

Teaching Equity through Assets-Based Journaling: Using Community Cultural Wealth to Guide Student Reflections

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Dr. Jessica Deters is an Assistant Professor of Mechanical and Materials Engineering and Discipline Based Education Researcher at the University of Nebraska - Lincoln. She holds her Ph.D. in Engineering Education and M.S. in Systems Engineering from Virginia Tech.

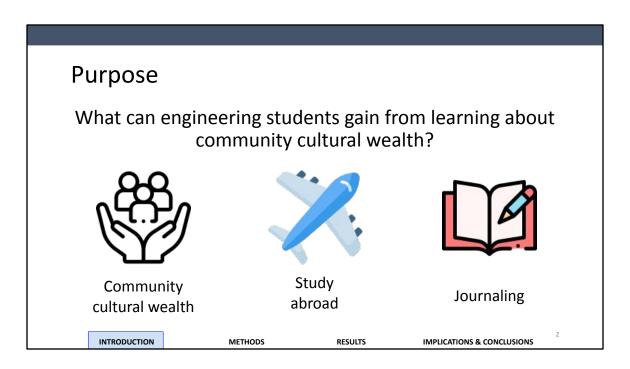
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Dr. Maya Denton is an Assistant Professor of Engineering Pathways at the University of Oklahoma. She received her B.S. in chemical engineering from Purdue University, her M.S. in environmental and water resources engineering from the University of Texas at Austin (UT-Austin), and her PhD in STEM education from UT-Austin. Before graduate school, she worked for an industrial gas company in a variety of engineering roles. Her research in engineering and STEM education focuses on career pathways within engineering and issues of diversity, equity, and inclusion.

Teaching Equity through Assets-Based Journaling:

Using Community Cultural Wealth to Guide Student Reflections

Gabriella Coloyan Fleming, Jessica Deters, Maya Denton



In this presentation, we will show preliminary results from our research study in which engineering study abroad students completed journaling assignments with community cultural wealth-based prompts.

Introduction to Community Cultural Wealth

- CCW is a critical theoretical framework that highlights student assets (Yosso, 2005)
 - Identified six types of capital
 - For Students of Color and education contexts
- Builds on the tenets of Critical Race Theory (Ladson-Billings & Tate, 1995; Solórzano, 1997, 1998)
- Opposes deficit views of cultural capital (Bourdieu, 1977)

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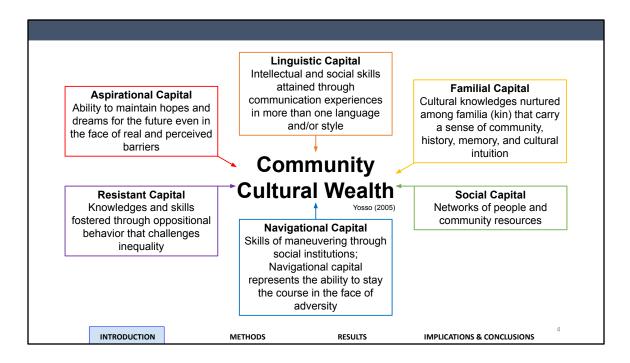
- Introduction of CCW as a theoretical framework
 - Focus of the framework
 - Where it originated from
 - Contexts in which CCW is used

Bourdieu, P. (1977). *Power and ideology in education*. Oxford, England: Oxford University Press.

Ladson-Billings, G. & Tate, W.F. (1995). Toward a critical race theory of education. *Teachers College Record*, *97*(1), 47-68.

Solórzano, D.G. (1997). Images and words that wound: Critical race theory, racial stereotyping and teacher education. *Teacher Education Quarterly, 24*, 5-19. Solórzano, D.G. (1998). Critical race theory, racial and gender microaggressions, and the experiences of Chicana and Chicano Scholars. *International Journal of Qualitative Studies in Education, 11*, 121–136.

Yosso, T.J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race, Ethnicity and Education, 8*(1), 69-91.



This slide was shown during the class discussion on CCW and provides an overview of each type of capital for the audience.

Community Cultural Wealth in STEM Education

- Use of CCW as a theoretical framework has grown in recent years
 - Way to highlight experiences of marginalized students in engineering & work towards institutional change
- Trends in CCW and STEM education research (Denton et al., 2020):
 - Studies often focus on the identification of capital
 - Often based in extracurricular or <u>outside</u> of classroom settings
 - Limited focus on the role of institutions, faculty, and staff
- Our work addresses a gap in the STEM Ed CCW literature:
 - Focus on a curricular implementation in a classroom setting
 - The use of reflections as an actionable way for students to recognize and value their own assets

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- In the last 10 years, CCW research has increased significantly in engr/STEM ed research
- Prior work often focuses on capital identification
 - We build on this by focusing on a curricular implementation in a classroom setting

Denton, M., Borrego, M., & Boklage, A. (2020). Community cultural wealth in science, technology, engineering, and mathematics education: A systematic review. *Journal of Engineering Education*, 109(3), 556-580.

Asset-Based Approaches

- Assets-based approaches highlight the intrinsic value of students being who they are
- Focus on systems as creating inequities for individuals



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What is deficit-based thinking?

- Blaming the victim (Ryan, 1971; Valencia, 1997)
- Oppressive and holds little hope for addressing students' success in school (Valencia, 1997)
- In the US, rooted in economic advantages of racial oppression (Menchaca, 1997)
- Examples of deficit-based thinking

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- Low student GPAs
- Being "underprepared" for math/ engineering courses
- · First-gen students "lacking" family role models

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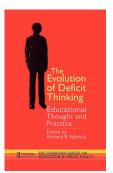
Quote from "The Evolution of Deficit Thinking":

"Deficit thinking is a person-centered explanation of school failure among individuals as linked to group membership (typically, the combination of racial/ethnic minority status and economic disadvantagement). The deficit thinking framework holds that poor schooling performance is rooted in students' alleged cognitive and motivational deficits, while institutional structures and inequitable schooling arrangements that exclude students from learning are held exculpatory. Finally, the model is largely based on imputation and little documentation"

Ryan, W. (1971) Blaming the Victim, New York: Random House.

Valencia, R. R. (Ed.). (2012). The evolution of deficit thinking: Educational thought and practice. Routledge.

Menchaca, M. (2012). Early racist discourses: The roots of deficit thinking. In The evolution of deficit thinking (pp. 13-40). Routledge.



IMPLICATIONS & CONCLUSIONS

Reframing Deficit-Based Thinking with CCW

- Use of asset-based frameworks to reframe deficit-based thinking in engineering education (Mejia et al., 2018)
 - Critical frameworks such as CRT, CCW, Feminist Theory, Identity Theory, Intersectionality Theory
 - Impacts framing of research questions and interpretation of results
- Previous work in STEM education and CCW:
 - Resistance of Latina/o students through role modeling, outreach, and mentorship (Revelo & Baber, 2018)
 - Computing/STEM identity and CCW (Rodriguez & Stevens, 2023; Rincón & Rodriguez, 2021)

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Mejia, J.A., Revelo, R.A., Villanueva, I., & Mejia, J. (2018). Critical theoretical frameworks in engineering education: An anti-deficit and liberative approach. *Education Sciences*, 8(4), 158.

Revelo, R.A. & Baber, L.D. (2018). Engineering resistors: Engineering Latina/o students and emerging resistant capital. *Journal of Hispanic Higher Education*, 17(3), 249-269. Rodriguez, S.L. & Stevens, A.R. (2023). Exploring computing identity development for Latinx students at a Hispanic-serving community college. *Journal of Diversity in Higher Education*.

Rincón, B.E. & Rodriguez, S. (2021). Latinx students charting their own STEM pathways: How community cultural wealth informs their STEM identities. *Journal of Hispanic Higher Education*, 20(2), 149-163.

Study Abroad Context

- Study abroad is a highly situated learning environment where students draw on their identities and past experiences to make sense of their new experiences (Deters et al., 2022)
- Study abroad experiences are a unique environment in which to investigate students' CCW (Perkins, 2020)



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Informed by Jessica Deters' visit to a university that uses an asset-based framework across their university.

Deters, J., Holloman, T. K., Grote, D., Taylor, A. R., & Knight, D. (2022). Critically Examining the Role of Habitus for Minoritized Students in a Global Engineering Program. Frontiers: The Interdisciplinary Journal of Study Abroad, 34(4), 172-205. Perkins, C. (2020). Rewriting the Narrative: An Anti-Deficit Perspective on Study Abroad Participation. Frontiers: The Interdisciplinary Journal of Study Abroad, 32(1), 148-165.

May Term Class

- Four-week engineering study abroad in Japan in May 2023
 - 3 weeks in Tokyo, with a one-week field trip to Kyoto and Hiroshima
 - 80 students, 3 TAs, 4 co-instructors from one US institution
 - Classes in Tokyo held at a Japanese university
- Class format: primarily project-based learning
- · Reflection assignments
 - 2 pages each
 - 1 at the beginning of class, 2 during, 1 at end
- Prior to the last reflection due date: class about CCW

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- The class was taught by one member of the author team at the home institution for students at that US-based institution
- Students earned 3 credit hours (engineering elective) towards their degree
- For participant confidentiality, we will not name the institution, department, or name of the class

Methods: Developing Reflection Questions

- Author team met regularly to design the reflection questions, led by the author who taught the class
- Started from reflection questions from study abroad context and adapted them to fit the CCW framework.
- Distributed questions across 4 reflections to aim for proper timing and length of reflection
 - At certain points in trip: made more sense to talk about different capital types
- Early decision: have questions related to each type of capital at 3 time points

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- Resistant capital was the most difficult to think of questions for but the Hiroshima visit provided a natural opportunity
- We will see later in results: how we framed the questions comes up in how students responded at the end of the class

Positionality



Gabriella Coloyan Fleming University of Texas at Austin



Jessica Deters
University of Nebraska–
Lincoln



Maya Denton University of Oklahoma

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- Gabriella Coloyan Fleming: research on student servingness at a newly-designated MSI, recently learned about UT El Paso's EDGE framework, which is a university-wide assets-based approach for student success
- Jessica Deters: Experience leading and researching engineering study abroad programs. Experience with an engineering study abroad program that uses reflection for both assessment and research purposes.
- Maya Denton: CCW

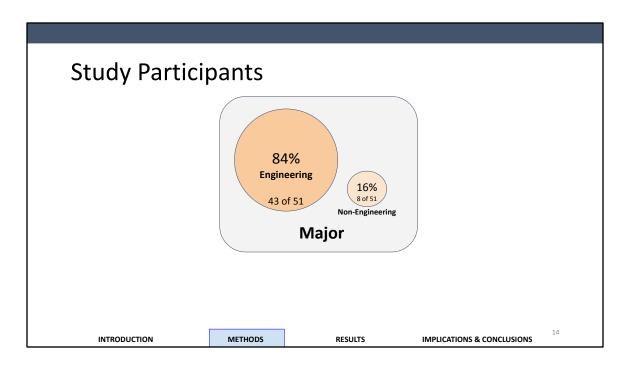
Study Consent: OPT-IN

- Students were informed about the option to participate in the study at the end of the CCW class
- · 25 students initially signed up
- · Participant incentives: \$25 Amazon gift cards

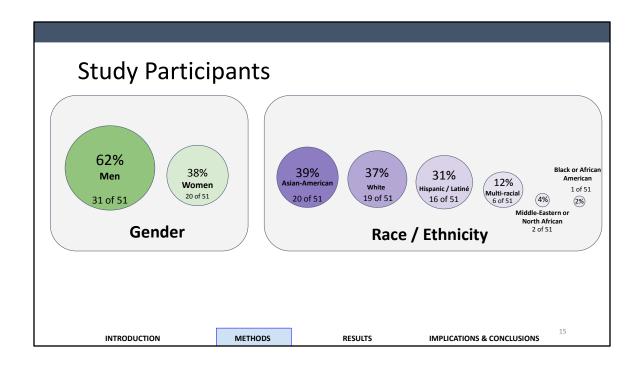
Final number of participants: 51

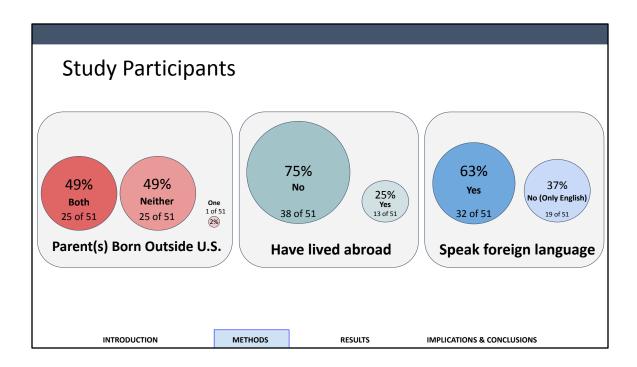
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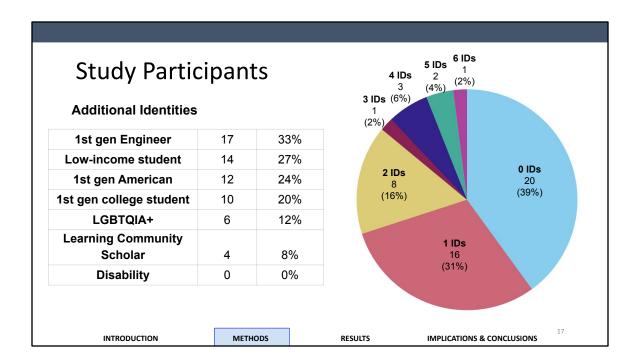
- Emphasized that participation would not affect their grade
 - O Not even co-instructors would know who participated
- Reassurance that all reflections would be anonymized
- Students could choose if there were any reflections that they wanted to exclude from the sample
 - O E.g., exclude reflection #3 but include #1, 2, 4
- Recall that this is out of a class of 80 students, so quite a good participation rate!



The demographics of the study sample are fairly representative of the total class demographics







- The table on the right shows how many of these additional identities students had
- "Learning Community Scholar" is the anonymized name for a member of the College of Engineering's student success program for first-gen and/or low-income students

Research Questions Reflection Prompts "What did you learn from reflecting What did students learn from reflecting on these types of capital? How has on types of capital? How did journaling journaling helped you realize what help students realize what assets they assets you already have?" already have? → How do students think they will use "How might you use these assets when you return home?" these assets when they return home? "Of the six types of capital, which → What types of capital resonate most resonates the most with you? Why?" with students? METHODS INTRODUCTION RESULTS **IMPLICATIONS & CONCLUSIONS**

- In this presentation, we focus on student responses to three questions from the final reflection.
- "Return home" is language from May about how students would use these assets when they returned to the US. The students are now back in the US.

Aspirational Capital Definition Sample Reflection Questions What are your current future Ability to maintain hopes and dreams for the future even in the personal aspirations and career face of real and perceived barriers goals? Yosso (2005) How does participating in this Maymester contribute to these? INTRODUCTION METHODS RESULTS **IMPLICATIONS & CONCLUSIONS**

- Here are sample reflection questions from each type of capital in the class.
- As we are preparing publications and proposals based on these questions, we are not sharing the full set of questions at this time.

Linguistic Capital

Definition

Intellectual and social skills attained through communication experiences in more than one language and/or style

Yosso (2005)

Sample Reflection Question

Reflect on your expectations with respect to the language difference in Japan.

What have you noticed about non-verbal communication in Japan?

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Familial Capital

Definition

Cultural knowledges nurtured among familia (kin) that carry a sense of community, history, memory, and cultural intuition Yosso (2005)

Sample Reflection Question

Think back to the friendship you described in Reflection #3. How has that friendship impacted your experience abroad?

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Social Capital

Definition

Networks of people and community resources
Yosso (2005)

Sample Reflection Question

How has this trip expanded your professional and social network?

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Navigational Capital

Definition

Skills of maneuvering through social institutions; Navigational capital represents the ability to stay the course in the face of adversity

Yosso (2005)

Sample Reflection Questions

Has your confidence in your ability to travel, work, and/or live abroad in the future changed?

How can you use what you have learned from this Maymester to navigate similar situations in the future?

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Resistant Capital

Definition

Knowledges and skills fostered through oppositional behavior that challenges inequality Yosso (2005)

Sample Reflection Question

Reflect on how the visit to Hiroshima impacted how you think about the role of engineers in designing technologies that have the potential to cause harm.

Would you have wanted to be on the Manhattan project team? If you were assigned to the Manhattan project, how do you hope you would respond? How do you think you would respond?

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Findings INTRODUCTION METHODS RESULTS IMPLICATIONS & CONCLUSIONS

- In this presentation, we show preliminary findings from a randomly selected sample (15 of the 51 participants)
- The demographics of this sample are similar to those of the whole participant population

RQ1:

What did students learn from reflecting on these types of capital?

How did journaling help students realize what assets they already have?

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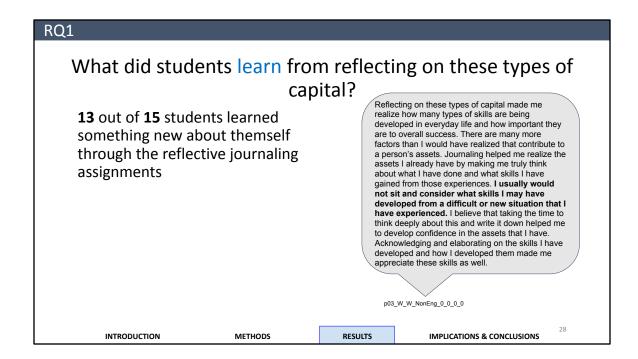
What did students learn from reflecting on these types of capital?

- Learned something new about themselves
- Realized they had more capital than expected

How did journaling help students realize what assets they already have?

- Realized that reflecting and journaling were beneficial practices
- Realized that experiences good or bad help build capital

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Participant naming convention:

ParticipantID#_Gender_Race/Ethnicity_Major (Engineering/ Non-Engineering)_Speak a language other than English_# of non-US-born Parents_Lived Abroad?_Additional Identities

As participants' reflections are largely situated in their identities, we have kept this crucial context

What did students learn from reflecting on these types of capital?

7 out of **15** students realized they had more capital than they previously thought

Reflecting on the different types of capital and assets that help me navigate the world has helped me realize what my unique strengths and weaknesses are as a person. Journaling also helped me realize many of the assets that I already had, and I enjoyed having to think back to my experiences, both in the past week vs. in my entire life. Journaling also helped me realize some of the assets that I did not realize I had and allowed me to build a stronger understanding of how these assets work together to make who I am as a whole person.

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How did journaling help students realize what assets they already have?

10 out of **15** students spoke about the benefits of journaling, especially in helping them slow down and make realizations about themselves

Looking into the different types of capital gave me a guideline for what assets I have in different concepts. Through reflecting on them, I realized more things about myself. I have always had trouble defining who I am and my values and putting them into words, so this really helped me. Journaling allowed me to take time to really think about myself, and the questions gave me a good starting point, which I usually struggle to find. With the fast pace of the world and the constant direction of my attention to social media and other things that keep me distracted, I usually don't give myself time to think and let things soak in. As a result, I feel like I'm just speeding through life and miss out on a lot of things in my daily life that I can learn from. Taking the time to journal gives me the time to think about myself and figure out who I am, but also allows me to reflect on the experiences I have and turn them into lessons for myself going forward.

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How did journaling help students realize what assets they already have?

11 of 15 students reported learning about assets and capital through this journaling exercise, and 1 student reflected that all of their experiences, good or bad, can help build capital

Reading through the different types of capital and matching them with my previous reflection responses made me realize that I hold more assets that help me navigate through my world than I had previously thought. I had always thought of myself as independent and capable, but writing these reflections encouraged me to reflect on all my past experiences that have led me here. All my lived experiences, regardless of whether they were perceivably good or bad, have given me something valuable to take with me wherever I may go. Of course, I've been treated unfairly in the past, but that built up my resistance capital, and thus my desire to help improve the situation so that others won't have to go through that.

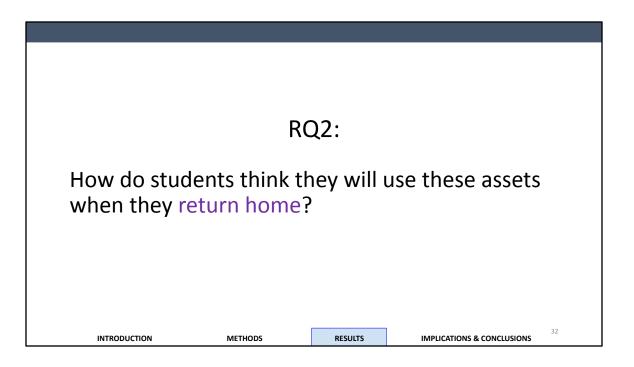
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RQ2								
How do students think they will use these assets when they return home?								
Students often reflected on thinking they will use the following assets:								
 Communication 	Linguistic Capital							
 Building and mai 	Social Capital							
 Navigating new e 	Navigational Capital							
 Awareness of assets in building their confidence 								
Frequent overlap between types of capital in their reflection responses								
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Students did not always directly name forms of capital in their responses to this question, but forms of capital often discussed indirectly

- Most common types of capital specifically named were aspirational and social
- Aspirational present in the three themes we are sharing
- Familial and resistant present less often so far but a few examples of valuing community/building community and working to fight social inequality (in their future career and as a student)

How do students think they will use these assets when they return home?

Communication skills, including:

- Using communication to build relationships
- Non-verbal communication skills

I think my greater awareness of the importance of communication skills will help greatly. Before I left for Japan, I had been in a rut within some of my friendships that I now see was from a lack of effective communication. I plan to use what I learned about communication to help fix those and get them back to where they had been.

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Other examples include:

- Using linguistic capital to communicate with friends of other cultures, particularly with non-verbal communication
- Navigational/linguistic overlap: being less nervous in situations with different primary languages, confidence to navigate
- Using more non-verbal communication skills in general

How do students think they will use these assets when they return home? Building and maintaining support networks, including: • For professional advancement • For friendship and emotional support Knowing how to create a genuine connection with a recruiter will be

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imperative to furthering my professional career and landing interview opportunities. Sometimes it doesn't matter how many connections you make, but rather

the quality of them.

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Social capital came up frequently in their reflection responses to this question. Other examples:

- General focus on personal relationships
- Importance of keeping up with support networks (often connected to other types of capital)
- Plans to engage with classmates, build a network
- Using their networking knowledge to get their first internship

RQ2 How do students think they will use these assets when they return home? Navigating new environments, including: I'm about to go into an internship in Professional environments, such as [State] the week after I leave Tokyo. internships It's another new experience in which I do not necessary know Uncomfortable situations anyone yet, but I will plan on using my social and navigational skills to get accustomed to that new environment over the summer and adapt quickly to make the most out of $p13_W_H_Eng_FL_0_LA_1G_LI_R_Q_1A$

Again, overlap with aspirational capital. Other examples:

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Ability to better navigate unexpected/unusual situations

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 Desire to work on navigational capital, since relied on others to help them get around

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RQ2 How do students think they will use these assets when they return home? Awareness of assets in building their The main way I can take these assets confidence, including: back home with me is being more confident. I think there are a good number Belief that they are capable of assets that I have, intellectually and Recognition of their own strengths socially, but it is rare that I put them fully into action back home. Being forced to do so in and value Japan has given me a better idea of just what I am capable of. Now that I know not only what I have, but also how useful those skills are when I put my full effort into play, I feel rejuvenated. p01_M_AHW_Eng_0_FP2_0_0

Other examples:

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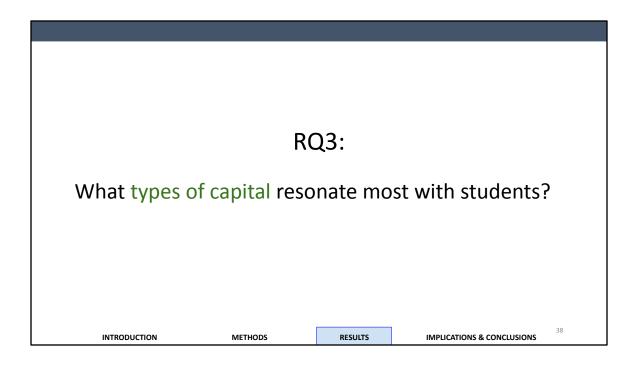
Importance of acknowledging their own strengths and having awareness

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- Plans to continue being aware of their own skills
- Feelings of being rejuvenated after the Maymester, renewed aspirational capital
- "I recognize that I have more than I give myself credit for"

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What types of capital resonate most with students? Of the first 15 participants analyzed, aspirational capital was most common capital named by students Aspirational: 8 Familial: 6 Linguistic: 4 Social: 4 Resistant: 4 Navigational: 3

These are just the types of capital students identified themselves- many spoke about other capital types but didn't name them

What types of capital resonate most with students?

4 of the first **15** students identified more than one type of capital

I think I will probably use all of these 6 assets when returning home. Aspirational capital is key for my drive in moving forward in my future career. Linguistic Capital is key in terms of being able to interact with different cultures which is especially necessary as a future doctor because of the wide variety of patients I would be interacting with. Familial capital is also key for me because developing my own community which I fit in and where I can get support from is important. Navigational capital is also really important in terms of understanding the different dynamics of institutions, and from country to country. Lastly, resistant capital is extremely important because there is social inequality everywhere, and as a doctor these are things I want to fight.

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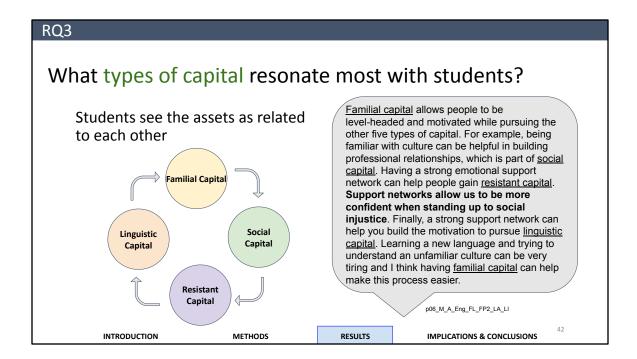
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Linguistic Capital **Familial Capital Aspirational Capital** "I find myself...noticing the nonverbal "My family has always "Life would be so sad if I did not cues that give away how they really feel instilled a very strong sense hold [AC] as a priority... [it is about things, or how they are trying to of familial connection and what has driven me throughout the portray themselves. I feel much more sharing of Taiwanese culture past three years to achieve in-tune with others, and it's nice now through their everyday lives... everything my family did not have because I feel like I can both hear when someone is laughing with me the opportunity to do so. I'm proud I think that these and see the legitimate joy in their of who I am, and what I have characteristics are very body language." p08_M_W_Eng_FL_0_0_1E become.' important for my personal p13_W_H_Eng_FL_0_LA_1G_LI_R_Q_1A and professional goals." p07_M_A_Eng_FL_FP2_0_0 What resonates most? **Resistant Capital Social Capital** "[RC] makes people question their "Being familiar with culture morals the most and reveals the can be helpful in building **Navigational Capital** true colors about a person... professional relationships, "Navigational capital is also Being able to challenge injustice which is part of social capital." really important in terms of and see eye to eye with your p06_M_A_Eng_FL_FP2_LA_LI understanding the different opponent is an essential skill to dynamics of institutions, and have because it gives you the ability to empathize and truly from country to country." p14_M_A_Eng_FL_FP2_0_0 understand what their thought process is. p10_M_A_NonEng_FL_FP2_0_0 41

How do students think they will use these assets when they return home?



Think/Pair/Share Activity

- Think about how you could implement reflective journaling about CCW prompts in your classroom
- Pair with a neighbor and share your ideas for implementing CCW reflection into your classroom
- · Share out with the group

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- Attendees may do this exercise generally or pick one type of capital to focus on
- After explaining the activity, we will show the slide with the 6 capital definitions

Takeaways

- Structured reflective journaling helps students learn about and conceptualize their capital.
 - · Increased students' confidence
 - · Facilitated meaning-making process
- Powerful to empower students to identify forms of capital in their own lives as they navigate a new environment (Japan)

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Next Steps

These are preliminary findings! Our research teams' next steps include:

- · Analysis of more participants
- Investigating if there is a relationship between participant identities and responses
- Publication of reflective journal prompts

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