
Equity and Social Justice Working Group

Brian R. Lawler, Kennesaw State University, blaw@kennesaw.edu

Keisha Albritton, University of South Florida, klalbri2@mail.usf.edu

Secondary mathematics teachers are charged with ensuring that each and every student becomes proficient in the state-mandated high school mathematics content (Association of Mathematics Teacher Educators [AMTE], 2017). Yet academic success for all high school mathematics students remains a persistent challenge (National Council of Teachers of Mathematics [NCTM], 2018). Some of these challenges are structural (NCTM, 2018), but some lie in the sociocultural realm. For example, teachers are tasked with improving the mathematical identities of students (sociocultural), yet many students are tracked into course sequences that do not offer access to an appropriate curriculum (AMTE, 2017).

A well-prepared beginning secondary mathematics teacher embraces the goal for academic success for each and every student, and also understands how social, historical, and institutional contexts affect teaching and learning (AMTE, 2017). As the members of the MTE-Partnership consider the preparation of future secondary mathematics teachers, we must respond to these challenges to produce knowledgeable and committed advocates for each and every child.

Role of the Equity and Social Justice Working Group

In a work session following the Sixth Annual MTE-Partnership conference, members of the Equity and Social Justice Working Group (ESJWG) began to lay out key drivers and change ideas toward the goal to produce secondary mathematics teachers who were knowledgeable and committed advocates. This session led to a statement of our improvement aim: Pre-service teachers' (PST) equity-driven sociopolitical dispositions and knowledge and use of equitable teaching practices will improve over the course of their teacher preparation program. This aim has two foci, for the PST to see themselves as advocates and for them to have the tools to achieve that goal. Along with this aim statement, a first draft of a complete driver diagram was completed in early 2018; see Figure 1. The driver diagram states our aim and the primary drivers necessary to advance the aim. The secondary drivers describe the system components that we hypothesize will activate the primary drivers. Finally, the change ideas, as listed, are initial improvement thoughts on processes to be tested on the associated drivers through Plan-Do-Study-Act (PDSA) cycles.

After settling on our own driver diagram (i.e., theory of change), ESJWG next reflected on its role with the MTE-Partnership. The ESJWG was formed to support the MTE-Partnership to fully attend to equity and justice challenges in preparing secondary mathematics teachers and to support dimensions of equity within the work of each RAC. Thus, ESJWG buttresses the five current primary drivers of the MTE-Partnership: Transforming Programs, Creating a Vision, Improving Clinical Preparation, Increasing Content Knowledge, and Improving Recruitment and Retention. Furthermore, equity and justice issues are underlying values in all elements of the preparation of secondary mathematics teachers; thus, Equity and Social Justice must stand apart as a secondary driver distinct from the other RACs. With these dual roles in mind, ESJWG proposes a revised MTE-Partnership driver diagram, as shown in Figure 2.

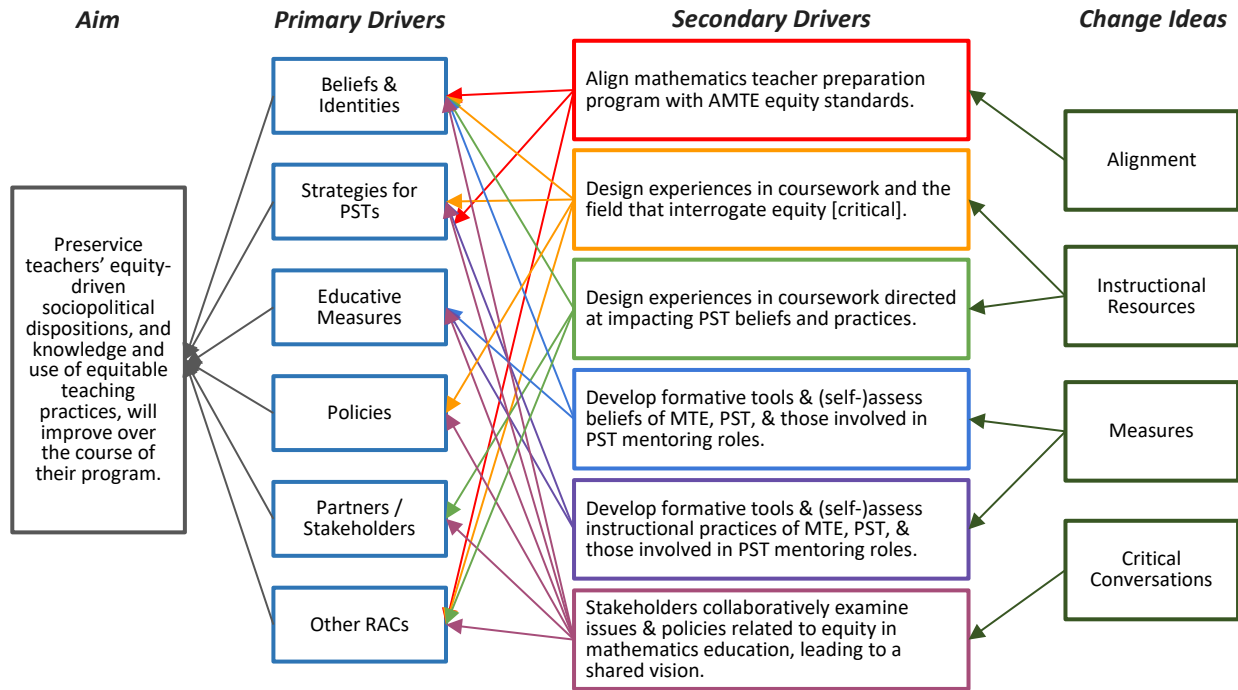


Figure 1. ESJWG driver diagram.

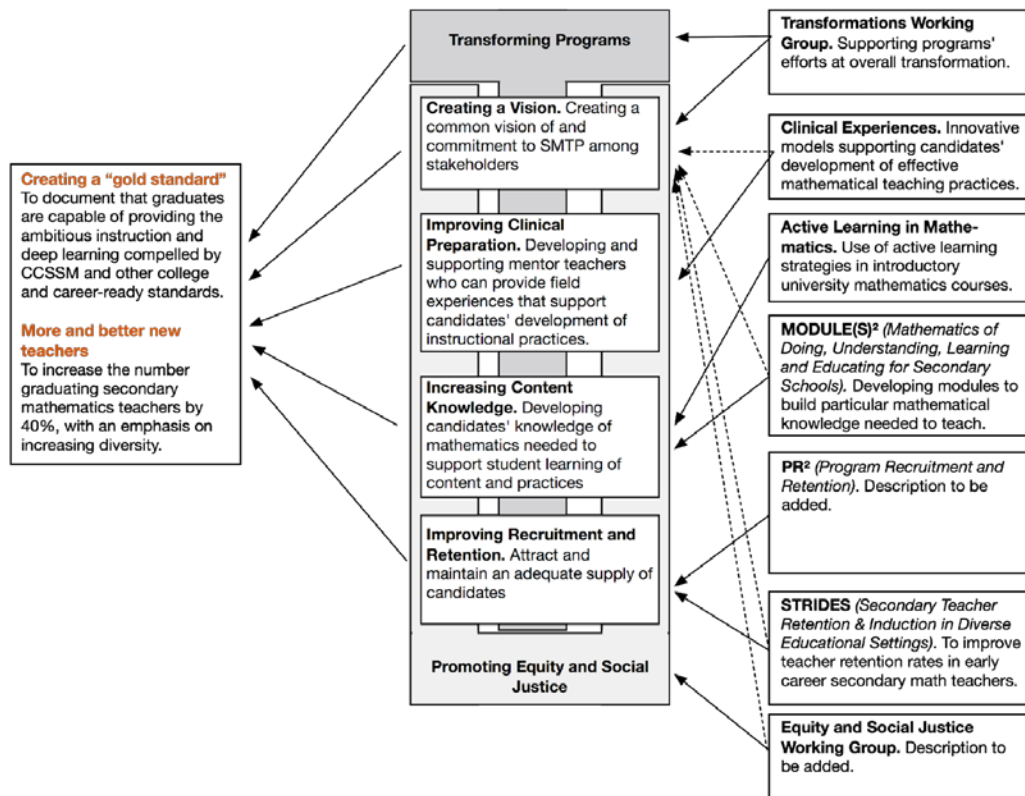


Figure 2. Proposed ESJWG revision to the MTE-Partnership driver diagram.

With the aim identified, and drivers established, the ESJWG was also able to initiate some PDSA research cycles to begin to tackle the challenge prior to the 2018 conference. Two PDSA cycles will be discussed here because of their presence during the conference. One need that emerged from the MTE-Partnership members was to define and develop a shared meaning for some terms commonly used in the equity parlance. Shortly after its inception, the ESJWG began developing definitions and a structure to communicate these in a way that was useful to the broader membership. Currently, we have an initial draft of these definitions and have received feedback from several MTE-Partnership members as well as a group of PSTs (Males & Males, 2018). During the summer of 2018, each small team is refining definitions, to be shared with the MTE-Partnership Research Action Clusters (RACs) in the fall.

A second PDSA cycle emerged from a challenge posed in our aim: How do we know if PSTs' dispositions and use of equitable teaching practices have improved during their program? At present, there do not exist any well-accepted tools to measure the equity disposition or to examine their knowledge/ability to implement equitable pedagogies. However, there are certainly resources to build upon or adapt. For example, the EQUIP tool (Reinholz & Shah, 2018) shows promise to examine equitable discourse patterns in the classroom. A subcommittee of the ESJWG is examining the options to utilize this tool to help measure our aim.

During the conference, the subcommittee held a conference call with Niral Shah, to further understand the potential for our use, and explore details of being able to begin running tests. We learned that the EQUIP tool is a web-based application (app) that has great flexibility for observing video and tagging instances of user-defined observables. In addition to the ability to code a video, the app offers some exceptional opportunities to provide insightful data analysis. The tool seems to have potential for our use for the following reasons:

1. A beta version will be released at the end of Summer 2018, and the developers are interested in partners to pilot the tool with teachers and study how teachers use it to inform their practice.
2. The tool allows for flexibly defining the variables you wish to code, facilitates the data collection, and creates data visualizations to explore.
3. It fits well within the PDSA cycle framework.
4. We could use it as a way to generate evidence across different sites about the dimensions of equity we want to focus on in classroom interactions using shared variables.
5. We could imagine it fitting in the variety of contexts across the MTE-Partnership (undergraduate classrooms, pre-service field experience, student teaching, etc.).

We plan to implement PDSA cycles soon to examine the usefulness of this tool for our measures. Our next important step will be designing the items to code in a video.

Work Completed at the Conference

In addition to this conference call, there were four activities of the conference to discuss: reactions to our poster session, work on the monograph, our two-hour discussion session, and an initial analysis of the data that came from that. First, some context about the manner in which the members of ESJWG engaged in the conference. Because each member was formerly or remains presently an active member of one RAC, most ESJWG members attended their RAC working time throughout the conference. However, a few of us have decided to make the ESJWG our main home, so we worked during the RAC times on the aforementioned four activities. It should be noted that members of the ESJWG who participated in their RACs continued to ensure that equity issues remained a focus for the RAC. Evidence of this appears in the reports of each of the other RACs.

First, a noteworthy activity of the ESJWG was to present an update at the conference of our work during the past year. For us, this was primarily a report of our problem analysis resulting in fishbone and driver diagrams.

We also noted the initial work of the definitions project and a few early PDSA cycles. What was particularly interesting was to reflect on the comments and questions we received, some of which are reported here:

1. Does ESJWG need to become a RAC? Many of the items in the drivers or fishbone diagram are being tackled by the other RACs.
2. Our work seems to emphasize equity, not social justice. Why might that be; what does that mean? Is social justice the action behind or driver for equity?
3. There seems to be overlap in the definitions of equity, diversity, and social justice. There may be value in presenting these as a Venn diagram.
4. Our definitions may need a 30,000-foot view, because as we get close to the ground, local contexts become important in the meanings.
5. Maybe “social justice mathematics” is different from “mathematics for social justice.”
6. Are these two different things: seeing self as mathematician / I do math, versus using math to critique my world?

These responses will be taken up in the coming year.

Some of our working time was dedicated to organizing for completion of the monograph chapter, due at the end of July. As the ESJWG planned for the chapter, it was decided that the primary emphasis would be on digging into the themes that emerged from the work to identify the problem space, i.e., the bones of our fishbone diagram. The author team each tackled a brief review of the literature on these bones, to be completed by the conference time. The chapter’s lead authors examined these contributions and identified an outline for the chapter.

The most significant project during the conference was a two-hour Equity and Social Justice discussion session for MTE-Partnership conference attendees. The agenda was developed the month prior by the ESJWG, with an agreement to focus first on sharing out what Aguirre, Mayfield-Ingram, and Martin (2013) defined as equitable teaching practices (see Appendix). We thought this would provide attendees with new ideas and specific direction for challenging themselves to improve their own teaching of PSTs and/or developing the teaching strategies of PSTs.

Second, we presented the equity and justice problem space related to the preparation of secondary mathematics teachers (see Figure 3) developed in the work of the ESJWG and ask attendees to identify where their RAC was working. The categories, “bones,” of our fishbone diagram included: definitions, policies, disconnections between school partners and higher education, expertise, resources, what does “it” (equity) look like, mathematics is not a space where diverse ways of knowing and learning are valued, PSTs do not identify as agents of change toward a more just society, deficit discourses, courageous conversations, and diversity of people. We felt this not only would help attendees reflect on their work through the broad perspective suggested in the fishbone, but also provide us with some information about the terrain in which RACs were already working. Their feedback would highlight large spaces that needed attention and identify potential work for the ESJWG.

A final project of the ESJWG at the conference was to conduct an initial analysis of the data collected during the second phase of the two-hour discussion session. Specifically, we tabulated all responses from RACs pairing their current work with our fishbone diagram. Each category on the ESJWG fishbone was addressed by at least one RAC. However, numerous subcategories were not marked. A few other observations and responses made in our nascent analysis of the fishbone diagram data are included below:

- The fishbone utilizes deficit language. Several participants had difficulty with deficit language that might have been addressed by a more explicit explanation of the tool.

- Conversations about equity and social justice can make people uncomfortable; it's important to support them in being ok with not being where they anticipate they should be.
- Some RAC members feel that they do not have enough knowledge of equity and/or social justice to include it in their work.
- RACs may be beginning to consider equity and justice issues in their work, and in many cases are ready for support to make it more effective.
- There is uncertainty about what it means to address issues of diversity, equity, and social justice within the RACs.

This initial data collection provides us some starting points for the progression of the working group, especially in our responsibility to serve as liaisons to the RACs.

We concluded the conference considering how this information collected during the discussion session might inform the next steps of the ESJWG. Initial thoughts included:

- ESJWG should examine the responses from the discussion forum and structure future work by identifying work unique to ESJWG and RAC liaison work.
- Utilize the RAC liaison to (a) better understand what each sticky note said, and (b) get more complete responses.
- Send summary of sticky notes to each RAC; collect feedback, refinement, and questions.
- Utilize the liaison role to support RACs with tensions between "equity" and their aims.
- Consider a project focused on educating MTE-Partnership members, per their request.

Reflection on the discussion session and analysis of each RACs reflection on their work provided the ESJWG members opportunity to begin to identify needs of the MTE-Partnership and shape our future work.

Moving Forward

The ESJWG was initially a collection of active RAC members nominated to form this working group. The seventh annual conference marked a time when this by-invitation-only group was ready to welcome new members. Because the ESJWG is not a RAC, we do not need team memberships and could allow individuals into our organizational structures. Since an important element of the ESJWG is to maintain close ties to each of the RACs, we invited new members to participate in one of two ways, as a RAC liaison or an active member. The option to serve as a liaison allowed interested participants to maintain their ties with their RAC while participating in the work of the ESJWG. An updated membership list is provided in Table 1. When a RAC is listed, that person remains an active member of that RAC, and serves as a liaison to the ESJWG. Members listed without a RAC are active members of ESJWG, and our new members are noted with an asterisk.

Table 1

Members of the MTE-Partnership Equity and Social Justice Working Group

Member	Institution	RAC
Keisha Albritton	University of South Florida	
Cynthia Anhalt*	University of Arizona	MODULE(S ²)
Brittney Black*	North Carolina State University	
Cyndi Edgington	North Carolina State University	Clinical
Ryan Seth Jones	Middle Tennessee State University	PR ²
Nancy Kress	University of Colorado	ALM
Brian R. Lawler	Kennesaw State University	

Josh Males	Lincoln Public Schools	
Lorraine Males	University of Nebraska Lincoln	
Charmaine Mangram	University of Hawai'i at Mānoa	Clinical
Cathy Martin*	Denver Public Schools	
Julie McNamara	California State University East Bay	PR ²
Farshid Safi	University of Central Florida	
Wendy Sanchez	Kennesaw State University	
Ruthmae Sears	University of South Florida	Clinical
Jami Stone	Black Hills State University	Clinical
Jeremy F. Strayer*	Middle Tennessee State University	MODULE(S ²)
Marilyn E. Strutchens	Auburn University	Clinical
Fred Uy	California State University Chancellor's Office	
Matt Voigt*	San Diego State University	ALM
Patrice Waller*	California State University Fullerton	Clinical
Charity Watson*	Florida International University	ALM
Travis Weiland*	Appalachian State University	

For the 2018–19 academic year, we plan for the work of the ESJWG to include:

- Monthly meetings of the *active* working group members, to allow for updates on PDSA work including discussion of challenges, and predetermined topics as necessary.
- Some of these monthly meetings will focus on interfacing with the other RACs. All *liaisons* will also be invited to these meetings, roughly once every three months.
- PDSA cycles with priority placed on the definitions and measures work.
- Revision and refinement of the driver diagram towards the end of the year.

We expect to attract a few more members and liaisons during the year. The focus on interfacing with the other RACs marks a significant shift in the work of ESJWG to this point. We look forward to supporting the MTE-Partnership community toward achieving the MTE-Partnership Guiding Principles (2014), both in direct relationship to the community and through a research agenda of our own.

References

- Aguirre, J. M., Mayfield-Ingram, K., & Martin, D. B. (2013). *The impact of identity in K-8 mathematics: Rethinking equity-based practices*. Reston, VA: National Council of Teachers of Mathematics.
- Association of Mathematics Teacher Educators. (2017). *Standards for preparing teachers of mathematics*. Raleigh, NC.
- Males, J., & Males, L. (2018). Examining prospective mathematics teachers' reactions to definitions of diversity, equity, and social justice. In W. M. Smith, B. R. Lawler, J. F. Strayer, & L. Augustyn (Eds.), *Proceedings of the seventh annual Mathematics Teacher Education Partnership conference* (p. 133). Washington, DC: Association of Public and Land-grant Universities.
- Mathematics Teacher Education Partnership. (2014). *Guiding principles for secondary mathematics teacher preparation*. Washington, DC: Association of Public and Land-grant Universities.
- National Council of Teachers of Mathematics. (2018). *Catalyzing change in high school mathematics: Initiating critical conversations*. Reston, VA: Author.
- Reinholz, D., & Shah, N. (2018). Equity analytics: A methodological approach for quantifying participation patterns in mathematics classroom discourse. *Journal for Research in Mathematics Education*, 49(2), 140–177.

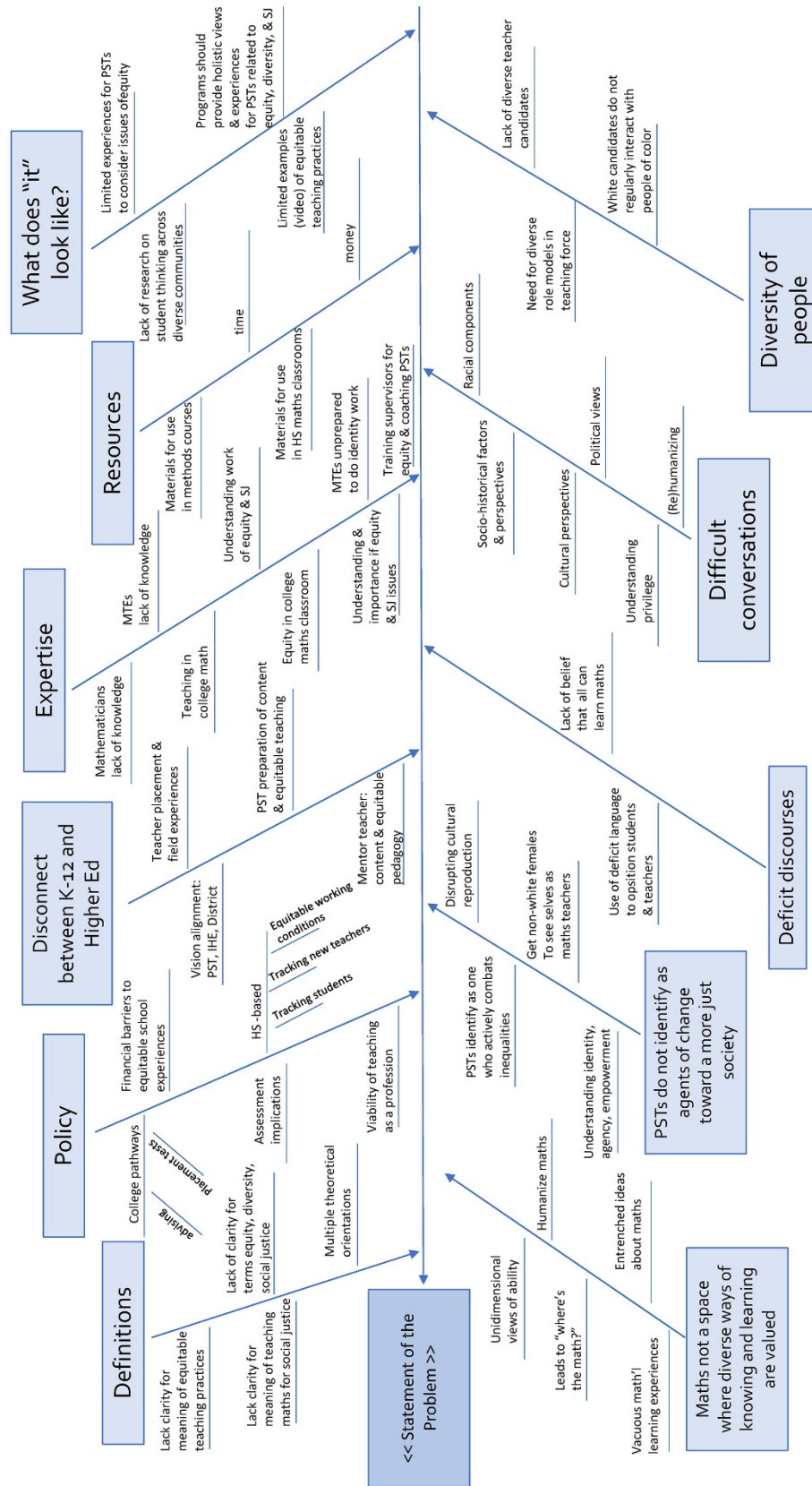


Figure 3. Fishbone diagram, identifying the major challenges toward the ESJWG goal.

APPENDIX

Five Equity-Based Practices in Mathematics Classrooms

Aguirre, Mayfield-Ingram, & Martin (2013)

Go deep with mathematics

- Support students in analyzing, comparing, justifying, and proving their solutions.
- Engage students in frequent debates.
- Present tasks that have high cognitive demand and include multiple solution strategies and representations.

Leverage multiple mathematical competencies

- Structure student collaboration to use varying math knowledge and skills to solve complex problems.
- Present tasks that offer multiple entry points, allowing students with varying skills, knowledge, and levels of confidence to engage with the problem and make valuable contributions.

Affirm mathematics learners' identities

- Promote student persistence and reasoning during problem solving.
- Encourage students to see themselves as confident problem solvers who can make valuable mathematical contributions.
- Assume that mistakes and incorrect answers are sources of learning.
- Explicitly validate students' knowledge and experiences as math learners.
- Recognize mathematical identities as multifaceted, with contributions of various kinds illustrating competence.

Challenge spaces of marginality

- Center student authentic experiences and knowledge as legitimate intellectual spaces for investigation of mathematical ideas.
- Position students as sources of expertise for solving complex mathematical problems and generating math-based questions to probe a specific issue or situation.
- Distribute mathematics authority and present it as interconnected among students, teacher, and text.
- Encourage student-to-student interaction and broad-based participation.
- Draw on multiple resources of knowledge (math, culture, language, family, community).
- Make intentional connections to multiple knowledge resources to support mathematics learning.
- Use previous mathematics knowledge as a bridge to promote new mathematics understanding.
- Tap mathematics knowledge and experiences related to students' culture, community, family, and history as resources.
- Recognize and strengthen multiple language forms, including connections between math language and everyday language.
- Affirm and support multilingualism.