

Growth through reflection: An arts-based focus group approach for developing intervention materials that elicited shifts in students' perspectives on classroom struggle

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Abstract: This Work-in-Progress (WIP) methods paper describes an arts-based focus group approach originally used to develop materials for an ecological belonging intervention designed to help students normalize typical academic struggle; in this paper, we focus specifically on how the focus group process itself functioned as a site of participant reflection and meaning making. Most methodological studies of focus groups have examined this method as a data collection tool and have not documented how the process of the focus group itself unfolds or how the process can be used to offer opportunities for participant growth and development. However, our approach intentionally leveraged focus groups as both a methodological tool and a reflective space for participants. In this WIP paper, we outline the generative process used to structure more than 20 focus groups containing students who had taken a course in the past that was now targeted for our intervention. Through discourse analysis, we found that the combination of activities and facilitation created a space in which participants could share experiences, observe and discuss similarities with peers, and situate their personal growth over time, ultimately eliciting meaningful shifts in how students understood and articulated their experiences of struggle. This work demonstrates how focus groups can function as both a tool for generating rich, applied research data and as a generative context that supports participants' reflection and perspective change. The findings suggest that applied researchers and educators can design focus groups that are simultaneously rigorous and developmental to address intervention development and equity in engineering.

Keywords: Focus Groups, Students, Attitudes, Belonging

Academic struggle is not an uncommon experience for students in higher education [1] and if not addressed, can lead to attrition out of an individual's major of choice or higher education altogether [2]. Students may struggle academically for a variety of factors, including (but not limited to) college preparedness, financial barriers, mental health challenges, and low sense of belonging [1, 3-5]. For some students and in certain contexts, academic challenges can serve as an inevitable and necessary part of the learning process [6]. However, cultural norms about "smartness" in educational contexts frame ability in terms of the ease with which students acquire and demonstrate their knowledge [7]. This dynamic can leave those who experience academic challenges feeling isolated and unprepared to persist [1]. A number of interventions have been created to address academic struggle, including social-psychological interventions—brief exercises that target participants' basic psychological processes such as ideas, feelings, and beliefs [8-9]. Specifically, belonging interventions are course-based activities designed to establish social norms that struggle is normative and can be overcome with time and effort [10-13]. These various forms of interventions have demonstrated positive results, including higher grades, rates of persistence, and sense of belonging [13-15].

This Work-in-Progress (WIP) methods paper describes a novel arts-based focus group approach. Although these data were initially collected to develop materials for an ecological belonging intervention designed to help students normalize typical academic struggle, the focus of this paper is on how the focus group process itself shaped students' understanding and articulation of their experiences. The context of the intervention included core undergraduate engineering courses, as well as courses in other disciplines such as biology, chemistry and economics. We describe the focus group protocol and the emergent findings of how individual students' language shifted over the course of the focus group to characterize their experiences with struggle in different ways.

Methods

Focus groups are guided discussions in a relaxed setting traditionally used to gather multiple participants' beliefs and attitudes on a particular topic [16], yet they often rely on their extractive nature to generate

data that primarily benefits the researcher rather than participants [17]. Additionally, most studies of focus groups have examined this method as a data collection tool and have not documented how the process of the focus group itself unfolds or how the process can be used to offer opportunities for participant growth and development. Our approach intentionally leveraged focus groups as both a methodological tool and a reflective space for participants. To do so, we developed a focus group protocol that utilized structured discussion and arts-based activities, including an exercise that facilitated reflection on good and bad course experiences, journey mapping, and letters to a past self. The discussion and activities were used to encourage reflection on academic struggle and growth.

We leveraged Krueger and Casey's [16] guidelines to develop the focus group protocol, with a specific focus on drawing out participants' experiences demonstrating their academic challenges and successes as they transitioned into college, a particular course, or their majors. Of note, the facilitator of each focus group began each conversation by explicitly acknowledging that many students experience challenges during these transitions. Participants were then asked a series of questions and were invited to engage in several activities through which they could share their challenges and how they overcame them. The arts-based activities included the creation and presentation of journey maps [18], where participants shared memorable or particularly important experiences within their collegiate careers that contained the transition point that was the aim of that particular focus group. Participants also documented three challenges and resolutions they experienced during the transition of focus, which we referred to as good/bad cards. Finally, participants were prompted to write a letter to a past version of themselves, the focus of which was an internal challenge they faced and the strategies they utilized to overcome it.

To analyze this full corpus of data, we employed discourse analysis, an approach which studies the structure and expression of language to comprehensively understand the meaning of the data by considering context, power, and the social construction of words. Instead of solely focusing on the identification of themes or patterns, the central premise of discourse analysis is language in use; in other words, language is not neutral and words have socially mediated meaning. Fairclough [19] described three levels of interpretation used in discourse analysis: micro, which centers syntax, word choice, and speaking order; meso, which focuses on context, interpretation, and audience; and macro, which considers power, social institutions, and ultimately the creation and validity of knowledge. Discourse analysis is used to understand how beliefs are shaped and shared, as well as to identify underlying assumptions in communication. This analytic approach is an ideal tool to examine large amounts and multiple forms of data with several people conducting the analysis [19], making it an appropriate approach for our study. We analyzed 21 focus group transcripts, conducting three rounds of analysis on each transcript (Table 1).

Table 1. Mapping of data analysis process with discourse analysis level

Component	Level	Contribution
Transcripts	Micro + <u>Meso</u>	Primary data source
Good/bad cards	Micro	Triangulation
Letters to self	Micro	Triangulation
Journey Maps	<u>Meso</u>	Triangulation
Observation Notes	Micro + <u>Meso</u>	Triangulation

The first pass of the data was for descriptive purposes, allowing members of the research team to familiarize themselves with the data, while the second round of analysis was interpretive, focusing on the micro (i.e., the framing of struggle and other word choices) and meso levels (i.e., opportunities for validation and other group dynamics). The third pass was integrative, with those analyzing the data

making connections with macro interpretations, critically reflecting, and looking across the focus groups. As we analyzed the data, we completed a matrix where each member of the analysis team recorded excerpts which demonstrated students' characterizations of struggle, paraphrased text, validation or invalidation, and other important micro and meso pieces of data (e.g., notable word choices). Those who analyzed each individual focus group then wrote a summary document for each one, synthesizing the major insights and noting which and how individual participants shifted their perspective over the course of the focus group, as well as instances of validation or invalidation and other notable discursive elements. This summative document created easy access for each member of the research team to review the analyzed data of every focus group, regardless of who analyzed individual focus groups. We then used the arts-based artifacts (e.g., good/bad card, journey maps, and letters to past self) produced in each focus group to triangulate our findings with the data from the focus group transcripts themselves by noting micro and meso trends, including external versus internal sources of struggle, instances of validation and other validation patterns. Finally, we met as a larger group where individuals who were analyzing the data presented the summary document to the other members of the research team where all involved discussed the content to ensure agreement.

Emerging Findings

In employing discourse analysis, we found that the activities and larger process of working through them over the course of a focus group elicited meaningful shifts in how participants understood and articulated their own experiences of academic struggle. Specifically, our analysis revealed key moments within the focus group protocol when students transitioned from framing struggles as complaints about and negative experiences with a course to recognizing strategies they had used to overcome challenges, reflecting new insights about how they grew and developed while enrolled in a particular course. The combination of activities and facilitation created a space in which participants could share experiences, observe and discuss similarities with peers, and reflect on their own personal growth over time.

In one focus group composed of five women in engineering, one participant's views on teaming in an introductory engineering course were those of frustration. They stated:

I think the most frustrating part was you just couldn't pick your teammates...but people just didn't do work and you'd just be like, "Oh shoot, I got put with someone who doesn't care, doesn't do work, is not going to participate, and there's nothing I can do about it," which was just really awful.

However, by the end of the focus group, their perspective on working with groups had shifted to one of appreciation for what it taught them. They stated: "The project-based nature of [first-year engineering course] was helpful in preparing me for future classes/projects in engineering. It was hard, but the experience was worth it." While four of the five participants in this particular focus group spoke extensively about struggles with teams, their collective "reframing" took the shape of looking at broader problems in engineering education like the expectations and assumptions placed on women in engineering spaces and society broadly.

In a different focus group with students discussing a natural science course, many of the participants experienced explicit shifts in their perceptions of their experience. For example, at the beginning of the focus group, one participant discussed how the exams felt extremely high-stakes, with each test comprising a significant amount of the final grade. They shared that since the exams were cumulative in nature, if you got behind, it was a "disaster" so they felt a lot of pressure to perform well. When they did not earn the grade they expected, they were frustrated and questioned whether they would be successful in medical school. However, later when presenting their journey map, the participant noted that they ultimately received Cs on the exams but had learned to accept that it was okay to earn this grade, a

notable shift in how they originally described their experience in the course. Another student in this focus group initially shared that they were not a great test taker so they experienced a lot of pressure and anxiety over exams in this course. They described their frustration over limited homework to buffer against potentially low exam grades, which felt unfair. When this participant did earn lower grades than they were used to, they questioned their plan to pursue pharmacy as a career, feeling as if they were not capable of being successful. Through their letter to their past self, they wrote that they had learned that grades don't determine who you are or who you will be and that their grade in this particular course would not determine their success in life.

At the start of another focus group composed of students who had taken a macroeconomics course, participants' reflected on and discussed their depictions of struggle in the course, many of which regarded peer comparisons, being perceived as not smart enough, and an unawareness of what questions to ask to receive needed academic support. The conversation shifted to how racial and ethnic identities can highlight and compound their disinclination to disclose a lack of understanding. Then, upon moving on to the good/bad cards activity which elicited a challenge students had faced and how they overcame the challenge, students discussed how persistence through challenge reframed struggle to be a validating experience. Through this activity, students learned that they could work hard and apply themselves, and in doing so, overcome challenging coursework. Later in the focus group, they recognized that the course had some utility for their academic majors. As this group presented their journey maps, they continued to discuss both confusion and moments of celebration and challenges and were able to connect academic struggles to larger uncertainties about their personal goals and purpose, ultimately concluding that the hard work of preserving through difficult coursework paid off in the end.

Conclusion

This work demonstrates how focus groups can function as both a tool for generating rich, applied research data and as a generative context that supports participants' reflection and perspective change. The findings suggest that applied researchers and educators can design focus groups that are simultaneously high-quality and developmental to address intervention development and equity in engineering. Additionally, the incorporation of activities beyond the typical focus group facilitated questioning route and intentional scaffolding of arts-based activities can elicit shifts in how participants reflect on and perceive their experiences. These changes in how students understood their ability to preserve through academic challenges could influence self-efficacy and ultimately serve as a critical aid in supporting persistence in courses and majors. Future work includes developing a qualitative methods article on our focus group approach and its outcomes.

Acknowledgements: This work was supported through funding by the National Science Foundation IUSE Grant No. 2111114/2111513. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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