**Boston, M., Goffney, I. & Gutierrez, R. (2018). *Rehumanizing Mathematics for Black, Indigenous, and Latinx Students*. Reston, VA: National Council of Teachers of Mathematics, Inc.**

In chapter 9 "I Can Solve All the Problems": Latinx Students (Re)Write Their Math Stories, begins with a story about a fourth grade student named Antoino who throughout early elementary school, he like many emergent bilingual Latinx students, was seen through a deficit lens, characterized by what he was perceived as not being able to do. He was ascribed an identity of failure, and his language was used to mark him as deficient. He was one of many students who experienced the marginalization of their language (and, subsequently, their selves) in mathematics classrooms. Through rehumanizing the math classroom the author and Antonio begin to rebuild an identity of power and confidence.

Rehumanizing the math classroom begins with helping students feel proud of who they are, proud of their language and their culture. Another point the author makes is how she uses cross-curricular units around social justice themes in which mathematics was key to the exploration of social and political questions. Mathematics mattered because it was used to solve real-world problems, many of these problems faced by the students in the classroom. Lastly, it is important that all students understand that they are mathematically capable and that it is important that teachers and students work in collaborations to learn from each other.

**Bronson, P. (2007, February 9). *How Not to Talk to Your Children*. New York Magazine. Retrieved October 5, 2020, from https://nymag.com/news/features/27840/**

The labels we give children, the language we use when praising their intelligence versus praising their effort can have lasting effects that may be the cause of students underperforming academically. The article highlights the research done by psychologist Carol Dweck and her team at Columbia University. Dweck and her team did a series of experiments on 400 fifth graders where they gave students a series of puzzles and upon completion, researchers gave students one line of praise. Some students received praise for their intelligence while others received praise for their effort. Ninety percent of those praised for their effort, chose to continue on with the experiment with a harder set of puzzles while those praised for their intelligence, a majority chose to continue on with an easier set of puzzles. When we praise intelligence, the message we are sending is look smart and don't make mistakes. When you praise effort, this gives students a variable that they can control. Students come to see themselves as in control of their success. When one emphasizes natural intelligence, it takes the control away from the child and provides no good recipe for responding to failure. We as parents and teachers should keep our praise specific and sincere so a child knows exactly what they did to earn such praise. In the opinion of cognitive scientist Daniel T. Willingham, a teacher who praises a child may be unwittingly sending the message that the student reached the limit of his innate ability, while a teacher who criticizes a pupil conveys the message that he can improve his performance even further.

**Chavez R., Gargroetzi, E., Langer-Osuna J., Munson J., & Williams I., (2020). *So what are we working on?: How student authority relations shift during collaborative mathematics activity*. Educational Studies in Mathematics. 104:333–349, https://doi.org/10.1007/s10649-020-09962-3**

The authors of this study design and explore peer authority relations in a mathematics classroom/lesson. They look at the shift in authority, typically held by the teacher, especially in mathematics, to shifting the authority to the students and asks how students come to establish and maintain shared authority within a lesson. In this three-week study with 9-10 year olds, the teacher intentionally shares authority with her students by inviting them to co-direct the classroom's mathematical work. This is done through partnerships and small groups with the expectation of students to share authority with one another. The study begins with "productive partnerships" in which students make choices about who to partner with, where to work and which tools to use allowing for student agency. Once in partnerships, researchers looked at how students chose to manage, distribute and negotiate authority during collaborative work and examined the shifts in the distribution of social and intellectual authority categorized as shared (which includes voiced negotiations of roles, and distribution of management tasks), concentrated (this is where one student successfully issues directives in the group), contested (multiple bids to manage participation are rejected and there is no settled authority), and disbanded (when a collaboration disbands into independent or off-task activity). This study particularly looked at Shared Social Authority as a means of successful student collaborations in a mathematics classroom.

**Denton P. (2007). *The Power of Our Words: Teacher Language That Helps Children Learn.* Northeast Foundation for Children, Inc.**

The Power of Our Words is a book I often refer to. In chapter three, Open-Ended Questions: Stretching Children's Academic and Social Learning, Denton talks about ways teachers can use language to stretch children's curiosity, reasoning ability, creativity and independence. Through asking open ended questions, questions that have no right or wrong answer, students can learn more broadly and deeply. Open-ended questions allow students to draw on their own thoughts

and knowledge, skills, experiences and feelings. They support a child's natural way of thinking and help create a sense of community amongst classmates.

In this chapter, Denton gives clear and specific examples of open ended questions and the learning cycle. Questions that prompt and encourage students to generate ideas and goals, reflect upon their experiences and actively explore, experiment and problem solve. She also explores the power of allowing for wait time, pausing before taking students' responses, especially for those students that take longer to process and formulate an answer.

**Hammond, Z. (2014).** ***Culturally Responsive Teaching and the Brain: Promoting Authentic Engagement and Rigor Among Culturally and Linguistically Diverse Students.*** **Corwin Press**

The chapter I focused on for this lesson study, Climbing Out of the Gap: Supporting Dependent Learners to Become Independent Thinkers, describes the problem of dependent learners being unprepared to do higher order thinking and creative problem solving. It points out the importance of productive struggle and how it actually grows students' brainpower. Typically culturally and linguistically diverse students have limited opportunities to develop habits of mind and cognitive capacities resulting in dependent learners with stunted cognitive growth.

Hammond states that it is more than a matter of grit or mindset, teachers need to help students accelerate their own learning by teaching students how to learn new content and improve their weak skills on their own. Hammond states that the key to closing the achievement gap is the practice of Culturally Responsive Teaching and in this chapter she describes the four practice areas of CRT through a ready-for rigor framework. The four practice areas are Awareness, Learning Partnerships, Information Processing and Community Building and although they are four separate practices, they work interdependently.

**Hilden, K., Jones, J., Mistele, J. (2016).** ***Math and Reading Connections: Analyzing the Comprehension Strategies Needed to Solve Third Grade Math Problems*****, Vol. 38, pp. 29-40. Education Source.**

In the article Math and Reading Connections: Analyzing the Comprehension Strategies Needed to Solve Third Grade Math Problems authors Jean Mistele, Kathrerine Hilden and Jennifer Jones (2015/2016) look at the link between students' ability to read and comprehend word problems to their ability to solve it. The study asks, "Have you ever thought that your student's ability to solve math problems could be somehow connected to their comprehension abilities?" Solving math word problems has a direct correlation to a students ability to read and comprehend the

text and graphics to those story problems. The study looks at 8 specific comprehension strategies that are linked to particular mathematics concept strands for 3rd grade in the state of Virginia. Those comprehension strategies include Author and Me (problems that require the reader to transform the data in the problem to come up with a new solution), Clarifying (includes going back and checking one's work when many details need to be managed in a problem), Cognitive Flexibility ( problems that require students to think about information in two ways simultaneously), Compare and Contrast (problems that require students to compare and contrast pieces of information, Fluency (the automatic skills that require little conscience processing), Graphics (interpreting a graphic), Prior Knowledge (math problems that require students to recall symbols, vocabulary or reading instruments), and Think and Search (requires the student to read across information in a problem or graphic but does not require applying additional operations.) Through this study it is also clear that multiple strategies are necessary in solving mathematics problems and that we should shift the language from 'reading strategies' to 'comprehension strategies' as these strategies should be used by educators across disciplines.