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Exploring Interdisciplinary Identity Formation in Graduate Students

Ms. Susan Wainscott, University of Nevada, Las Vegas

Susan Wainscott is the Engineering Librarian for the University of Nevada, Las Vegas University Libraries. She holds a Master of Library and Information Science from San Jose State University and a Master of Science in Biological Sciences from Illinois State University.

Dr. Dustin B. Thoman, San Diego State University

Dr. Dustin Thoman is a Professor in the Department of Psychology and the Center for Research in Mathematics and Science Education at San Diego State University. His scholarship is grounded in social psychology, diversity science, and a social contextual framework of motivation. He studies how motivation can be supported or disrupted by the social and cultural contexts in which interests are sparked, developed, and ultimately become (or not) lifelong pursuits. He and his team utilize insights from motivation science to identify and remove institutional and social-contextual barriers that impede the development of educational and career interests for students from marginalized and historically underrepresented backgrounds. Improving equity and inclusion is at the heart of his team's research and translational work to support research on equity and inclusion in STEM education.

Prof. Satchi Venkataraman, San Diego State University

Satchi Venkataraman, Ph.D., is a Professor of Aerospace Engineering. He has served as Graduate Advisor for the Aerospace Engineering program (17 years) and as an Associate Director at the Computational Sciences Research Center at San Diego State University (11 years). His expertise is in computational mechanics and optimization applied to design of lightweight and durable composite aircraft structures. He has extensive experience in developing programs for student professional development and broadening participation (co-PI and PI on three NSF S-STEM grants).

Exploring Interdisciplinary Identity Formation in Graduate Students

Abstract

The first year of graduate school can produce great angst in students undertaking a fundamental identity shift from student to researcher [1]. In interdisciplinary programs, acquiring confidence with an additional disciplinary framework and threshold concepts brings additional challenges [2]. Solutions often focus on mentoring [3], but students entering highly interdisciplinary graduate programs may need additional support that helps them integrate the unique challenges faced by students changing or integrating multiple disciplinary backgrounds and identities. We propose that formalizing career path exploration, with an emphasis on surfacing students' angst about their options and career paths through a professional development course may ease students' transition to their emerging identity(ies). We predict that this may occur by increasing students' sense of agency around their individual professional identity development.

Grounded in identity theory, we use qualitative data analysis strategies to examine multiple artifacts of student coursework across a semester in a professional development course for first year students in a Computational Science graduate program. Specifically, we use thematic analysis and deductive coding across multiple artifacts for one cohort of computational science graduate students. We had previously found evidence of angst in thematic responses to an early course assignment that asked students to describe strengths and weaknesses of computational science careers. Students identified several aspects of computational science career paths that they described as both a strength and a weakness, for example, without a clear understanding of how to resolve that contradiction. When focusing on potential future careers with a computation science degree, students expressed angst about their future as well as conflicting categorization of opportunities and threats of the profession.

In response to these tensions, the instructor developed assignments that were designed to provide students with opportunities to resolve their angst, and our coding of student work and course reflections indicates how students crossed the developmental threshold from angst to agency. Specifically, we find evidence that encouraging students to develop their own agency through a variety of course assignments afforded students the opportunity to develop adaptive perspectives and a sense of control as they navigated troublesome shifts in professional identity. We also found evidence that students felt the program provides a sense of community, autonomy over professional development, and opportunity for exploration and self-discovery. Finally, in students' final written reflections on the course, we found evidence of increased sense of control over their unique career development path and growth of their mentor network.

We discuss the relevance of these findings for theory on interdisciplinary identity development and design of professional development courses to increase graduate student agency.

Introduction

The first year of graduate school is not only a time of intense learning and skill development, but is also often a time for rapid identity growth and change for students. In the first year, students undertake a fundamental identity shift from student to researcher [1] and this can produce

feelings of uncertainty leading to frustration, aka "angst"[4]. Graduate students may also be continuing their important transition to a professional disciplinary identity as expected in undergraduate programs [3]. Erickson's model of identity development emphasized the importance of points of tension as opportunities for individuals to deepen or clarify their sense of identity [5]. Identity development studies show that undergraduate students experience tensions as they reconcile their prior sense of identity with their new roles, groups, and understandings [1], [6]. Such points of struggle are opportunities for students to build their agency and experience identity growth [1]. In particular, Phinney found that young adults in college experience identity growth at points of tension when they are exposed to new and conflicting information about their social world [2].

In interdisciplinary graduate programs, acquiring confidence within more than one disciplinary framework and set of threshold concepts is necessary and provides considerable cognitive challenges [2]. Reconciling the differences among multiple disciplinary and career stage identities may also compound these challenges [2], and interdisciplinary students in particular may benefit from guidance beyond what is provided by their primary research supervisor [7]. Interdisciplinary graduate degree programs may serve their students well by offering exposure to diverse career and disciplinary research settings, and to provide structures that prompt students to investigate and reflect upon these options. For instance, an expanded mentorship group is often encouraged for graduate students, but is often presented as a selection of faculty members within their degree program and institution [3]. However, students entering highly interdisciplinary graduate programs may need additional mentors outside of their home degree program, as well as support that helps them integrate the unique challenges faced by students changing or integrating multiple disciplinary backgrounds and identities. If the student might seek employment outside of academia, they may need mentors external to their institution and the academic network of their research supervisor.

Students may not establish the professional networks necessary to cultivate such a variety of mentor relationships without explicitly planned networking activities and skill development. To build these networks and seek out meaningful mentor relationships that are key to their successful identity development, a graduate student needs a strong sense of self-efficacy, motivation, and autonomy [7]. Independence, motivation, and self-direction have also been shown to be vital for the success of interdisciplinary graduate students [8], [9]. One framework to understand these characteristics is Bandura's agency model, which has four aspects: intentionality, forethought, self-reactiveness, and self-reflectiveness [10]. The first, intentionality, refers to an individual's ability to envision a desired future state of being, and the actions needed to achieve this state. This ability to envision oneself taking actions to achieve a future state is related to both self-direction and self-efficacy. Forethought is the addition of a time component and outcomes of these planned actions, and may include sequencing of actions in a plan. The third aspect of agency involves acting on the plan through implementation of one or more planned action(s). The final and fourth aspect is the pause to engage in metacognition and reflect upon the actual actions and outcomes, and how these experiences fit into or conflict with the individual's intentions and plans. Opportunities to engage in any of these four components of Bandura's agency model related to professional and disciplinary identity can be positive for students [2], but an emphasis on identity work is rarely considered in science, technology, engineering, and mathematics (STEM) graduate programs.

Seeking mentors, reflecting on one's professional identity, and building a professional network that spans several employment types all require a sense of agency among interdisciplinary graduate students who are already focusing energy on the cognitive demands of their coursework and research. Here we explore one option to assist students in performing these actions, supporting their sense of agency, and to assist with their professional identity development.

San Diego State University (SDSU) has a Computational Science graduate program [11] that awards masters degrees, and doctoral degrees in conjunction with the California State University system. With NSF S-STEM funding, a professional development workshop series has been expanded to a credit-bearing, 2-semester course sequence for first-year MS and Ph.D students [12]. In the Fall 2021 semester, students participated in a collaborative classroom activity to complete a SWOT (Strengths, Weaknesses, Opportunities, Threats) identification exercise for their interdisciplinary career (see appendix). The goal of this activity was to identify themes of student needs and concerns. The SWOT activity was led by one of the authors with experience in needs assessment and professional development training. Full results from this activity have already been presented [13] and we summarize the key themes below.

Following the listing of SWOT elements, the students discussed as a group the themes that cross the SWOT categories and/or could be seen as potentially contradictory. We focus here on these themes that most directly inform identity development. These themes illustrate that some students identified aspects of computational science career paths as simultaneously representing both a strength and a weakness, and could not describe how to resolve that contradiction. Students also expressed uncertainty about their future as well as conflicting categorization of opportunities and threats of the profession. This uncertainty and the intersection of opportunity and threat appeared to frustrate students, causing feelings of angst [4] about their future.

Key Theme 1: Students identified flexibility and adaptability as a strength of computational science, while simultaneously struggling with how to communicate to others what computational science is, its value, and why they chose it. Most people outside of their program do not know about the field of computational science, and students expressed difficulty in talking to others about what they do within this highly interdisciplinary field. While students appreciated the interdisciplinary nature of their work and potential to take on a variety of roles over time, they expressed frustration with constantly having to manage the presentation of this identity socially.

Key Theme 2: Students simultaneously appreciated that computational science provided them with a wide breadth of experiences that facilitated their adaptability and expressed concerns about potentially having to adopt a "Jack-Of-All-Trades" identity [8] without a core depth of focus skill or disciplinary expertise. They were concerned that lacking specialized knowledge would make them less valuable and potentially feel less competent working in research or product development teams, but also saw strength in potentially proving breadth of knowledge and being the "glue" to hold together highly interdisciplinary teams.

Key Theme 3: Students identified experience of working across several fields as a strength, but also expressed concerns about how others view them, both in and outside of work teams. They worried about feeling like an outsider in every work environment. They also worried that they would miss the common norms and jargon that develop in disciplines, and that as the outsider they would always be missing this cultural knowledge and struggle to fit in.

In response to the SWOT activity themes, the course instructor developed a series of class activities and assignments designed to promote student agency and provide them opportunities to resolve disciplinary and career tensions while further developing their professional interdisciplinary identities. These activities/assignments were created through a series of iterative design sessions in collaboration with a faculty member in the Psychology Department and STEM Education Research Center at the same university whose expertise includes student identity development and development of STEM career interests (co-author 2). These activities and assignments were implemented in the next semester, Spring 2022 [13]. We have used a multi-identity theory framework that allows for both dynamic changes between identities and holding multiple identities simultaneously [14] and an agency framework [10] with qualitative data analysis strategies to examine multiple artifacts of student coursework to address our research questions:

Research Question 1. Do we see evidence that the activities in a professional development course surface statements about their sense of professional identity?

Research Question 2. Do we see evidence that students experience agency in course activities and additional professional development actions concurrent with their class enrollment?

We predict that formalizing career path exploration, with an emphasis on surfacing students' angst about their options and career paths, through a professional development course may ease students' transition to their emerging identity(ies). We predict that this may occur by increasing students' sense of agency around their individual professional identity development.

Methods

Using two rounds of abductive analysis and a final round of emergent, open and axial thematic coding [15], we examined artifacts from three newly-designed student assignments in the second semester of the two-semester course sequence, Spring 2022. We conducted this research within the guidelines approved under SDSU IRB HS-2019-0247. Assignments are listed in Table 1, and the prompt for each assignment is provided in the appendix.

Table 1. Artifacts examined from Spring 2022 course assignments.

Month completed	Assignment	Number of artifacts
February	Video pitch to prospective students	12
April	Networking event reflections	11
May	Final course reflections	11

All students had completed the prior semester's course (Fall 2021) and participated in the SWOT activity, at the end of that first semester, where angst had featured prominently in student responses. The SWOT activity prompt is also described in the appendix. Recall that the three assignments examined here were designed to promote student's sense of agency and to aid them in resolving professional identity tensions or angst. However, none of these assignments

explicitly requested statements about student's professional identities, nor any feelings of angst or agency they may have been experiencing.

Co-author 1 reviewed de-identified artifacts and used deductive coding within an identity framework [14], then an agency framework [10], and finally coded for emergent themes. Co-author 1 works at a different university that does not offer a similar graduate degree. Codes were reviewed by and themes discussed with co-author 2, who is familiar with the course and helped design the relevant activities, but external to the degree program. Consensus codes were then used in the final analysis to describe themes within the data.

The first coding round used a definition of identity that was both dynamic, allowing for changes in an individual's identity, and also allowed an individual to simultaneously hold multiple-identities [14]. We looked specifically for evidence of disciplinary and professional identity. This allowed for students to express more than one facet of their identity within each artifact. A second coding effort was conducted within an agency framework, limited and most similar to the third of four properties of human agency described by Bandura, self-reactiveness [10]. For this analysis, we identified agency as: A student states that they have taken an action that they tie to their professional growth or may be implied by context of the whole assignment to be tied to their professional growth. Note that stated future actions, plans to act, intentions, and aspirational statements are not included as evidence for agency for this analysis. The final coding effort looked for additional, emergent themes in the artifacts.

Results

Although not explicitly prompted to state or discuss their identities in these assignments, students did describe aspects of their identity. In the video pitch assignment, one student mentions their disciplinary identity "*As a student in structural engineering, myself,...*" and another their interdisciplinary identity "*Through my own personal experience in computational science...*" In the final course reflection, a student mentioned that a class activity had helped them with interdisciplinary group membership identity "*The SWOT analysis gave me a better idea of my role as a computational scientist. It was interesting to see how our perceptions of being computational scientists have changed since last semester.*"

In the course, students were exposed to a variety of potential career types such as academia, industry, within a governmental research agency lab, or as entrepreneurs, via panel discussions, guest speakers and a networking event (ACSESS). We found statements supporting development of professional identities related to the type of workplace. Some students expressed tensions or angst in the video pitch "*Am I ready for industry yet, or what do I even want to do?*", while in the final course reflection, others stated they had resolved uncertainties around this aspect of their identity. "*...learn about career paths outside of academia or government, including starting my own business, which I thought was exciting*" including narrowing options "*I think I also realized that the path may not be for me.*" In the networking event reflection, referring to a panel discussion participant, one student noted "*I have always been unsure of what I wanted to do between academia and industry, and it is inspiring to see that she manages to do both at the same time.*" In the final course reflection, another student expressed confirmation of their

developing identity "*I don't think my life's purpose is to be an entrepreneur, and the panel more or less confirmed that belief.*"

We found that students exhibited self-reactiveness agency [10] throughout the course sequence, particularly when reflecting upon their individual attempts to connect with potential mentors and apply for internships. In the networking event reflection, students mentioned actions they had taken to follow up on or expand upon course experiences and assignments "*...reached out to him in the days following over email asking to set up a zoom meeting to discuss his experience working at [REDACTED] and how he entered the field of AI*". The actions also included extra preparations for activities such as the networking event "*I printed up business cards to give away at my poster.* " In the final course reflections, there was evidence of students expanding their understanding of professional options, and actions they had taken to pursue those opportunities "*I've opened up my job searches...*". In this assignment, one student also described how they helped peers during the semester "*I was also able to help other students as I have already completed a master's degree in the past.*"

Additional themes emerged in the data. One theme was planned or intended actions, and aspirations related to professional development actions. In the networking event reflection, *"I look forward to further discuss how he became involved with HIV research as well as being CEO at his company."* Future-oriented statements were also found in the final course reflections

- *"From here on out, I plan on utilizing the communication techniques developed from the workshop, as well as participating in more academic events and continuing to participate in CSRC events such as ACSESS.";*
- *"I think going forward I will try to reach out to Alumni of the program in order to network and look for opportunities in my areas of interests.";*
- *"Because of the mentoring program I am now inspired to reach out to a few of these individuals to get guidance on how to shape my career.";*
- *"I am hoping to expand my network more this summer through my internship at [REDACTED] and challenging myself to post on LinkedIn at least once (I've never done it before).";* and
- *"Moving forward, I know that in order to prepare for and maximize these opportunities, I need to gain more experience outside of academia."*

In the video pitch assignment, there was also a theme of opportunity. Students pitched the value of the degree program as an opportunity for exploration and self-discovery. "*You have the opportunity to explore your interests and see what really makes you tick and what you want to pursue after this.*" In this assignment, another spoke of the opportunity for lifelong exploration of interests and career options within this interdisciplinary field *"has several interests and wants to be able to have a variety of experiences."* Another described the opportunities for the interdisciplinary field:

> *"And through my job search that I'm currently doing with a master's level computational science degree, I've already found plenty of opportunities. But with computational science, you can also go for a PhD. And there's also plenty of opportunities for that route as well. So overall, computational science is a great field for someone that has several interests and wants to be able to have a variety of experiences."*

In the final course reflections, there were several statements expressing an increased sense of control over students' unique career development path.

- *"...after taking this course, I can identify specific areas of computational science which interest me (e.g. machine learning, high-performance computing), as well as possible opportunities within a number of projects and industries that would benefit from a computational scientist's skills and background. Not only do I feel far more confident about my decision to get a Ph.D. in such a subject, I know that I will have a variety of career opportunities that will both fulfill and challenge me.";*
- *"found it interesting that most panelists had taken indirect paths to their current position. This helped to reinforce that idea that computation science skills are highly transferable. I've opened up my job searches to companies that tackle a varied set of problems. I feel more confident that I should tackle problems that interest me now and worry less about whether or not that job will "set me up" for some career goal.";*
- *"At first, I thought the IDP [Individual Development Plan] was just busy work, but after doing it I thought it was actually very helpful. It forced me to write down what I think my strengths and weaknesses are, along with goals. Typically, these are things I just think about rather than directly mapping them out";* and
- *"Upon entering this semester, I had a lot more insight into what goals I wanted to achieve before I finish my degree. Along with that, I was able to identify areas I struggled in and make a detailed plan on how to improve."*

Students also expressed control over the development of a mentor network in the final course reflection assignment.

- *"I think going forward I will try to reach out to Alumni of the program in order to network and look for opportunities in my areas of interests.";*
- *"Because of the mentoring program I am now inspired to reach out to a few of these individuals to get guidance on how to shape my career.";*
- *"I have expanded my professional network a little (ACSESS was extremely helpful for this), but I still feel that it may be one of my weaker points. I am hoping to expand my network more this summer through my internship at [REDACTED] and challenging myself to post on LinkedIn at least once (I've never done it before).";*
- *"It gave me a good perspective on what to expect from teachers and mentors, and that you have to consider your own goals when selecting mentos/advisors.";*
- *"... I felt it was really valuable to learn that mentors can be specific and not one-size-fits-all.";* and
- *"...that I don't only have to look for mentoring from my direct supervisor."*

In the same assignment, some students described expanding their stance within their network by becoming a mentor to others "*I will have to consider how I can mentor others going forward.*" and "*This past semester I felt like I was able to both mentor and be mentored by my colleagues.*"

Additionally, in the video pitch assignment, a student shared that they had found a sense of community within the degree program overall. "*This program is unlike any other program because it fosters a sense of community. You become very close with your classmates through coursework as well as other activities that are sponsored throughout the program.*" In the

networking event reflections, a student described feeling inspired by meeting a professional who discussed the balance between two employment types "*I have always been unsure of what I wanted to do between academia and industry, and it is inspiring to see that she manages to do both at the same time.*"

Finally, there were many statements about communication within the final course reflection assignment. Of note, students expressed confidence in communicating about both the field of computational science and themselves as a professional.

- *"For communication, I found the blitz in-class practice somewhat useful. It gave me a better sense for how to pitch myself and give people an idea of what I do in an abbreviated manner."*; and
- *"I had trouble explaining my research to a more general audience, but now I recognize that I need to improve this skill. From here on out, I plan on utilizing the communication techniques developed from the workshop, as well as participating in more academic events and continuing to participate in CSRC events such as ACSESS."* This student also stated *"The workshop activities and computational science program events have improved my communication abilities to effectively convey my research interest and work."*

Discussion and implications for practice

The SWOT activity conducted at the end of the Fall Semester had unearthed angst among the students [13] related to the interdisciplinary nature of computational science, whether their choice of this field would make them less valuable to future employers or research teams, and if they would fit into future work environments. The students expressed both uncertainty and frustration about this uncertainty, i.e., angst. Each of these tensions can be understood through the frame of identity development [1], [2], [6]. We found that designing assignments for the subsequent Spring Semester to support the students in development of their professional interdisciplinary identities alleviated these tensions [7]. Students showed they achieved benefits beyond learning and practicing the mechanics of the course activities. Importantly, we show that strategically designed activities can help students work through those concerns and move toward a greater sense of agency even within a single and early semester of their degree program.

Research Question 1. Do we see evidence that the activities in a professional development course surface statements about their sense of professional identity?

We found evidence for students' developing identity as interdisciplinary computational scientists in artifacts. We also found statements about prior and current disciplinary identities in artifact(s) . We also saw evidence that the class activities were helpful to developing a sense of interdisciplinary group belonging [7] for some students. In the final course reflection assignment, we found students tying this identity development to specific course activities and assignments. Also in this assignment, students expressed increased confidence in communicating about their chosen interdisciplinary field, their research and their work interests. This relates directly to one of the key angst themes in the earlier SWOT analysis.

We also found identity statements relating to workplace type (career) in all three assignments. This confirms that the course activities had value for several students' identity development [1], [2]. Several students mentioned expanding their mentor networks to deliberately include professionals employed by organizations outside of academia, including entrepreneurship, or expressed their identity relative to future employer type. This is consistent with Phinney's findings that individuals describe their group identity using salient features for their current context [2]. While it is possible that exposure to employment types also occurred outside of the course activities, we found statements regarding the value of course activities for interdisciplinary identity and for expanding career identity through exposure to several options [2].

Research Question 2. Do we see evidence that students experience agency in course activities and additional professional development actions concurrent with their class enrollment?

We found evidence of self-reactiveness agency aspects within the course activities, particularly the networking event. We found that some students expressed a sense of agency throughout the course, particularly when reflecting upon their individual paths to connecting with mentors and applying for internships. These statements show that some students moved past their earlier angst to take actions in support of their career and professional identity development. In the emergent coding analysis we also found potential evidence of additional aspects of agency as described in Bandura's model. Students expressed that they had both the intent to take action (intentionality), and noted specific schedules for those plans (forethought) [10]. As these aspects were not a focus of this study, there may be more evidence within the artifacts supporting those aspects of agency that are precursors to actions.

In addition to answering our research questions, we found an additional emergent theme in the data. In spite of the course sequence taking place during the first year of students' interdisciplinary graduate program when we would expect uncertainty and the stress of adjusting to graduate school to be high, we may have evidence of thriving [16], [17] within these data. These statements include a sense of belonging to the interdisciplinary degree program and profession, goal-oriented statements, expressions of interest and evidence of connections made to peers and potential mentors. While much of this evidence is not specific to the professional development course, the course assignments prompted self reflection. This metacognitive activity may benefit students' sense of well-being and thriving by prompting them to recall skills, strategies and other resources at their disposal for the remainder of their graduate program.

Limitations and Future Directions

As a qualitative research study, our findings are not designed to be inferred to a larger population. However, the insights revealed may be informative to others considering similar educational interventions. We also cannot presume that the course activities were a cause or sole cause of any of the statements that students made over the course of the semester, as the course assignments and activities were but one portion of each student's life experiences during this time.

In the future we will extend this study to analyze additional assignment artifacts across several semesters to look for identity development [14] and also expand our analysis to encompass all four aspects of Bandura's framework [10]. We will consider analysis framed by components of graduate student thriving theory [16], [17]. Using the outcomes of these efforts we will also explore the artifacts for potential grounded theory and an identity development model for interdisciplinary graduate students, and how the course activities might support a transition from disciplinary students to interdisciplinary researchers.

Conclusion

Interdisciplinary graduate students enrolled in a professional development course did experience development of their professional identities. Also, we find evidence that encouraging students to develop their own agency through a variety of course activities and assignments increased their sense of control and awareness of future opportunities as they navigated troublesome shifts in professional and career identity. Students also achieved growth in their mentorship networks, described plans to continue this expansion, and described developing a community with peers, alumni and other professionals in computational science.

Insights from this qualitative analysis are relevant to the design of other professional development courses, standalone assignments, or co-curricular interventions such as workshops and other events. None of the examined assignments explicitly requested statements about student's professional identities. Nor did any assignment ask them to discuss any feelings of frustration, uncertainty, angst, control, or independence they may have been experiencing. However, these assignments did elicit authentic statements and reflections on students' understanding of their selected interdisciplinary field, their own professional development, and statements reflecting agency to undertake activities at points in time across the semester. Adding a more explicit reflective component to existing assignments or activities in the second semester of the course sequence might enhance these opportunities for students to engage in identity development work [1], [2]. Such small alterations to common graduate professional development activities may lead to leaps in individuals' internal identity development and allow them to thrive in an uncertain interdisciplinary environment.

Acknowledgements

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Appendix

Assignment Prompts

Fall 2021, end of semester SWOT exercise
Self Assessment is a key component to planning. SWOT (Strength, Weakness, Opportunities and Threats) Assessment is a tool used for assessment and planning purposes in many contexts. This can be used here as a tool to help in developing and updating our Individual Development Plan.

The response form all course participants will be pooled and used for course discussion. No participant information is collected on this Google form. Please avoid any personal information (names, etc).

> **What do you consider to be your strengths (this can be Technical skills, Academic skills, People skills, Personal skills, etc.) Group them if possible.**
>> Think of Strengths as the things based on your knowledge, skills, experiences gives you a unique advantage.
>
> **What do you consider to be your Weaknesses (this can be Technical, Academic, Professional, Personal etc.) Group them if possible.**
>> Think of weaknesses as things you could do better in or need more training to become proficient.
>
> **Where do you see opportunities where you can improve your Technical, Academic, Professional, Personal etc.**
>> Here discuss things that you see clearly possibilities or resources to improve in (from your list of weakness)
>
> **Discuss Threats.**
>> This is a loaded word. What we mean by threats are challenges you face (or lack resources or opportunities) that prevent you from achieving your goals (academic growth, technical growth, personal growth, etc).

Spring 2022, February, Video Pitch
Pitch for why someone should pursue Computational Science/Computational Mechanics studies This is an extension of the class exercise where you developed and presented a 2 minute short pitch to an undecided student (undergraduate or master's) on why they should consider Computational Science or Computational Mechanics. Based on the feedback and the things we discussed in class, update this pitch the record a short video (2 mins max, shorter the better) of this pitch. You can record this on your phone or on zoom or any other video recording software you have and upload the video file or link to the file you recorded here.

Spring 2022, April, ACSESS Networking Experience reflections
For this assignment you will need to attend the ACSESS event and meet and introduce yourself to at least two visitors from industry/lab and report on what you learned from them about their organization, job functions and/or career paths till now. Make sure you get the name and contacts of the person you talk to. If you don't already have one, make a few business cards to hand out. Write a short summary of this.

Also, reflect on what was the most challenging part on interacting with the ACSESS event participants and how this could be better facilitated in future.

<u>Spring 2022, May, Course Reflection</u>
1. How did this course increase your awareness or provide you knowledge and/or experiences for professional development as a computational scientist/engineer? You can comment along the goals we set for this course, namely provide activities and opportunities for learning and discussion of following topics that contribute to professional development

2. What are things you learned or became aware of that you didn't know previously. As a result, what will you be doing differently going forward?

3. If you were to rank the three best activities or aspects of this course what would they be and why? What were the least productive activities and why?

4.Based on your graduate school experience so far, what are some areas you feel you need to improve or get better?

5. Do you have any other general comments, feedback or suggestions for the second part of this two semester course sequence?