

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

Purpose

What can engineering students gain from learning about community cultural wealth?



Community
cultural wealth



Study
abroad



Journaling

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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

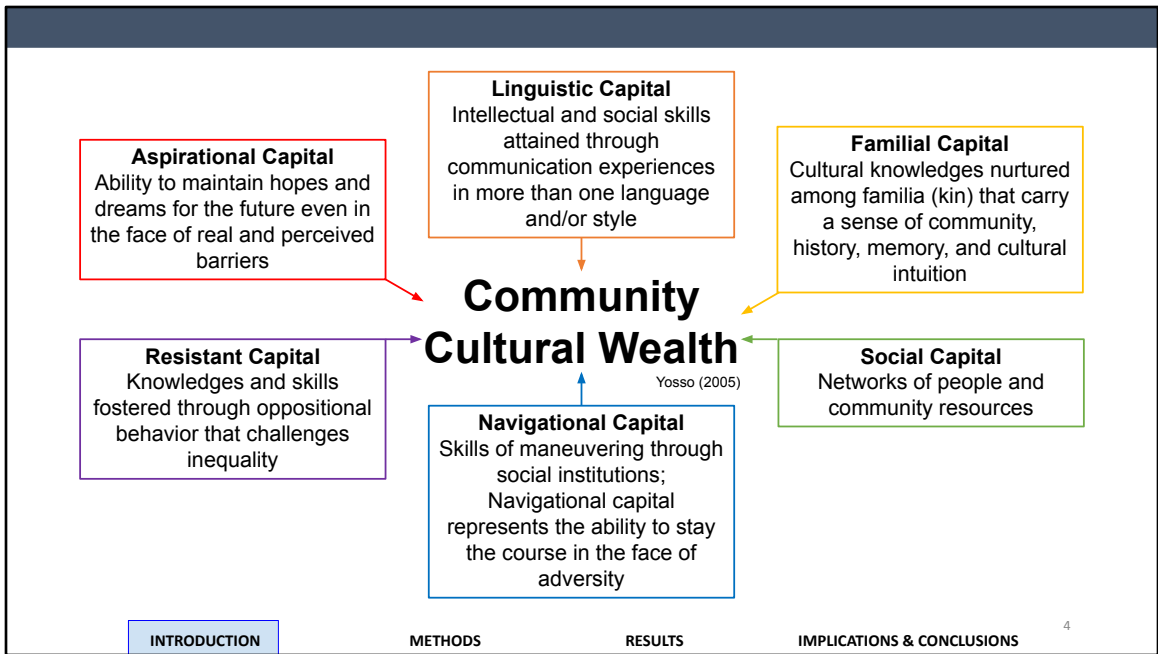
Bourdieu, P. (1977). *Power and ideology in education*. Oxford, England: Oxford University Press.

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 outside 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

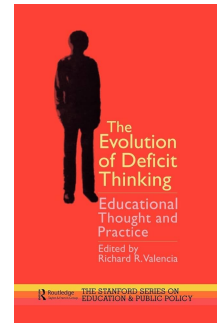
- Assets-based approaches highlight the intrinsic value of *students being who they are*
- Focus on systems as creating inequities for individuals



Image from unsplash.com

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
 - 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 disadvantage). 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.

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 resisters: 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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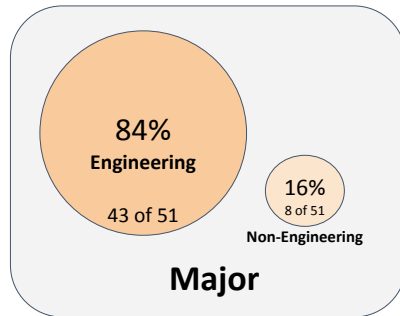
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- Emphasized that participation would not affect their grade
 - Not even co-instructors would know who participated
- Reassurance that all reflections would be anonymized
- Students could choose if there were any reflections that they wanted to exclude from the sample
 - 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!

Study Participants



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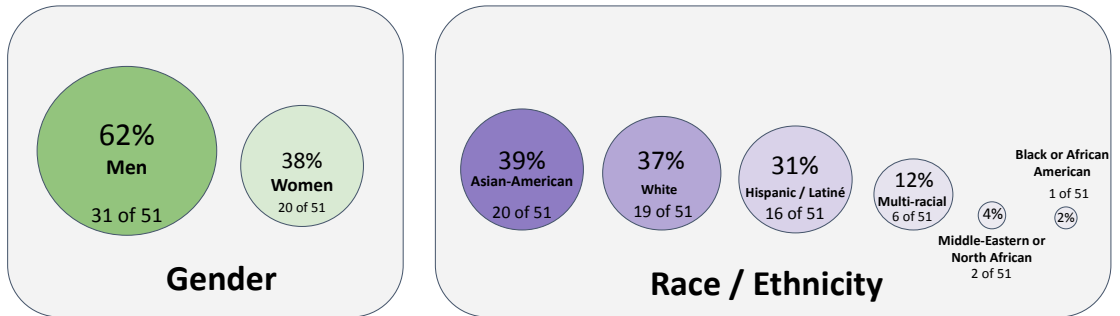
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The demographics of the study sample are fairly representative of the total class demographics

Study Participants



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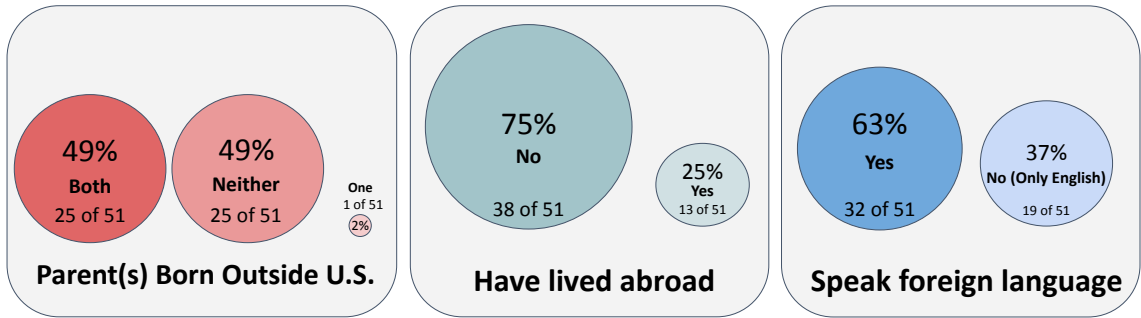
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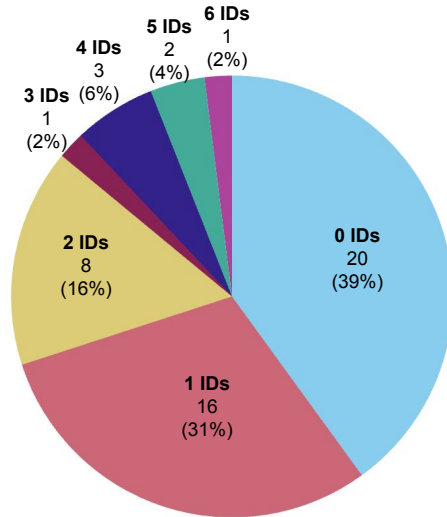
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Study Participants

Additional Identities

| | | |
|-----------------------------------|----|-----|
| 1st gen Engineer | 17 | 33% |
| Low-income student | 14 | 27% |
| 1st gen American | 12 | 24% |
| 1st gen college student | 10 | 20% |
| LGBTQIA+ | 6 | 12% |
| Learning Community Scholar | 4 | 8% |
| Disability | 0 | 0% |



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- 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

Reflection Prompts → Research Questions

“What did you learn from reflecting on these types of capital? How has journaling helped you realize what assets you already have?”



What did students learn from reflecting on types of capital? How did journaling help students realize what assets they already have?

“How might you use these assets when you return home?”



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

“Of the six types of capital, which resonates the most with you? Why?”



What types of capital resonate most with students?

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- 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

Ability to maintain hopes and dreams for the future even in the face of real and perceived barriers

Yosso (2005)

Sample Reflection Questions

What are your current future personal aspirations and career goals?

How does participating in this Maymester contribute to these?

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- 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?

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?

Social Capital

Definition

Networks of people and
community resources

Yosso (2005)

Sample Reflection Question

How has this trip expanded your
professional and social network?

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?

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?

Findings

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- 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?

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

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

13 out of **15** students learned something new about themselves through the reflective journaling assignments

Reflecting on these types of capital made me realize how many types of skills are being developed in everyday life and how important they are to overall success. There are many more factors than I would have realized that contribute to a person's assets. Journaling helped me realize the assets I already have by making me truly think about what I have done and what skills I have gained from those experiences. **I usually would not sit and consider what skills I may have developed from a difficult or new situation that I have experienced.** I believe that taking the time to think deeply about this and write it down helped me to develop confidence in the assets that I have. Acknowledging and elaborating on the skills I have developed and how I developed them made me appreciate these skills as well.

p03_W_W_NonEng_0_0_0_0

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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.**

p07_M_A_Eng_FL_FP2_0_0

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.**

p12_W_W_Eng_0_0_0_0

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.

p13_W_H_Eng_FL_0_LA_1G_LI_R_Q_1A

RQ2:

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

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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 skills -----> Linguistic Capital
- Building and maintaining support networks -----> Social Capital
- Navigating new environments -----> Navigational Capital
- Awareness of assets in building their confidence

Frequent overlap between types of capital in their reflection responses

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.

p09_M_A_Eng_0_0_0_Q_1E

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

I will be using social capital when I get home to the states. This capital will be extremely beneficial when networking next semester to try and get my junior year internship. **Knowing how to create a genuine connection with a recruiter will be 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

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

Navigating new environments, including:

- Professional environments, such as internships
- Uncomfortable situations

I'm about to go into an internship in [State] the week after I leave Tokyo. **It's another new experience in which I do not necessary know 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 it.

p13_W_H_Eng_FL_0_LA_1G_LI_R_Q_1A

Again, overlap with aspirational capital. Other examples:

- Ability to better navigate unexpected/unusual situations
- Desire to work on navigational capital, since relied on others to help them get around

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

Awareness of assets in building their confidence, including:

- Belief that they are capable
- Recognition of their own strengths and value

The main way I can take these assets back home with me is being more confident. I think there are a good number of assets that I have, intellectually and socially, but it is rare that I put them fully into action back home. Being forced to do so in 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:

- Importance of acknowledging their own strengths and having awareness
- 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”

RQ3:

What **types of capital** resonate most with students?

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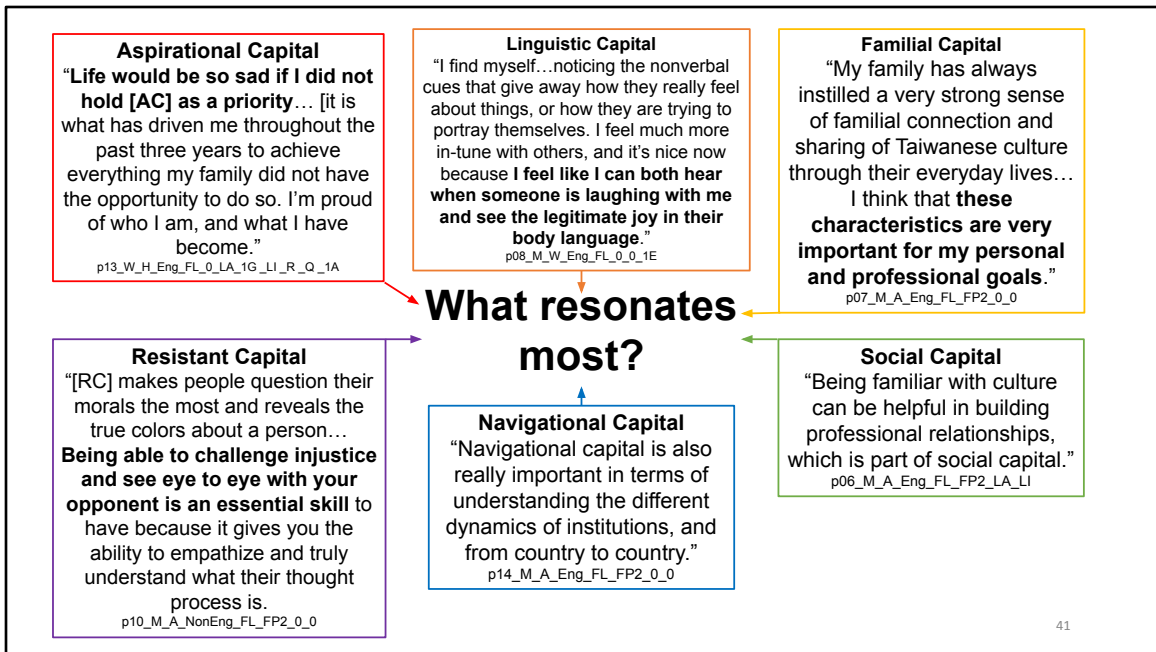
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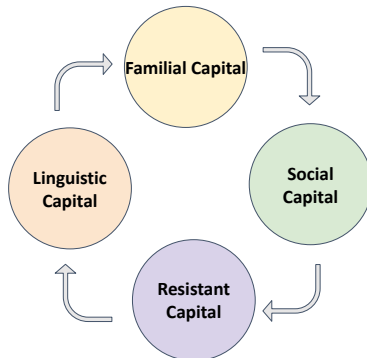
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How do students think they will use these assets when they return home?

What types of capital resonate most with students?

Students see the assets as related to each other



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Familial capital allows people to be level-headed and motivated while pursuing the other five types of capital. For example, being familiar with culture can be helpful in building professional relationships, which is part of social capital. Having a strong emotional support network can help people gain resistant capital. **Support networks allow us to be more confident when standing up to social injustice.** Finally, a strong support network can help you build the motivation to pursue linguistic capital. Learning a new language and trying to understand an unfamiliar culture can be very tiring and I think having familial capital can help make this process easier.

p06_M_A_Eng_FL_FP2_LA_LI

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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)

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