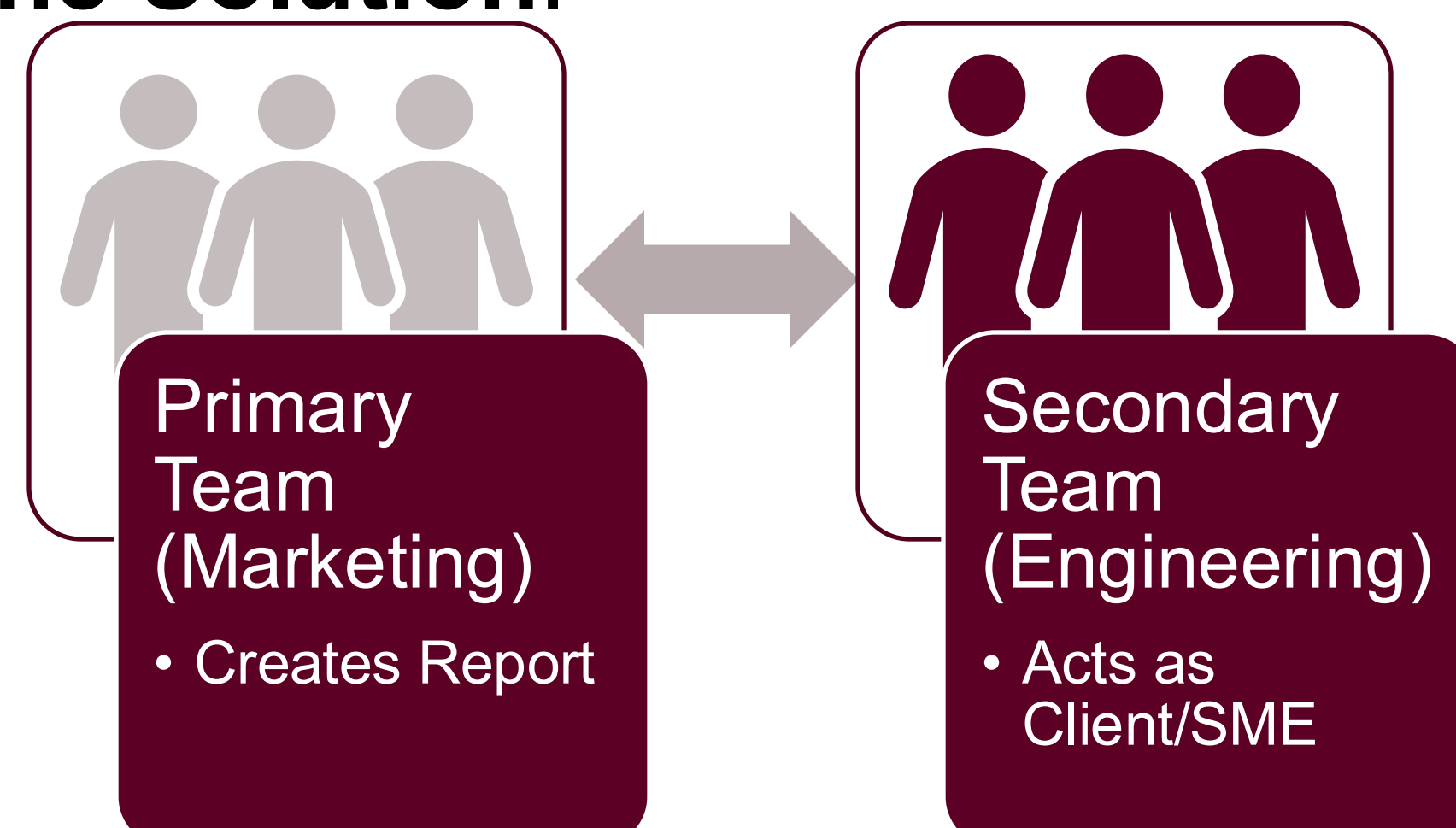


Figure 1: The Primary and Secondary Teams in Each Project

Novel Initiative

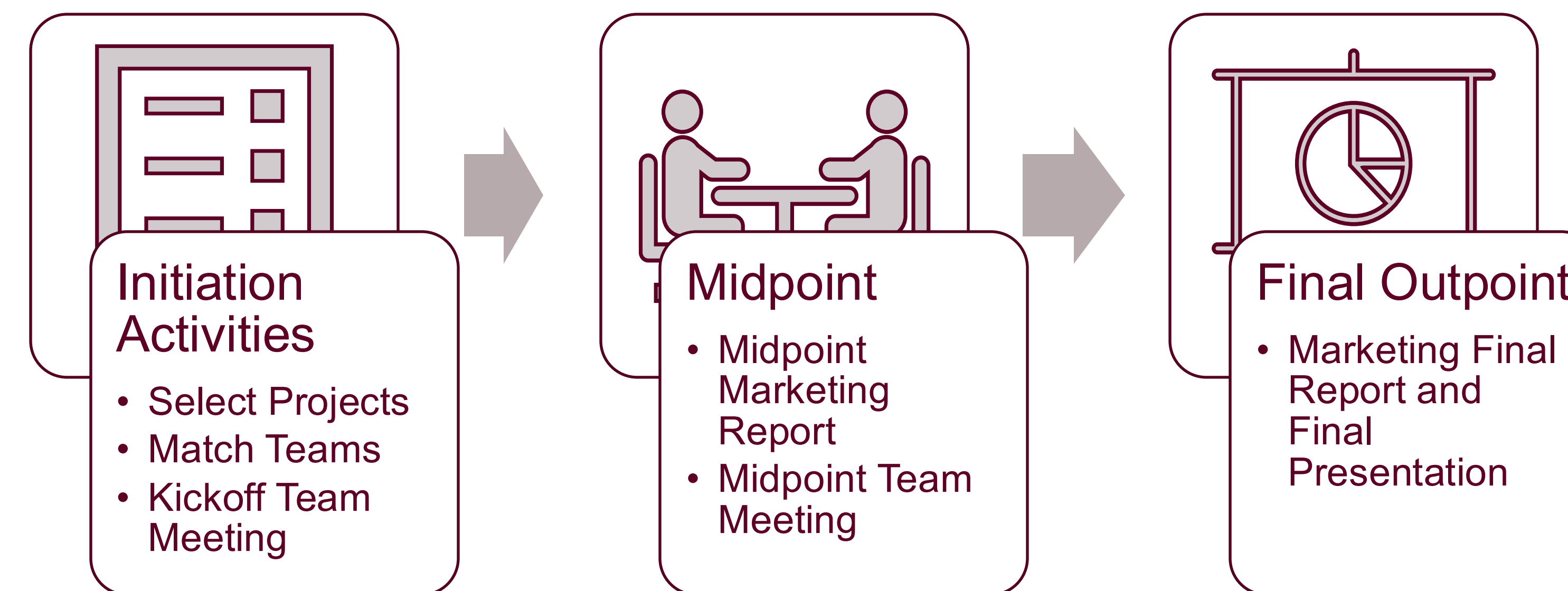


Figure 2: An Overview of the Project Main Touchpoints

Responsibility	Primary Team (Marketing)	Secondary Team (Engineering)
Role/RACI [5] Role	Lead/Responsible & Accountable	Client/Consulted
Learning Objectives	Senior Level Principles of Marketing Course Objectives	Collaboration and Communication as Client/Subject Matter Expert (SME)
Workload	100% including all course objectives	Minimal/5-10% (SME only)
Final Report	Primary Author	Reviewer/Contributor

Figure 3: Each Team's Responsibilities and Roles

Key Metrics

- **Program Lifespan:** The program has been running for 3 years, with 6-10 projects
- **Selection Criteria:**
 - The external sponsor's willingness to participate.
 - The project's suitability for a mass-market/consumer-focused marketing assessment.

Feedback

- 96.8% of biomedical engineering students (30 out of 31) voted to continue the program.



Reflections: Successes and Key Learnings

- **Mutual Benefit & Faculty Champions**
- **Structured Timelines**
 - A two-semester capstone model
 - The engineering team needs to finish an initial prototype in semester one
- **Smart Project Selection:** Projects are commercially translatable, not overly niche, and not too technically complex
- **Fair Grading & Team Size:** Independent grading scales and ideal team size is 4–5 students

Conclusion and Future Work

- **Continuation and Expansion:** The marketing department has expanded this capstone model and other engineering departments have also begun adopting the framework

References

- [1] C. Robb and D. Alexander, "Enhancing Cross-disciplinary Collaboration and Innovation for Engineering and Business Student Teams," Capstone Design Conference, Jun. 2016, Available: https://www.researchgate.net/publication/315793674_Enhancing_Cross-disciplinary_Collaboration_and_Innovation_for_Engineering_and_Business_Student_Teams
- [2] "Entrepreneurship in Capstone Design Using Interdisciplinary Teams and a Business Plan Competition," ASEE, 2005. Available: <https://peer.asee.org/entrepreneurship-in-capstone-design-using-interdisciplinary-teams-and-a-business-plan-competition.pdf>
- [3] D. Bowie, A. Donaldson, and J. Im Rand, "Business and Engineering Project Interaction," ASEE, 2004. Available: <https://peer.asee.org/business-and-engineering-project-interaction.pdf>
- [4] "Criteria for Accrediting Engineering Programs, 2025-2026-ABET," ABET, 2024. Available: <https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2025-2026/>
- [5] R. D. P. Suhandi and D. Pratami, "RACI Matrix Design for Managing Stakeholders in Project Case Study of PT. XYZ," ResearchGate, 2021. Available: https://www.researchgate.net/publication/354214293_RACI_Matrix_Design_for_Managing_Stakeholders_in_Project_Case_Study_of_PT_XYZ

Acknowledgments

Google Gemini was used in the creation of this poster. I gratefully acknowledge the support of Dr. Altay Dikeç, the TAMU BMEN Department, the TAMU Marketing Department, and all the students who participated.