From Jharkhand, India to Lowell, Massachusetts, USA: Engaging Women in Participatory Action Research to Build Connections, Solve Problems, and Develop Visions for Change

http://www.ekjutindia.org/

Photo: http://www.ekjutindia.org/

Photo: S. Tripathy

What is PAR?

- PAR is a research framework that involves researchers and community members working together to listen and learn from each other, identify problems, collect data, and take steps to bring about constructive change.
- In this process, the views and participation of *ALL* community members are prioritized, and every voice is respected and given the opportunity to be heard.

Key Principles of PAR

- **Participation:** Collaboration and power-sharing between "research team" and "community members"
- **Action:** Identifying and enacting "action steps" for positive change
- **Research:** Questions/topics emerge and are explored according to the interests and priorities of all participants. Research team emphasizes listening and mutual learning rather than expertise
- **Iterative process**: repeats and recycles until the desired outcome is reached

"Nothing about us without us"

Why use PAR?

- Gives voice
- Fosters motivation
- Confers a sense of ownership
- Empowers people
- Builds trust and networks
- Enhances capacity
- Sustains results → Impact

From: Sweetser, A.T. (2010) "Participation, Decentralization and Conflict," presented at the East-West Center 50th Anniversary Conference in Honolulu, Hawaii.

Ekjut's Results?

NMR	Intervention Clusters	Control Clusters
Year 1	55.6	53.4
Year 2	37.1	59.6
Year 3	36.3	64.3

32% lower overall, and 45% lower in years 2 and 3, when adjusted for clustering, stratification, and baseline differences

NMR = Neonatal Mortality Rate, per 1000

https://www.thelancet.com/action/showPdf?pii=S0140-6736%2809%2962042-0

“Communities need to be made aware of what it is in their own power to accomplish ”

--Dr. Nirmala Nair, Ekjut

Participatory Action Research (PAR) Focus Groups *with* UMass Lowell Engineering Students

What is the Problem?

- Low numbers of women in engineering
  - At UML, in 2019, females represented 17% of the 3,064 undergraduate engineering students
- Women may persist in their degree program, but drop out of engineering after graduation
- Numerous studies have documented difficulties experienced by women in engineering programs
  - Microaggressions by male peers and faculty members
  - Stereotype threat
  - Climate of intimidation
  - Isolation and marginalization
  - Negative experiences in teamwork and internship sites

Key Questions:

How can we empower students to help bring about constructive change in their engineering majors?

How can we involve faculty and administrators to collaborate with and listen to students?

How can we implement the best ideas that emerge?

Not about “fixing” students – but allowing their voices to be heard. Recognizing that they bring to the table many assets that need to be valued. At the same time, they need to develop successful strategies for learning engineering skills.

RESEARCH, ACADEMICS AND MENTORING PATHWAYS (RAMP) TO SUCCESS : SUMMER BRIDGE PROGRAM AT UMASS LOWELL 2018,2019,2020

IMPROVE ENROLLMENT & PERSISTENCE OF WOMEN IN ENGINEERING DEGREE PROGRAMS

- It has taken 40 years for the percentage of women receiving BS degrees in engineering to increase from 10 to 20%
- At UML, in 2019, females represented 17% of the 3,064 undergraduate engineering students
- In the last few years, ~40% of these degrees were from Environmental and Biomedical disciplines; Less than 15% of the degrees were from Electrical, Computer, Aerospace & Mechanical fields [J. Roy, Engineering by the numbers, 2019, ASEE]
- RAMP: Summer bridge program designed in 2018 to establish a good foundation for new students to transition to college life
- RAMP continues during subsequent academic years with activities that reinforce the students' short and longer term educational and career goals, while ensuring their well-being and success

HOW DO WE USE PAR WITH ENGINEERING STUDENTS AT UML?

- Mainly through focus groups -- small discussion groups led by a peer facilitator. We also use online evaluation surveys to collect data.
- PAR focus groups encourage problem-solving, self-reflection, and empowerment
- Basic structure/theme/activity provided by the facilitator
- Since we were online in 2020, we used MIRO whiteboards to share ideas and plans (https://miro.com)

How are Peer Facilitators Chosen and Trained?

Peer facilitators are selected from students who have participated in the RAMP focus groups in previous years.

They are usually chosen by the research team according to their initiative and willingness to participate, but peer facilitators themselves also recommend students and reach out to them.

Training in listening techniques, encouraging participation, and respecting all voices is provided.

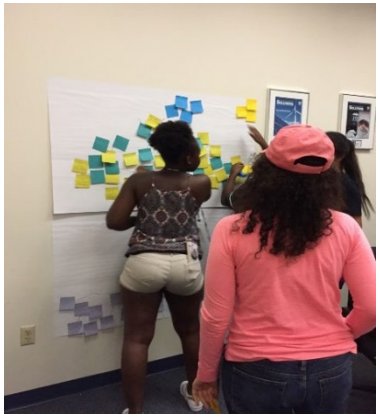
Facilitators are also provided with a step-by-step script for each FG activity.

Characteristics of Current Peer Facilitators

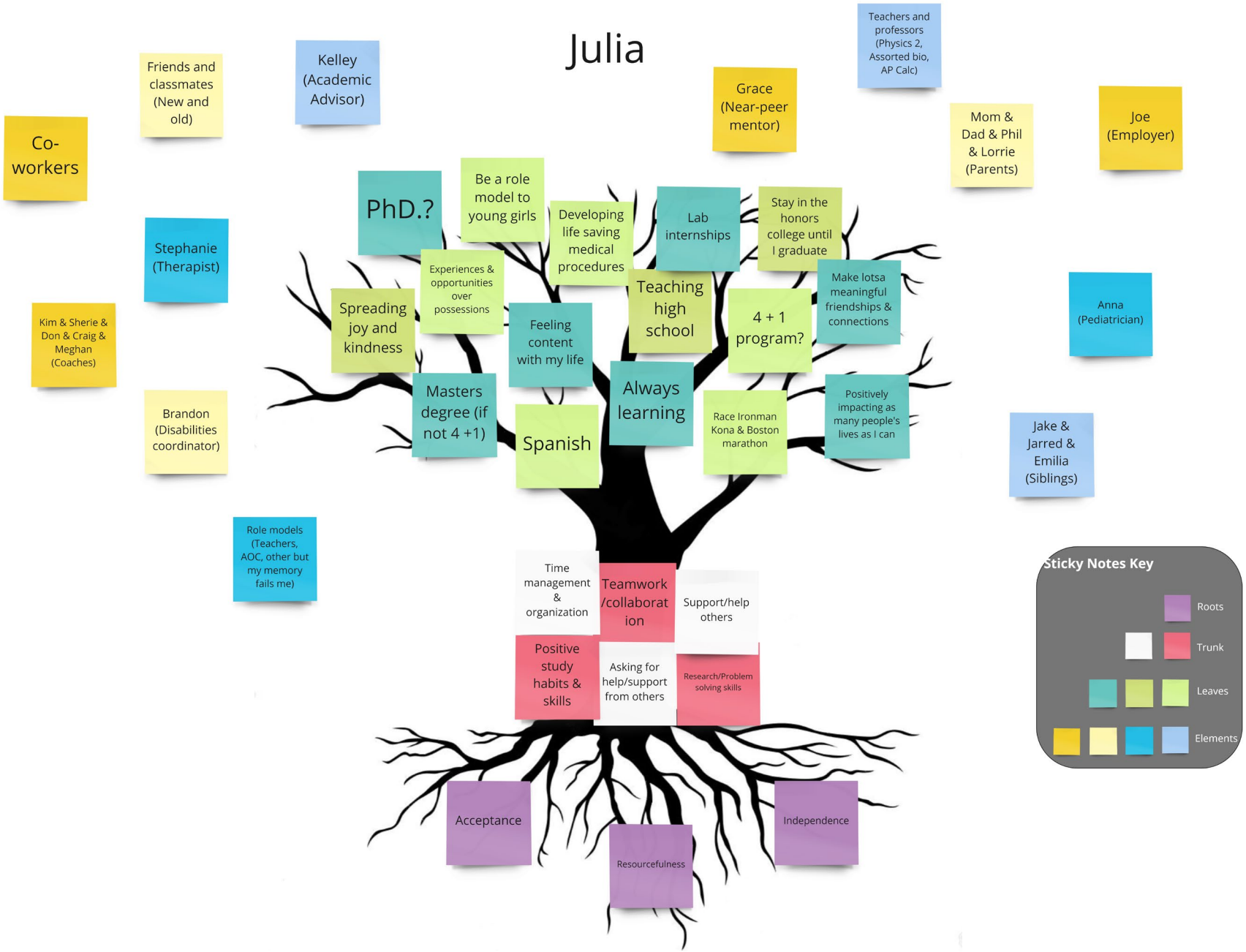
- *Class year: 2 Sophomores, 2 Juniors, 2 Seniors, 1 Graduate Student*
- *Engineering Major: 4 EECE, 1 Bio-med, 1 ME, 1 Chem-E*
- *Race/Ethnicity: 2* African-American, 1 Haitian, 1 White, 2 Asian, 1 Middle-Eastern
- All Women
- All Participated in the RAMP program (6 as students, 1 as a peer mentor and program asst.)

FOCUS GROUPS DESIGN: *TOPICS, GOALS, ACTIVITIES*

- For RAMP, 4 focus groups were created, each with specific topics, goals, and activities.
- *Example: Focus Group #2*
  - Topic: How can you keep your engineering career in orbit?
  - Goal: Using the metaphor of planets orbiting around the sun, allow students to consider similarities & differences between themselves, and what they need to do and need from others to keep their engineering career in orbit.



Activity: Students chose a card with a photo of a planet in the solar system, and then commented on how their planet was similar or different from the rest. This led to a discussion of how RAMP students are similar and different, and ways to help keep their engineering careers in orbit. A written list of these ideas was then generated and shared with all students.


Julia
Co-workers
Friends and classmates (New and old)
Kelley (Academic Advisor)
Teachers and professors (Physics 2, Assorted bio, AP Calc)
Grace (Near-peer mentor)
Mom & Dad & Phil & Lorrie (Parents)
Joe (Employer)
Stephanie (Therapist)
Kim & Sherie & Don & Craig & Meghan (Coaches)
Brandon (Disabilities coordinator)
Role models (Teachers, AOC, other but my memory fails me)
Anna (Pediatrician)
Jake & Jarred & Emilia (Siblings)
PhD.?
Be a role model to young girls
Developing life saving medical procedures
Lab internships
Stay in the honors college until I graduate
Experiences & opportunities over possessions
Spreading joy and kindness
Feeling content with my life
Teaching high school
4 + 1 program?
Make lotsa meaningful friendships & connections
Masters degree (if not 4 +1)
Spanish
Always learning
Race Ironman Kona & Boston marathon
Positively impacting as many people's lives as I can
Time management & organization
Teamwork /collaboration
Support/help others
Positive study habits & skills
Asking for help/support from others
Research/Problem solving skills
Acceptance
Resourcefulness
Independence
Sticky Notes Key
Roots
Trunk
Leaves
Elements

SAMPLE RESPONSES FROM 2019 ONLINE SURVEY QUESTIONS ON THE VALUE OF FOCUS GROUPS:

"Since the focus groups were made up of less people, it was much easier to not only get your own thoughts across, but also to listen to what other people have to say. Everyone was always very relaxed and comfortable with each other, especially as the weeks went. You can definitely see how we've all gotten to know each other better. The focus groups gave us a break and allowed us to reflect and look on our week."

"I really enjoyed how it was a safe space to discuss what we like and dislike about the program and things that could be worked on in a respectful manner. We got to discuss the pros and cons of how certain things like the panelists and the pace of class and how a professor is teaching all in a way no one would get hurt, but it was all positive and constructive feedback."

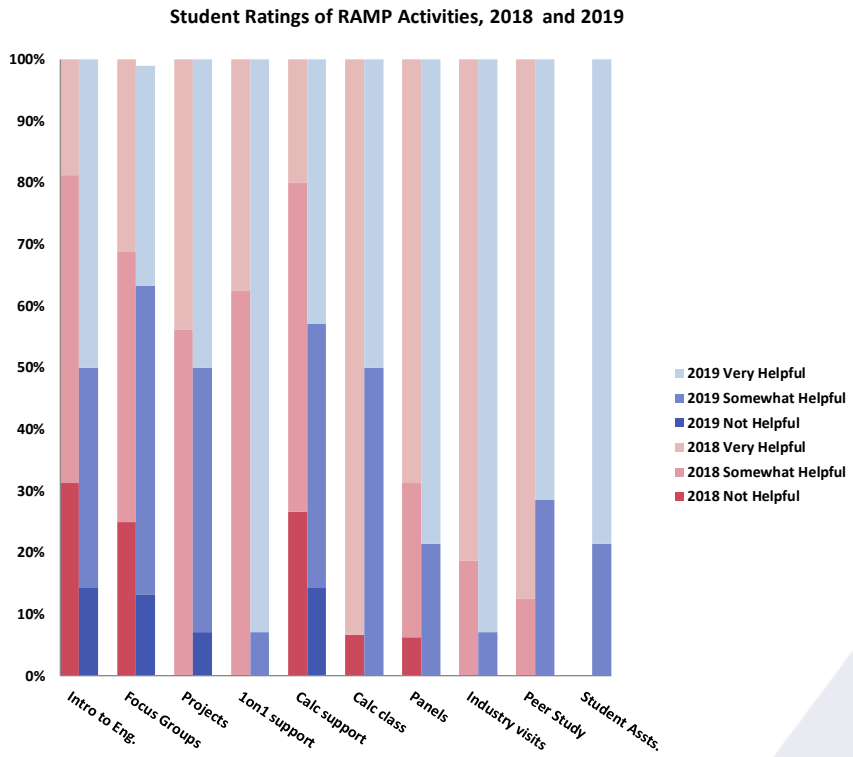
APPLICATION OF FOCUS GROUP AND SURVEY DATA TO MAKE CONSTRUCTIVE PROGRAM CHANGES

What Changed from 2018 to 2019:

- Focus Group facilitators: Two undergraduate student facilitators were trained to replace the faculty member who facilitated in 2018
- Locations: Long days in one location were changed to a variety of locations
- Research Model: Changed from presentation-based to more interactive projects
- Student Mentors: Graduate students in 2018 replaced with undergraduates in support role

What worked Well and was Expanded:

- Balancing academic work with fun activities such as kayaking, ice cream socials, etc.
- Industry visits and panels
- Financial wellness and Financial aid Workshops



Focus Groups with College of Engineering Students, Fall 2020

- Seven Focus group facilitators (described above)
- Seven Focus Group participants:
- 2 females and 5 males
- Majors: 2 ME, 2 Civil E, 2 EECE, 1 Chem-E.
- Academic year: 6 Seniors, 1 Junior

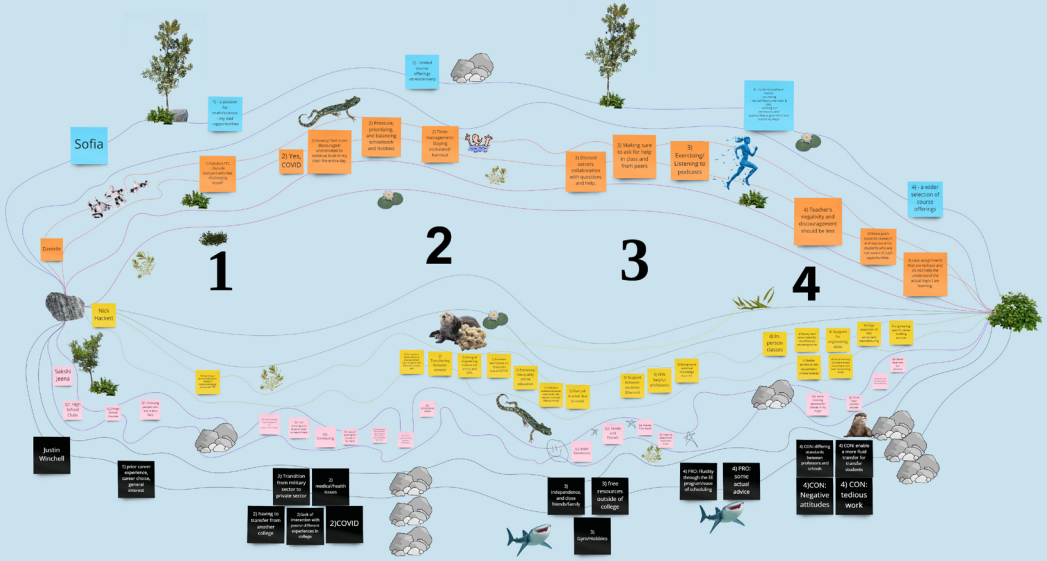
River of Life Activity

Objects To Pick For Your River

Obstacles

Animals

Feel free to add anything else that you want your river to hold and symbolize.



Questions

1.) What motivated you to join your Engineering major?

2.) What barriers/difficult experiences have you encountered along the way?

3.) What has been most helpful to you on your journey?

4.) Considering your experiences and goals, what would you like to see reinforced, changed, or improved in the College of Engineering?

https://engageforequity.org/

Analysis of a Photo, or "Code"

SHOWED QUESTIONS

What did you **SEE** here?	Descriptive
What's <u>really</u> "**HAPPENING**?"	
HOW are people feeling?	
How does the story <u>relate</u> to **OUR** lives?	OUR Personal
WHY does this problem occur?	Analysis
What would help **EMPOWER** us?	Action
What can we **DO** about the problem?	

Shaffer, R., 1983, as cited in Wallerstein, N. & Auerbach, E. 2004: 37-38.

Examples of Student Voices

Comments, Stories, Suggestions, and Ideas

Types of Diversity Present in the Focus Groups:

Students discussed many different ways they can feel "different" and how this might lead to difficulties connecting with other students, being underestimated about what they have to offer, and/or difficulties learning engineering: transfer students, veterans, students with visible and invisible disabilities (dyslexia), commuters, gender, race, international students, language barriers, mental health issues, dealing with deaths of friends/family members, etc.

Imposter Syndrome:

- Imposter syndrome—feeling like they're the only one who doesn't "fit in" and they shouldn't be there: *"Sometimes, I'm in a class. And I'm like, I don't think I'm cut out to understand this . . . I'm like, maybe I can't work with other people like that."*
- Students mentioned that they wished people talked about these feelings more. One student commented that *"People have a lot in common but they're unaware of it."*
- And another: *"There's a lot of people that won't admit they're suffering because, I don't know, it kind of feels like a big test"*

Microaggressions:

- *“ I had been in a case where I was like one girl and I think this was like awhile ago, one of my friends, actually . . . we were in one of our classes and he's also a computer engineer and we were talking about jobs and everything. And he was like, ‘Yeah. You're a girl. You're going to get a job so easy. Like there's not a lot of girls in CE and especially you being a girl like companies are going to want you, so you don't have to try as hard.’ And I was just like so offended.”*

Interactions with Engineering Faculty: Positive and Negative

- *“So in some classes, you have a professor where like you can talk to them about what you understand and don't understand--they can actually help you navigate the classes.”*

- *“There seems to be a lot of negative attitude from professors here and I don't like to necessarily do this, but I was in the military, and like I I've seen it all. I've heard everything under the sun. But there seems to be some bad attitudes towards students that are really discouraging.”*

Stereotypes of Engineering Students by South Campus faculty:

“And the professor’s like, well, you guys are engineers, so you're not really going to pay attention to this, you know, and it's like, okay, so why am I here. You know, why can't I take something else that I enjoy.”

Reactions to Mostly Male Classes and Clubs:

- *"This is actually for lunch before (IEEE) they have a (place) where they all hang out. And I remember the first time that I walked into that room it was all guys and just like sitting around talking . . . as you walk in, you just turn around like you just feel not at place. And then they had elections and me and my friends ran and we both won. I was vice president and after that you kind of saw more girls come into the club and so like the next year we had like four or five girls running."*

- *"I had this one situation. It was the Intro to Engineering lecture and there were 100 plus students in there, but it was for electrical engineering. So then when I walked in there was like a bunch of males in there. And I was like, oh my goodness, and then I don't know, I just like it was like, oh my god, I'm the only female, but that's okay. Like, I'm okay with that. But it just felt like, oh my god, I'm kind of different, but that's okay. And then I saw my friends that were girls because I took the summer RAMP program. And I was like, oh, there's some females, but yes."*

Reactions to Mostly Male Dorms

“But for some reason that year there were so many men that got admitted to Leech hall that there was an entire floor for men. And it was an Honors floor. So it was all men and it was East Campus. So it was mostly STEM majors and I have never seen less diversity of thought in one way and then obviously diversity, you know, as every other regard is concerned, but diversity of thought.

Also, it was, it was like it was sometimes kind of terrifying. It was like, wow, it's like the power strip plugged into itself, you know, nobody seemed to have any concern for you know anybody's feelings or any because it's like, oh, we're men we don't do that and so it must have been terrifying for anybody else in the building.”

Appreciation of Safe Spaces:

“ . . . have more safe places. So if, if you just come to class and go back home you don't really feel like people are at school and it's harder to learn in my opinion. So have more places like this, I think that might help.”

Importance of Clubs for Social Connections and Learning:

Have a more rigorous introduction to clubs Freshman year: "So like the students get cycled through each of the clubs or something like that, just so they get a taste of like how they can get more involvement and you know this helps a lot with building the relationships of people that are going to help you understand subjects about them."

Suggestion for Improving Teamwork:

"There should be maybe even from the professor level from the get go, maybe in Intro Mechanical they start talking about, you know, forces and MATLAB and all that stuff, but maybe they can also talk about, okay, how do you include group members. How do you have successful group projects, how do you work together. How do you survive these classes together and maybe by priming our brains to be more, you know, helpful to each other we can make this suck less for everybody and hearing it from somebody who has, you know, has some authority."

Questions?

- What are other PAR methods we might be able to use? Could photovoice be an option?
- What strategies can be used to implement student suggestions?
- How can we increase the participation of the students in the focus groups and overall research process?