

Designing a Research Based Leadership Studies Curriculum & Content for Undergraduate STEM Students

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Description/Statement of the Problem(s)

Often, when we discuss leadership, we talk about it in the context of academic fields such as the humanities or non-academic fields such as business. In doing so, it can be easy for STEM students to feel left out of the discussion and to experience difficulties in figuring how to practice leadership within their fields.

Rationale for the Capstone

As a biochemistry student minoring in leadership studies, I have seen first-hand how leadership studies and development can be extremely impactful in scientific fields, especially when applied through research. In everything from generating meaningful research questions to setting goals and deliverables to team-work skills and scientific communication, I have seen that leadership can be practiced and applied in everything that I do as a STEM student.

Other's Solutions

The engineering field has seen a robust academic focus on how to best engage undergraduate engineering students with leadership development. Leadership studies is being increasingly incorporated into engineering curriculums [1]. The vision is for engineering students to gain experience putting their engineering & design skills to use in problem-solving and creating more sustainable communities. Having said that, other STEM fields excluding engineering continue to be largely left out of the discussion.

Project WM

Values: My project is grounded in three key values – equality, achievement, and excellence.

Vision: The vision of this project is to bring the study of leadership to all students so that they can all be challenged to grow as leaders and professionals while simultaneously positively impacting their communities.

Mission: The mission of this project is to create a research-based leadership studies curriculum and content to more meaningfully engage STEM students in leadership studies and development.

The Project/The Selected Approach to the Problem

My project seeks to bring STEM students into the leadership conversation by offering them leadership training and content that is applicable to them. Specifically, my project is a research-based applied leadership curriculum that consists of content presentations that aim to demonstrate the effectiveness of research as a leadership studies practicum. These presentations inform and educate undergrad STEM students on how to best and most meaningfully engage with leadership in their fields of interest through research. They highlight how students can practice active leadership – exercising the Kouzes & Posner Practices and Commitments of Leadership [2] – within their undergraduate research teams. The presentations also highlight how students can utilize a research experience to strengthen career readiness skills and competencies. Ultimately, this project aligns with my personal values and vision of expanding equality and empowering people through education.

Project Timeline

- I spent the summer of 2020 working on incorporating the lessons I learned from my leadership studies practicum into a leadership studies curriculum composed of 12 topics/presentations.
- During the Fall 2020 and Spring 2021 semesters, I worked with Dr. Karen Boyd, my leadership studies coach & advisor, to improve this content and delivered it jointly to a leadership practicum course within the Minor.
- Over the course of my graduation semester (Spring 2022), I have been finalized my content presentations, incorporating the feedback and lessons learned from delivering them to students in the Minor.

Partners

My partners for this project consist of Dr. Karen D. Boyd and Mr. Zac Hyder who have both been instrumental in helping me create and perfect the content presentations. Other partners include LSM students that I had the opportunity to pitch the presentations to and assist as they were completing their practicums.

What was Achieved

Through this capstone project, I was able to bring my project values, vision, and mission to life. It was also incredibly powerful to see leadership studies content that I helped create be utilized to facilitate the journey of other STEM students interested in leadership.

Final Project Status

The final product is a practicum-based leadership studies curriculum tailored specifically for STEM students engaged in research as a leadership practicum.

While not perfect, these leadership content presentations can be a launching pad that undergraduate STEM students utilize to inform themselves on how to exercise leadership through their work as researchers.

The starting vision of this project was to expand opportunity for STEM students to engage in leadership studies and this project has put in place the foundation for that to occur.

Leadership Highlights

Synthesizing everything that I have learned over the past four years – as a STEM student and as a leadership studies student – and delivering that as a final product/resource that help facilitate the educational experience of my STEM peers.

Future Project Plans

- In terms of the project, the next step is to take the curriculum and content presentations developed and to turn them into a video library of presentations. This can then be accessed and utilized by any undergraduate student without needing the content to be delivered live.
- In terms of my personal career trajectory, I plan to continue my pursuit of science, leadership, and academia by seeking an MD-PhD.

References:

- [1] Cox, M., Dekich, O., & Adams, S. (2010, April 20). Developing Leadership Skills of Undergraduate Engineering Students: Perspectives from Engineering Faculty. *Journal of STEM Education*, Vol. 11, No. 3, 2010.
- [2] Kouzes, J., & Posner, B. (2017, March 30). *The Leadership Challenge*. Jossey-Bass, 6th edition.