

Exploring the Connection Between Positioning Theory and Educator Experiences

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Abstract

Stephanie Cutler and Alexandra Coso Strong (2023) bring attention to how engineering education research often focuses on the impact of educators on students but not the social identities of the educators. These identities can and likely do inform their work. Cutler and Coso Strong also point out the variation among those who educate in engineering (tenured/tenure-track faculty, graduate students, and contingent/adjunct faculty), which is not always acknowledged. By not paying attention to such variation, the impact of work done in engineering education research may be limited. In an effort to illuminate these variations, we report on research that explores some details of the educator experience. In this paper we ask: what does it look like to be an educator working to adapt an existing curriculum for a new term, in our case a curriculum previously taught in Autumn 2021 and adapted for use in Winter 2022? Broadly, the curriculum was a 10-week seminar titled Dear Design: Defining Your Ideal Design Signature where students explored multiple elements of the design process and had the opportunity to discover their ideal design signature. During the delivery of the seminar, the education team wrote weekly reflections to capture their adaptation experiences. Using qualitative methods, we analyzed the education team's structured reflections. The thematic analysis resulted in three emergent themes: 1) I thought this would be easier, 2) acting on values, and 3) teaching as an educational journey. We discuss these themes in light of positioning theory and the norms that early career instructors may find themselves working within.

Introduction

Stephanie Cutler and Alexandra Coso Strong (2023) bring awareness to the lack of discussion about faculty as people in engineering education research. They note how engineering education research focuses on the impact of engineering faculty on students while failing to acknowledge faculty's social identities, which inform their role as faculty. Furthermore, Cutler and Coso Strong (2023) also draw attention to how engineering education research generally uses "we" to refer to engineering faculty and they draw attention to the variations in those who educate (e.g., tenured/tenure-track faculty, graduate students, contingent/adjunct faculty, etc.). It is interesting to consider how a lack of attention to such variation may limit the impact of work done in engineering education. To start filling in this picture, we explore some details of the educator experience in this paper. Specifically, we ask, what does it look like to be an educator working to adapt an existing curriculum for a new term.

Our team adapted a 10-week seminar titled *Dear Design: Defining Your Ideal Design Signature* for the 2022 winter quarter where students explored broad aspects of the design process and had

the opportunity to discover their ideal design signature. The fourth instance of Dear Design was built upon the insights and feedback gathered from the previous three instances of the seminar. The education team (a full professor, a graduate student funded on a research assistantship, and a recent BS graduate funded in an hourly research position) wrote structured weekly reflections on their own and shared back with each other during team meetings. We analyzed the individual reflections using thematic analysis.

In the paper, we present three themes that emerged from the data analysis. We additionally discuss the significance of these themes by drawing upon concepts from positioning theory. The contribution of this paper supports Cutler and Strong's (2023) call to redefine the engineering education community's understanding of engineering educators and honor the challenges of adapting existing curriculum materials.

Approach/Method

In the course that we are analyzing, three educators - Fiona, Gabby, and Paige - are delivering a fourth instance of a seminar. Fiona was an experienced educator and designed and taught this seminar since the first instance offered in early 2020. Gabby was a graduate research assistant with prior teaching assistant experience but was new to Dear Design. Paige was a postbaccalaureate researcher, a novice instructor but familiar with Dear Design. The names provided are pseudonyms: Fiona for the tenured [F]aculty member, Gabby for the [G]raduate student, and Paige for the [P]ostbaccalaureate researcher. In this section of the paper, we describe the seminar itself and then turn to describe the data source and analysis methods to investigate the educator experience.

The Seminar

Dear Design: Defining Your Ideal Design Signature, inspired by the book Dear Data (Lupi & Posavec, 2016), was a virtual seminar delivered across a 10-week quarter. Each week students dove deeply into doing design and creating a visual representation of their design process on a postcard they shared with the other students. The premise of the seminar was to engage students in design metacognition, specifically, thinking about design processes with the goal of developing their "ideal" design process (or signature) by the end of the seminar. The idea of an *ideal design signature* was scaffolded with a new lens to interpret design each week. This included the first three weeks on how to capture and represent design processes (1. What counts as design?, 2. Qualitative coding, 3. How to capture design); weeks four through eight on different lenses for "seeing" design (4. How to visually represent design, 5. Design awareness questions and metacognition, 6. Many models of design processes, 7. Design expertise research, 8. Other design expertise research and design inspiration); and the final two weeks on the students supporting themselves as future designers who are aware of their design processes (9.

Design awareness and design signatures, 10. Presenting final ideal design signatures and reflection). These topics as well as class activities and assignments are presented in Figure 1 and can be found on the Design Signatures website at the following address: https://www.designsignatures.org.

The seminar was a 2-credit optional course offering that students applied to. It was graded as credit/no credit. The first instance of the seminar was delivered in the winter quarter (January - March) 2020 in person, with a pivot to online for the final class as the pandemic started. All other offerings were via Zoom, with a Google slide deck providing the structure for the seminar. A Miro board provided a shared space that students interacted with in small groups via Zoom break-out rooms. At the beginning of each session, students presented their postcards to each other via Zoom from the shared Miro board. Then the new lens for the week was introduced and students worked through an interactive exercise about that topic in the Miro board.

The instance we discuss in this paper was the fourth iteration of the seminar delivered in the winter quarter of 2022. During the autumn quarter (September - December) of 2021, Gabby and Paige analyzed past Dear Design curriculum materials and students' survey responses to inform modifications to the seminar's curriculum. The team had access to three Google Drives that contain previous iterations' materials created by Fiona and previous collaborators. The materials included syllabi, surveys, presentation slide decks for each topic, former students' postcards and folders, Miro boards, and more. Within the presentations for each topic, the team had access to class activities, postcard instructions, and student reflections. The team relied on the Autumn 2020 seminar's material as it had been the most recent compared to the other two iterations. Autumn 2020 also had Zoom recordings of class sessions available. This analysis influenced a minor change in the order of the topics and also opened up a space for a new topic in the eighth week. It also allowed the team to know the students enjoyed the seminar's content and thought it was worthwhile. The team did not do a deep dive into the materials for each week, until the winter quarter of 2022 as the seminar was happening.

In the winter 2022 Dear Design seminar we offered two online sections with a total of 25 students. Paige led the Wednesday section with 14 students, and Gabby led the Thursday section with 11 students. Fiona worked in the background supporting Gabby and Paige.

WINTER 2022 VISUAL SYLLABUS

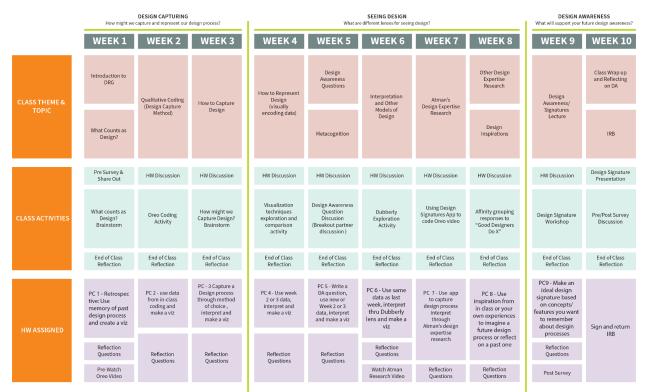


Figure 1. The image above shows a visual of the seminar's syllabus.

Data source and analysis method

During the delivery of the seminar, the education team decided to do weekly reflections to capture their experience in the two Dear Design sections. The team created a template that they followed for all 10 entries, see Figure 2. The reflection form was designed for two main purposes: 1) to provide us with information that we could use to improve the course we were currently teaching and keep track of our changes, and 2) to provide information to help us create a set of curriculum materials that could be shared to the larger design education community on a website, and perhaps in a book.

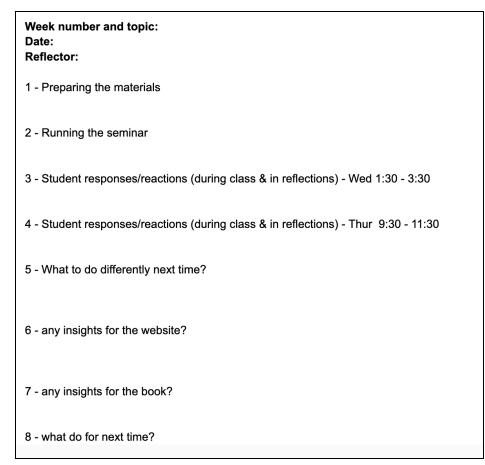


Figure 2. The above image demonstrates the reflection template the education team followed.

The entries for weeks 1 - 7 were written in real-time while weeks 8 - 10 were written in September 2022. During weeks 1 - 7, the team would have a meeting to share the reflection responses. These reflections were the source of analysis. Gabby completed two rounds of thematic analysis. The first round consisted of reading each of the three educator's reflection documents week by week in chronological order beginning with week 1 and ending with week 10. The reflections were read in order of Gabby, Paige, and Fiona. While reading through the content, Gabby wrote pen/paper notes of things that stood out and then prepared memos. This initial round of coding led to the initial three themes -- existing material, the work of a second section, and acting on core values.

The second round of coding consisted of writing out the initial themes on paper to reference them while reading through the reflections again. While reading the reflections, Gabby was coding for the themes. This time, Gabby read all of one educator's entire reflection content starting with week 10 and ending with week 1 in the order of Fiona, Paige, and Gabby.

Results

In this section, we describe the emergent themes of 1) *I thought this would be easier*, 2) *acting on values*, and 3) *teaching as an educational journey*.

1. I thought this would be easier

The first theme emerging from the data analysis is the attention participants paid to the ambiguous status of the materials regarding whether they were useful or required more work than expected from the team. The team describes the materials for the first three weeks of the seminar as useful starting points. The preparation for the slides appears to have been straightforward, essentially a copy and paste for the slide deck and Miro board from Autumn 2020, with only a change in the slide's visual design. One of the contributing factors to existing material being useful was the material having notes to explain the material's rationale. For example, during week nine, Fiona describes the creation of the post-survey as being easier because the team had annotated the pre-survey.

However, the materials were not always useful. The following are instances of the team having to do more to prepare for the week's sections. With an extensive amount of existing material to lean on, the team mostly described challenges when the existing material did not help prepare for the lecture. All three team members describe week 4 (topic: Data Visualizations) and week 5 (topic: Design Awareness Questions) as the more challenging prep weeks. Week 4's preparation consisted of Paige and Gabby splitting up the work of creating a new set of slides and their instructor notes. Like the prior weeks, the expectation was to use AUT 2020's slides but not even watching the Zoom recording for AUT 2020's Data Visualization lecture helped the team feel confident in delivering the content. The data does not provide information as to why the video was unhelpful. As a result, Paige and Gabby did research on the topic to understand data visualization (data type/measurement scale, nominal/ordinal/quantitative, etc.). This led to Paige and Gabby updating the visualization examples using postcards from previous students. All three educators acknowledged the amount of work required for week 4 and the exhaustion that came with it.

Although Paige and Gabby describe week 5 as less stressful than week 4, they found that the workload of preparing for it was similar. Paige and Gabby once again had to create a new set of slides for the topic of Design Awareness Questions. What made this week less overwhelming, according to Gabby, was less jargon. Through Fiona's reflection, it is revealed that part of the challenge of the existing material for weeks 4 and 5 was that there were no notes left behind to assist with the understanding of the materials, so the team was relying on Fiona's memory for the rationale for these two week's activities. The need for a rationale also suggests the topics were unfamiliar to Paige and Gabby.

"This week ended up being the same heavy lift that last week was. I had anticipated last week (data vis - in the past straight from [previous graduate student's] head), but had not anticipated this week. But in hindsight i should have anticipated it. In this week we ask the students to start asking questions - which seems straightforward - but [previous co-educators] & I had probably talked, but not put down in slides - that a key component is not just the questions - but in order to answer the questions with the postcard work - it take alignment of the complexity of the activity you capture, how you capture it, and how you represent it. [Paige] and [Gabby] did amazing work with guiding questions to figure out what we were teaching - how to bring the activity from week 9 in Autumn 2020 up to week 5 this time around. The example postcards in the deck and the redesigned Miro activity were fabulous - and are huge steps to being concrete about what we are trying to convey" -- Fiona, week 5

The last example is the preparation for week 8. Week 8's topic, *Other design expertise research and design inspiration*, was a new addition to Dear Design's curriculum. Fiona's goal for this class was to offer students more perspectives from the design research and engineering education community about what constitutes "good" design. As context, prior iterations of the seminar presented students with three perspectives in-depth: design expertise research (Atman et al., 2007), converge/diverge design models (Eris, 2003), and the co-evolution of problems/solutions (Dorst & Cross, 2001). Fiona emailed some of her colleagues requesting a response to the prompt, "When you talk to someone and say "Good designers do 'X'", what are the top 4 or 5 things you list? I'm looking for 'off the top of your head' answers." She received 27 responses with over 100 statements. Fiona was excited by the richness of the responses. The challenge then was how to present this information. Paige began working with the responses during week 6 trying to figure out what in-class activity was possible. In her process, Paige ended up creating version two of the responses -- a shorter, more digestible version of the original responses, and doing a thematic analysis. During a team meeting, the team finalized the content for week 8.

"- I remember spending a long time preparing the materials my time was divided between preparing for the actual class itself and what I was going to say and understanding and sorting through the list of responses from design and engineering professionals and researchers." -- Paige, week 8

In summary, the team describes their experience of preparing for each week's lecture. Some weeks were more challenging than others with that largely depending on the usefulness of the existing materials.

2. Acting on values

This theme is about how educator values were brought into the design and delivery of the seminar. We present two value stories. The first story is about valuing the student learning experience and the second is about negotiation among the educator team about the value of diversity.

Value: Student Learning Experience. The following are examples that demonstrate the educators' commitment to creating a positive student learning experience.

During week 9, Fiona describes a student having a question about the task of having students design their own "design signature". Fiona noted that the description provided was confusing and made some changes to reduce confusion for the second section. The second example is from week 4. Paige described feeling confident about the materials but getting nervous while running Wednesday's section because there were students who had a lot of design experience. In her reflection, she adds she wished for there to have been time to hear back from students to know if they understood the material or know what could have been better. These examples illustrate Fiona and Paige's interest in improving the course and making it more effective for all students.

The team was also conscious of supporting students' learning experiences in and outside the seminar. A big part of the seminar was students' understanding of design processes and representing them on postcards. During the first two weeks, the education team noticed a few of the students were representing design products, rather than design processes on their postcards. During the postcard share out, Fiona and Paige would provide feedback to students - some students changed their representation to be design process while others did not. Paige emailed the students who were still representing design products so they could meet outside the seminar and she could better explain the difference.

Value: Diversity. The point of the following example is to demonstrate that a shared value of including diverse perspectives can occur alongside different interpretations of what constitutes diverse perspectives. As mentioned in the previous section, week 8 was a new addition to the Dear Design curriculum. Fiona was excited about the responses she had received from her colleagues, noting in her reflections that,

"my plan was to ask experts to say what they thought was important and I would choose a couple of what the experts converged on and present those additional findings

- what happened was way bigger than a bread box!

- I asked colleagues in the design research community and the engineering education community who were doing design work, and the number of people who I ended up asking snowballed to somewhere around 30 or 34 and I heard back from 27

- what I got back was in lots of different formats people change the question that they answered but the thing that was amazing was just how rich the responses were and what a large large space the [responses] covered" -- week 9

Paige and Gabby were also enthusiastic but to quote Gabby, they felt that "there was something missing." In the work of organizing and deciding how to share so many responses with the students, Paige and Gabby found themselves grappling with their sense that not only did they need to help students manage the breadth of responses, but they also wanted to make visible the voices and perspectives that were not yet present in the responses. In her reflection, Paige wrote,

"[Gabby] and I had a conversation in which we talked about how we wished that the respondents were coming from more diverse backgrounds and academic disciplines. For me this came from the feeling that I didn't feel like i could relate to many of the respondents and that certain identities and demographics were not being represented in the responses." -- week 8

Meanwhile, Gabby wrote,

"...while some of the design expert responses were inspirational there was something missing. With how things are in the world, [Paige] and I felt that some of the responses were still too focused on the product and not so much on the people and improving human life." -- week 9

At the suggestion of a peer graduate student, Gabby and Paige read some chapters in the book Design Justice (Costanza-Chock, 2020), and this helped them understand how they might share their concerns with Fiona. With some trepidation, Gabby and Paige decided to bring up their concern during the next planning session and were relieved when a productive conversation followed. The following quote from Fiona summarizes the team's conversation,

"[Gabby and Paige] also brought up really good points about the voices that were in the responses and the voices that were not in the responses and that led to an important way to make sure we framed the list that we got for the students so it didn't overrepresent the data on perspectives on what is important in design (meaning to say that these are not the only expert responses to this question - see the venn diagram in the slides)" -- Fiona, week 9

The team's conversation led to the framing of the topic that was used to introduce the list of responses to the students. Specifically, the team presented a diagram that showed what communities the responses came from (and also what communities were not included in the responses.) In addition, Fiona, Paige, and Gabby shared resources and perspectives that were inspirational for them as designers.

The reflections revealed multiple ways that values played into the design of the educational experience, demonstrating that educators were highly invested in providing an engaging and effective learning experience for their students.

3. Teaching is an emotional journey

As demonstrated in Figure 2, the reflection prompts were practical and intended for keeping track of how to improve the material rather than learning about the educators' experience, and yet throughout the reflections, there are glimmers of the emotional journey. The following are instances where the educators describe their emotions. To end on a positive note, the section starts with negative emotions before transitioning to positive emotions.

Before providing new examples, it is important to draw attention to the emotions described in the previous two themes. Paige and Gabby have described being overwhelmed or stressed in preparing for the week's lecture. They have also lightly described having been nervous while giving the lecture. And there has also been excitement from hearing students' feedback to getting responses from colleagues.

The following are examples of relatively negative emotions. According to the educators, week 7 was relatively easy as the topic was Design Expertise Research, which was based on Fiona's past talks. While all of the educators noticed more student absences, only Fiona added being disappointed. This particular example stood out because it reflected the excitement educators feel when sharing their area of expertise, but encountering limited student engagement. The next example is from week 5. As mentioned in theme 1, week 5's preparation was stressful but Gabby describes running the seminar as beginning smoothly and then feeling flustered by the noises in her home (as the seminars were delivered via Zoom and the teaching team was teaching from their individual homes). Gabby's example highlights the impact distractions have on educators' facilitating. There was also no other instance in which the educators mentioned something from their personal lives affecting their work.

The education experience also included more positive emotions. For example, the postcards themselves brought joy to the education team. Across the reflections, it was clear that the educators felt happy whenever they received positive feedback and reactions from their students. They also felt better when they worked collaboratively with each other.

Lastly, even in the weeks that were the most challenging (weeks 4 and 5) Paige and Gabby wrote about appreciation. For instance, Gabby described week 4's preparation as rough and feeling nervous about running the seminar. However, Gabby felt good in the end because the students' end-of-class reflections demonstrated their appreciation for the content. Meanwhile, Paige describes week 5 as busy. She encountered the challenge of her laptop losing power as she was running the seminar and running out of time for students to share back. Despite this, she found something positive by writing,

"- I was really happy with the responses to the miiro activity and felt like students were ultimately able to understand and internalize the topics taht we covered in lecture." -- Paige, week 5

In conclusion, the educators' reflections show the emotional investment they had as educators. The postcards brought joy to the education team, and positive feedback from students made the educators feel happy. Even in the most challenging weeks, the educators found appreciation for their work.

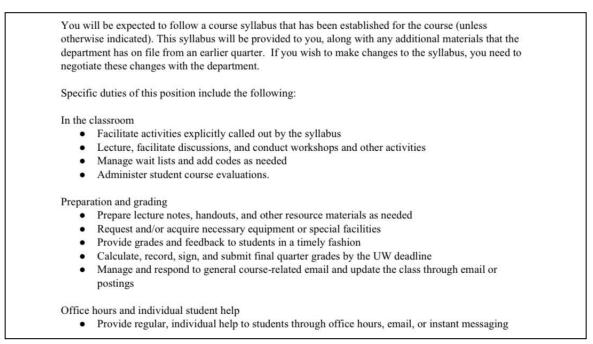
Discussion and Conclusion

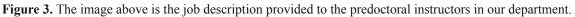
Positioning theory extends from social psychology and "emerged in part as an alternative to role theory in an attempt to better account for the complexity of human participation in social settings" (Acevedo et al., 2015, p. 32). The focus of this discussion is not to build on or challenge positioning theory, but instead to use it as a new way to think about educators' experiences. The text below draws out the implications of these three themes using concepts from positioning theory, and its emphasis on storylines, position, and acts. We aim to gain a

broader understanding of the three themes: *I thought this would be easier*; *acting on values*; and *teaching is an emotional journey*.

Positioning theory tells us that we are active agents with choices who draw on past experiences to inform our choices on the situation at hand (Acevedo et al., 2015; Green et al., 2020; Mcvee et al., 2018). There are storylines, position, and acts. The storylines are the social practices that guide people's actions. Position is the cluster of norms and expectations that people perform or reject that are constantly evolving. Acts are the actions in a storyline that shape social meaning (Green et al., 2020).

Figure 3 is offered as a reference for our discussion. The artifact shows the job description given to doctoral students in our home department who serve as instructors. The artifact represents one set of norms relevant to the situation described in this paper. While the artifact applies more closely to one of the three educators it helps illustrate how some educators are positioned. In other words, this artifact makes visible the false expectations we have of instructing and thus the role of educator.





Let's consider our first theme, *I thought this would be easier*. The artifact highlights that a pre-doctoral instructor is expected to "facilitate activities explicitly called out by the syllabus." However, during weeks 4, 5, and 8, the education team had to create new instructional materials and activities instead of just facilitating what was already outlined in the syllabus. This led to the team spending a lot of time and effort on redesigning. The job description also mentions that instructors should "prepare lecture notes, handouts, and other resource materials as needed,"

which could imply that creating new materials falls under this category. However, this raises the question of where the line should be drawn between implementation and creation. Since these acts were not what was anticipated from the positioning, they were understandably experienced as significant.

The artifact also implies values echoing the second theme in this paper, *acting on values*. The artifact's text emphasizes the value of student-centeredness through providing timely grades, feedback, and individual help to students through office hours and instant messaging. This value of student-centeredness matched the educators' work in paying attention to student feedback, iterating on the class materials, and consciousness of supporting students' learning in and outside the seminar. While the artifact's implied value of student-centeredness matched the team's actions, it's hard to see what other values beyond student-centeredness an educator might have and enact while instructing.

And yet, values beyond student-centeredness are part of the narrative presented in the results. During week 8's preparation, Paige and Gabby had different reactions to the over 100 statements collected for the "Good designers do X" prompt. As stated in the results, Fiona was excited about the responses while Paige and Gabby recognized something was missing which hinted at the existence of certain values guiding their reactions. While the reflection analysis does not provide how Paige and Gabby navigated this moment of value negotiation (and, in fact, is light on what happened overall), the reflection analysis does point to important questions. For example, how might a job description foreshadow and/or make room for such value negotiations that might happen in the real-time work of teaching? And, what kinds of training for teaching would prepare early career educators for such negotiations?

The third theme, *teaching as an emotional journey*, was the most surprising theme. It surprised us because emotions do not exist in the storyline of the formal job description. Without the acknowledgment of emotions in the job description it distorts our expectations and realities of teaching. The act of creating a reflection with pragmatic prompts is further evidence of how emotions are not recognized as part of the job. Teaching is undoubtedly an emotional experience, and positioning theory helps explain why. Educators and scholars, like bell hooks, remind us teaching is an act of love that compels us to reflect on the emotions that lie in the profession. While it is clearly not easy to imagine a job description that alludes to emotions, that does not mean it is impossible to acknowledge this issue in the job description. For example, could a job description allude to the responsibility for self-care in the face of emotion or the responsibility to talk with a supervisor when emotions are potentially getting in the way of expected job performance? There is room for discussion here.

In the work, we stayed as true as we could to the data source--our reflections. This means we were unable to offer all the additional context that we realize now would have made this work

more nuanced. For example, we were not able to share that during week 8's preparation, Gabby was taking an ethnic studies course that reinspired her as a designer, or sometimes Fiona did not have the time available to respond as quickly as she would have liked to issues that were brought up. The paper could have been much richer (and much longer) if we had captured that type of detail. Nevertheless, we offer this paper as a contribution to an important conversation, and also as motivation to others about the type of data collection that could make future contributions greatly enhance our understanding of the space.

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