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Chapter 18- "An Amazing Change in Mindset": Student Psychosocial Development and Social Science Research Methods

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Section IV: Mooring

This section explores how students, anchored in good Habits of Mind already, can apply these study skills and academic dispositions to opportunities outside the traditional classroom. Sarah Tulane and Travis Thurston examine social science research methods courses in which Habits of Mind help students develop personal relevance of research, growth mindsets, and self-efficacy as researchers. Joyce Kinkead then explores how her National Science Foundation-funded pilot project on Course-Based Undergraduate Research Experiences (CUREs) draws on Habits of Mind. Ekaterina Arshavskaya demonstrates how Habits of Mind skills can be incorporated into service- and community-engaged learning opportunities. Rachel Turner considers how Habits of Mind prepare K–12 educators to be culturally responsive educators. Finally, Karin deJonge-Kannan illustrates how she incorporates Habits of Mind into scaffolded research papers.

Habits of Mind discussed in this section include:

- Creating, imagining, and innovating
- Questioning and posing problems
- Gathering data through all senses
- Applying past knowledge to new situations
- Persisting
- Thinking flexibly
- Thinking about your thinking (metacognition)
- Thinking and communicating with clarity and precision
- Striving for accuracy
- Remaining open to continuous learning
- Managing impulsivity
- Thinking interdependently

Chapter 18

“An Amazing Change in Mindset”: Student Psychosocial Development and Social Science Research Methods

Sarah Tulane and Travis Thurston

Introduction

Students enroll in social science research methods courses with varying backgrounds and experiences with quantitative methods (Clark & Foster, 2017; Murtonen et al., 2015; Papanastasiou & Zembylas, 2008). Although some students approach research methods with self-efficacy and positive perceptions (Papanastasiou & Zembylas, 2008; Sizemore & Lewandowski, 2009), other students enter the course with misconceptions about research, and potentially apprehension regarding statistics or other unknowns about engaging in research (Earley, 2014; Kawulich et al., 2009; Slocum-Schaffer & Bohrer, 2019; Wishkowski et al., 2022). At the end of a research methods course, some students show improvements in knowledge in research methods while others remain stagnant (Balloo et al., 2016; Murtonen, 2015). Some students leave a research methods course with improved attitudes towards research (Kawulich et al., 2009) and others do not experience an improvement in attitude (Ciarocco et al., 2013; Sizemore & Lewandowski, 2009). Student motivation in these courses also improves significantly when they feel a sense of belonging to the learning community (Garrison, 2016). There is certainly learner diversity with students in mid-level social science research methods courses (Nind & Lewthwaite, 2018).

As instructors intentionally build relevance into their coursework and learning activities, students are more likely to feel intrinsically motivated to engage (Deci & Ryan, 1987; Keller, 1987). When teachers create autonomy-supportive courses with structures to not only support students, but also provide space for relevance and personalization, students have been shown to develop other important skills including creativity, engagement, positive emotion, preference for challenge, and persistence (Keller & Suzuki, 2004; Jang et al., 2010; Reeve, 2002). Furthermore, when students are intrinsically motivated in courses providing support with Habits of Mind, they are more likely to develop self-regulation and self-efficacy, among other vital skills (Costa & Kallick, 2009; Kallick & Zmuda, 2017).

The scholarship of teaching and learning includes suggestions for helping students improve their attitudes toward research and improve perceptions. Balloo (2019) encourages teachers to make clear-cut connections between research and employment, explain how research is fundamental to the discipline, and provide clarity with assignment descriptions to decrease the element of the unknown and assist with student anxiety toward research methods. Additionally, Balloo notes that quality instructor feedback can enhance “research self-efficacy” (p. 126), especially if there is student understanding regarding how to act on the feedback in the future. A final suggestion is to provide opportunities for practice and revision. Personal relevance of research can help decrease anxiety regarding research methods as instructors include course elements to enhance personal relevance of research for students (Slocum-Schaffer & Bohrer, 2019). Others suggest using self-reflection essays as a space for students to process mistakes, recognize their growth in understanding, and reflect on their self-perceptions as researchers and how they fit into the field (Hosein & Rao, 2016). Each of these suggestions for course design aligns with a Habits of Mind framework. These ideas can potentially influence psychosocial characteristics of learners associated with Habits of Mind, including relevance, growth mindset, self-efficacy, and sense of belonging (Farrington et al., 2012).

This study builds on past research examining both online and face-to-face social science research methods courses (Wishkowski et al., 2022). A call for future research by Wishkowski

and colleagues included an examination of specific pedagogical features that may be contributing to shifts in attitudes and views of the relevance of research in social science research methods courses. Using mixed methods, we quantitatively examined both attitudes toward research and perceptions of relevance of research at the beginning and the end of the semester in an online social science research methods class. We also collected qualitative data to dive into which elements of the course contributed to attitudes toward research and perceptions of relevance. Results from this study provide additional ideas for furthering social science research methods course design to help students discover the personal relevance of research, engage in growth mindset opportunities, receive feedback, practice self-efficacy, and ultimately find a sense of belonging as researchers.

Methods

Data were gathered at four points in time through the semester—one reflection per unit in the course. Both the first and final evaluation included informed consent, and students could agree to share their reflections for the study or decline to participate. To decrease social desirability biases, the university’s director of teaching excellence was the main contact for students, and gathered and housed the data for the duration of the semester. Furthermore, the data were collected using Qualtrics and were anonymous, with a code linking reflections for comparison across time. A total of 51 students agreed to participate in this study. The sample was predominantly female (94%), reflective of the demographics of the Human Development and Family Studies department.

The first and final reflections included portions of Papanastasiou’s (2005) attitudes toward research scale, specifically the relevance to life subscale and attitudes toward research subscale. The research relevance subscale from the D.Ra.MA. scale (Briggs et al., 2009) was also included in the first and last reflection assignments. All four reflections included open-ended questions asking about student perceptions of the relevance of research. Reflections two, three, and four included open-ended questions about how student attitudes and perceptions toward research changed across the course of the semester, and what elements of the course, if any, contributed to current understanding of and attitudes toward research.

Three main questions drove this mixed-methods project:

1. Overall, how do student perceptions of the relevance of research and attitudes toward research shift over the course of a semester?
2. What elements of the course helped change perceptions of research relevance for students?
3. What elements of the course contributed to student attitudes toward research?

Quantitative analysis showed a slight positive increase in perceptions of the relevance of research across the semester and a statistically significant improvement in attitudes toward research from the first reflection point to the final reflection point. Qualitative analysis supported the quantitative results. Using a general thematic analysis (Creswell & Creswell, 2018), we identified four major themes in student responses regarding course elements that changed student perceptions toward the relevance of research and attitudes toward research: increased knowledge and confidence, personal choice and interest, course structure, and instructor efforts. Figure 18.1 contains ideas that were collapsed into each of the major themes, with an example quote from a student for each theme.

Figure 18.1

Themes and Example Quotations

Theme identified in data	Student quotations
<u>Increased knowledge and confidence</u> Skill improvement, specific course topics, understanding, confidence	“I used to just skim to the bottom of research articles to see what I am supposed to learn from them, but now I am starting to enjoy actually reading them. So learning and understanding what is actually in a research paper, the different parts, has been beneficial.”
<u>Personal choice and interest</u> Connecting research to personal or professional life, choosing topics of interest	“The fact that I got to choose the topic for my final project is hugely beneficial to me and helps me see the relevance of research in my field.”
<u>Course structure</u> Specific assignments or discussions, lectures, readings including reviewing research in multiple formats, course policies	“The lectures are key to me understanding research better. The assignments have helped too, but I think the biggest factor to understanding the importance and value of research has come from reading [the book group discussion book]. It’s been invaluable to see research in action. This course has made reading research much less intimidating.”
<u>Instructor efforts</u> Professor excitement, attitude, teaching style, topic knowledge, and availability to students	“My professor is excited in teaching about research. She gives excellent instructions and also a variety of assignment types to help us learn. Her positive attitude and teaching style definitely makes me more excited to learn more about research.”

Habits of Mind, Academic Mindsets, and Course Elements

Kallick and Zmuda (2017) mention the work of Farrington et al. (2012) that focuses on four academic mindsets: relevance (“this work has value for me”), growth mindset (“my ability and competence grow with my effort”), self-efficacy (“I can succeed at this”), and sense of belonging (“I belong in this academic community”; Farrington et al., 2012, p. 10). Farrington and colleagues note that positive academic mindsets are associated with persistence and, subsequently, improved academic performance. Furthermore, they highlight the reciprocal relationship between a positive mindset and academic performance, noting that “strong academic performance ‘validates’ positive mindsets, increases perseverance, and reinforces strong academic behaviors” (p. 9). Kallick and Zmuda (2017) suggest that for personalized learning to work, these four characteristics are “essential” (p. 79). To deepen this connection, they map the Habits of Mind onto each characteristic (see Figure 18.2).

Figure 18.2

Psychosocial Characteristics and Habits of Mind

Relevance	Growth mindset	Self-efficacy	Sense of belonging
<ol style="list-style-type: none"> 1. Remaining open to continuous learning 2. Questioning and problem poising 3. Drawing from past knowledge and applying it to new situations 	<ol style="list-style-type: none"> 1. Taking responsible risks 2. Remaining open to continuous learning 3. Thinking flexibly 4. Persisting 	<ol style="list-style-type: none"> 1. Manage impulsivity 2. Think about their thinking 3. Strive for accuracy 4. Thinking and communicate with clarity and precision 	<ol style="list-style-type: none"> 1. Think interdependently 2. Listen with understanding and empathy 3. Respond with wonderment and awe

Note. Source: Kallick and Zmuda (2017, pp. 79–81).

The following section focuses on qualitative responses from the present study that emphasize the essential connection between the four psychosocial characteristics and Habits of Mind. In addition to student responses, specific course elements and further explanation of specific pedagogical practices employed during the semester are included and analyzed in terms of associated Habits of Mind. Figure 18.3 contains an overview of how academic mindsets and the results of the qualitative analysis align.

Figure 18.3

Psychosocial Characteristics and Qualitative Results

Relevance	Growth mindset	Self-efficacy	Sense of belonging
<ol style="list-style-type: none"> 1. Course structure 2. Personal choice and interest 	<ol style="list-style-type: none"> 1. Instructor characteristics and efforts 2. Increased knowledge and confidence 	<ol style="list-style-type: none"> 1. Course structure 2. Increased knowledge and confidence 	<ol style="list-style-type: none"> 1. Increased knowledge and confidence 2. Personal choice and interest

Relevance

The academic mindset of relevance for a student includes personal interest and value of subject matter (Farrington et al., 2012). Research Question 1 focused on the relevance of research in students’ lives because past research has shown that when there is a personal connection or recognition of relevance, research methods is not such an intimidating subject (Slocum-Schaffer & Bohrer, 2019). Student opinions of the relevance of research improved over the course of the semester.

Qualitative Analysis Results Connected With Relevance

Course structure. Students were exposed to research in a variety of formats and writing styles: academic peer-reviewed journal articles, USU Extension publications, a book discussion

group activity using best-selling books focused on research written for non-academic audiences related to the field of study, news pieces covering research, TED talks, and popular podcasts that use research methods concepts or cover research. Multiple media formats were used to address different topics of interest and learning preferences and to introduce students to the variety of formats used to disseminate research to academic and community audiences. Every assignment had videos breaking down assignment requirements, with clips highlighting how researchers commonly cover the topics in research in our field using actual articles on a variety of topics.

One specific assignment, the book discussion group, was mentioned by students as impactful on perceptions of relevance. A student said, “Reading that book and finishing it this week was a huge part of my opinion of research improving because I realized how relevant, exciting, and enlightening research can be!” Another student mentioned the format of lectures and other course content, as well as the variety of formats of research:

Just learning the different components of research in simple and clear ways helped me to not be afraid of research anymore. And I really liked the assignment where we were given a link to the USU extension with tons of links to various research-based short articles about things that really caught my interest. That helped influence my attitudes and feelings about research.

These quotes demonstrate how designing a course with elements that enhance the psychosocial characteristics of Habits of Mind, including assignments, lectures, and engaging materials, can foster relevance by helping students remain open to continuous learning. This fostering increased interest and personal connection with research methods.

Personal choice and interest. Providing students with options throughout the course opened personal connection opportunities, allowing students to take responsible risks by becoming more invested in the subject. Students chose topics of interest to dive into research, and they chose between two research-based books written for non-academic audiences for book group assignments. As suggested in past research, reflection points were woven into the course for them to consider how they see research as relevant (Slocum-Schaffer & Bohrer, 2019).

Student comments across the four reflection periods touched on the importance of personal choice and interest. Remaining open to continuous learning showed up in student reflections. A student stated, “It is a bigger part of my life than I previously gave it credit. I research things all the time.” Another pointed out that it “makes me want to learn more.” We see drawing from past knowledge and applying it to new situations in this student thought, “As I’ve learned about different types of research, I have seen them more in the news as well as the books I am reading. It puts a real-life application on the material.”

Growth Mindset

Students with a growth mindset use resources in learning, stretch themselves, and study to learn (Dweck, 2016). From a Habits of Mind perspective, they think flexibly, persist, and think about their thinking (metacognition). One student summed up the growth mindset experience in a research methods course with this thought:

When I began the semester I had the thoughts: “I want to use relevant research in my work, but not conduct it” and “research is overwhelming.” There have been at least two times, within the last couple weeks where I have thought, “I should research...” That’s an amazing change in mindset. While I still find some research intimidating, I’m getting

better at breaking it down. I'm still not sure I'd call research fun, like [the professor], but I could get on board with interesting.

This student is demonstrating persistence with the subject that was originally viewed as overwhelming. Furthermore, we see the metacognitive process in action, with the student actively recognizing thought processes, including shifts in thought processes across the semester.

Qualitative Analysis Results Connected With Growth Mindset

Instructor characteristics and efforts. Instructor characteristics was a theme from the qualitative analysis that connected well with fostering a growth mindset in the course. A student stated, "Our professor is so excited about research and that excitement is contagious. Making research more fun." For example, another student said:

The way that the course was taught influenced my feelings and attitudes about research. The instructor's positive and excited attitude influenced me to want to find out what is so exciting and how can I get that excited about research. I know that research is important, but having someone else telling me and showing me why it is important helped me feel positively toward research.

Costa and Kallick (2008) proposed that mindful teachers and their efforts matter in the classroom. Mindful teachers make both verbal and nonverbal efforts (e.g., tone of voice) to help build trust and safe learning environments for students. This course was an online course, so instructor efforts included quick response times to student queries, following up on questions or student misunderstandings, encouragement in feedback, and sincerity in expressing excitement for the topics. Costa and Kallick (2008) state, "The manner in which teachers and administrators respond to students can create and sustain a thoughtful environment that creates trust; allows risk-taking; and is experimental, creative, and positive" (p. 99). This is also an opportunity for an instructor to model remaining open to continuous learning. Instructors designing with Habits of Mind frameworks are not complacent in their own learning and often seek opportunities to continuously learn about their subject.

Increased knowledge and confidence. Reflections from students resonated with the Habits of Mind of remaining open to continuous learning and persisting. For example, a student commented, "I used to hate research, but now that I understand it better it's more enjoyable and I like learning." Student attitudes toward continuous learning and persisting was presented in responses that recognized the challenging aspects of the subject matter, coupled with their current growth and progress. For example, a student explained remaining open with an excellent analogy comparing learning about research to learning a new language:

Learning about all the different sections in research, why they are important and what they tell us, has made it easier for me to decipher research. Sometimes the articles feel so verbose it's hard to decipher what the author(s) are trying to say, but this course has taught me a foreign language essentially. I'm not fluent yet, but I can survive.

Another student focused on learning week-by-week in the course, remaining open to continuous learning:

Every single week I feel like I am learning something new and I find myself looking for examples of what we are studying in Research Methods in my other classes. Research is

everywhere and this course has helped me recognize the importance of breaking research down until it's understandable.

For this student, research became visible. As her knowledge and confidence increased, her opportunity to learn expanded into her other coursework. She remained open to learning beyond the research methods classroom.

For other students, persisting and remaining open to continuous learning created positive attitudes toward research. A student commented: "Learning about the different methods of research and how to interpret research helped me feel more confident and by being more confident and less nervous about research helped me to have a positive attitude." Both persistence and an open mind about research methods created a positive reciprocal relationship (Farrington et al., 2012) with the student's willingness to continue engagement with the content increasing confidence and moving the student into a positive academic mindset.

Self-Efficacy

Where students enter research methods courses with varying backgrounds and established feelings about quantitative methods, improvements in self-efficacy varies by individual student. For instance, a student entering the course with a negative attitude stated, "I used to just say that I don't like research, but now I'm actually super intrigued about what I can learn from studies people have done. It is actually exciting now and can apply to my daily life." Another student declared, "I don't hate it as much as I thought I was going to." Even students entering a subject with reticence can experience increases in self-efficacy.

Qualitative Analysis Results Connected With Self-Efficacy

Course structure. Students mentioned various components of the structure of the course that helped improve their self-efficacy. The course's policies include the opportunity to "revise and resubmit" coursework—an opportunity to review instructor feedback and improve writing or clarify areas, accompanied with the opportunity to earn points back for revisions. Students also get to drop their lowest quiz score each unit and have multiple opportunities for points beyond weekly quizzes to address different learning preferences. When students are given opportunities to practice course concepts through low stakes activities, it prepares them for bigger assignments (Masland, 2021). A student highlighted a few of these policies and practices and how it helped foster self-efficacy and confidence:

This class has overall been easier than I expected, which has made me feel better about it. I don't like getting stressed about constant (what feels like) failures. I'm glad this class gives opportunities to cross a bad score off every now and then to keep me from getting very discouraged. The APA quiz was also a great tool to help me feel more confident with getting APA content right.

Another student discussed the research tools covered as part of the course content. "I think being able to find research so easily through the tools given," they wrote, "made me realize that research doesn't have to be so difficult." As reflected in these quotes, instructors can structure a class with policies and content to encourage students to take responsible risks without fear of failure.

Increased knowledge and confidence. This was the theme in the data in which students clearly aligned with self-efficacy. A student commented, "Learning about the different methods

of research and how to interpret research helped me feel more confident and by being more confident and less nervous about research helped me to have a positive attitude.”

Some students expressed a lack of self-efficacy regarding statistics. This lack of self-efficacy contributed to their attitudes toward research. Students in this major have a 3000-level statistics course as a prerequisite, and the research methods course focuses more on recognizing the appropriate application of statistics and interpreting statistics, rather than the actual computation. Instructions on assignments focusing on statistics also focus on helping students start where they are. What is one statistic they can explain with confidence? Some students start with frequencies, percentages, means, and p-values. Others use course resources to explain and understand statistics beyond the expectation for understanding at the undergraduate level. Statistics is one area where the Habits of Mind of striving for accuracy and persisting can help with success.

Even when students did not feel self-efficacy with statistics, some were able to find personal interest in some areas of research methods related to data analysis. For example, at Time 4 a student stated, “The statistics still frustrate me because I just can’t understand them or remember them. I really like the idea of qualitative research, that seems more up my alley.” Another student noted, “I think I understand the different kinds of research a lot better and no longer feel like it’s just statistics.”

Sense of Belonging

Student belonging in the world of research was found across research questions in the data. Regarding attitudes toward research, a student began the course by saying,

I think of it as sort of a necessary evil. It sounds boring—almost like the “paperwork” part of a fun job. Even so, I am already convinced that it’s incredibly important for every field and I’m excited to learn how it can also be interesting.

By the final assessment, the student’s attitude shift reflected a sense of belonging. She said, “It’s still intimidating to me. But it’s exciting. And to be honest, I would love to explore options of how I could be involved in writing and participating in research. It’s definitely appealing to me.” Other students expressed similar sentiments in the final reflections. A student stated, “I’m excited about it and feeling ready to start getting involved with actually conducting research.” Another student showed this progression of sense of belonging from the first reflection:

I find research overwhelming at times. It gets hard to decipher good information from bad information. I do not want to be a researcher, but I do need to understand research and know the difference between relevant research and irrelevant research. I also feel like society has weaponized research, so I need to be able to step back and break information down to find the pertinent information and not fall victim to rhetoric.

To the final evaluation:

My attitude toward research is hopeful and curious. I hope to continue to learn more about research, its outcomes and procedures. I hope to keep finding meaning from research. Before this course I didn’t have any desire to conduct research but this course has taught me that I could and I just might.

Both quote examples are expressions of wonderment and awe. This includes their interest in participating in research beyond the class, an empowerment in being a researcher, as well as hope and curiosity.

Qualitative Analysis Results Connected With Sense of Belonging

Increased knowledge and confidence. As students' understanding, knowledge, and confidence grew in the subject, their sense of belonging with the subject emerged as well. For example, a student stated, "It's helped me realize research isn't just for crazy smart people. That you don't have to be a big scientist to understand the methods/results of research."

Personal choice and interest. Students found a sense of belonging with research when their topics mattered to them. A student said, "I also just think that recognizing many useful topics that apply to my own life helps to ignite an interest in doing more research." Other students started to recognize how often they interact with research. This recognition and identification with personally important topics connects well with thinking interdependently. This Habit of Mind accounts for the bigger social connections students have and the groups with whom they work. A student said:

Being able to read articles about preschool-aged children has been bringing my education full circle, especially since I am a student teacher in the preschool lab on...campus. I can take what I'm reading about and see daily what they are talking about, or what they may be missing.

Fixed Mindsets and No Change

As previously covered, Farrington and colleagues (2012) suggest there is a reciprocal relationship between a positive academic mindset and performance in class. They also suggest this reciprocal relationship is evident with a negative mindset and poor performance in a course—where negative mindset relates to behaviors that lead to a poorer performance in a class, further perpetuating the negative mindset. There were only a few responses that fell under a "nothing" or not applicable category. This category included two students who did not experience change, maintaining a negative view of research. A lack of improvement in attitude toward research is supported in past research (Ciarocco et al., 2013; Sizemore & Lewandowski, 2009)—that students can retain negative attitudes toward research throughout a semester. Students were asked to include their final grades on the last reflection, and the two with perpetual negative mindsets had the lowest grades out of the sample of students, potentially supporting the negative academic mindset reciprocal relationship suggested by Farrington et al. (2012). Even when employing Habits of Mind principles, a course may not change the perspective of every student.

There were other students who had responses in a "nothing" or no change category. A student did not experience change because the student already viewed research as relevant and had a positive attitude toward research prior to the course. This category also included two students that listed N/A responses to this question.

Conclusions

A Habits of Mind framework, coupled with academic mindsets, is effective in guiding pedagogical practices and policies in mid-level research methods courses. For students in this sample, personal connection and interest, increases in knowledge and confidence, course structure, and instructor characteristics were all elements that contributed to improved perceptions of the relevance of research and attitudes toward research. Taking suggestions from

past researchers teaching social science research methods courses can potentially build a course that encourages student usage of Habits of Mind concepts to improve perceptions of relevance and attitudes toward research. Some of these pedagogical practices include:

- Connect research and employment (Balloo, 2019; Owen, 2017)
- Explain how research informs the discipline
- Clarify assignment descriptions and explanations
- Provide clear, actionable feedback
- Allow opportunities for practice and revision (Balloo, 2019)
- Provide opportunities for reflection (Hosein & Rao, 2016)
- Engage in active learning techniques (Earley, 2014)

In addition to this list of past research, other pedagogical approaches to research methods that may be useful in improving perceptions of relevance and attitudes toward research include:

- Present research to students in multiple formats. As researchers, we share research with both academic and non-academic audiences. Giving students exposure to styles of writing research for different audiences, deliveries, and modalities may help students discover research in meaningful ways, potentially improving perceptions of the relevance of research.
- Consider using student-friendly policies that allow students opportunities to try, potentially fail, and try again without catastrophic implications for their grade. Low-stakes practice opportunities prior to high-stakes assignments, coupled with clear, actionable feedback, may be an effective way to improve the student experience with research methods. Opportunities for trial, error, correction, and success can potentially increase student self-efficacy.
- Give students choices. Opinions of personal relevance toward research can decrease anxiety toward the subject matter (Slocum-Schaffer & Bohrer, 2019). Giving options in assignments opens opportunities for students to see themselves in research in meaningful ways, thus creating a sense of belonging.
- Share your passion. Instructor attitude and subject enthusiasm can be “contagious” for students, supporting them as they dive deeper into the subject. Because students approach research methods with varying degrees of interest (and potential apprehension), there is power in modeling and encouraging a growth mindset in the learning environment.

Because some students approach social science research methods courses with hesitation, designing the course with a Habits of Mind framework has powerful implications for student performance in the course. Specifically focusing on elements that may improve academic mindsets can help students shift from anxiety, hesitation, or potential misperceptions of research to connecting with the relevance of the subject, building self-efficacy, experience growth-mindset opportunities, and ultimately feeling like they belong as researchers.

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