

Equity in the Teaching and Learning of Mathematics

UNC System Learning and Technology Symposium

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Purpose of Today

1. Address systemic barriers ethnically diverse students often face that lead to educational disadvantages
2. Examine Gutiérrez's Dimensions of Learning Equity
3. Provide participants with literature that discusses five equity-drive pedagogical models

“Many who study education argue that far too often for urban students, school is the place that exacerbates students’ problems. *Instead of helping students, school often hurts them.*”

[13]

Defining Equity



Equity Defined

“Equity means fairness, not sameness. So when we look for evidence that we are achieving equity, we should not expect to find that everyone ends up in the same place.” [5]

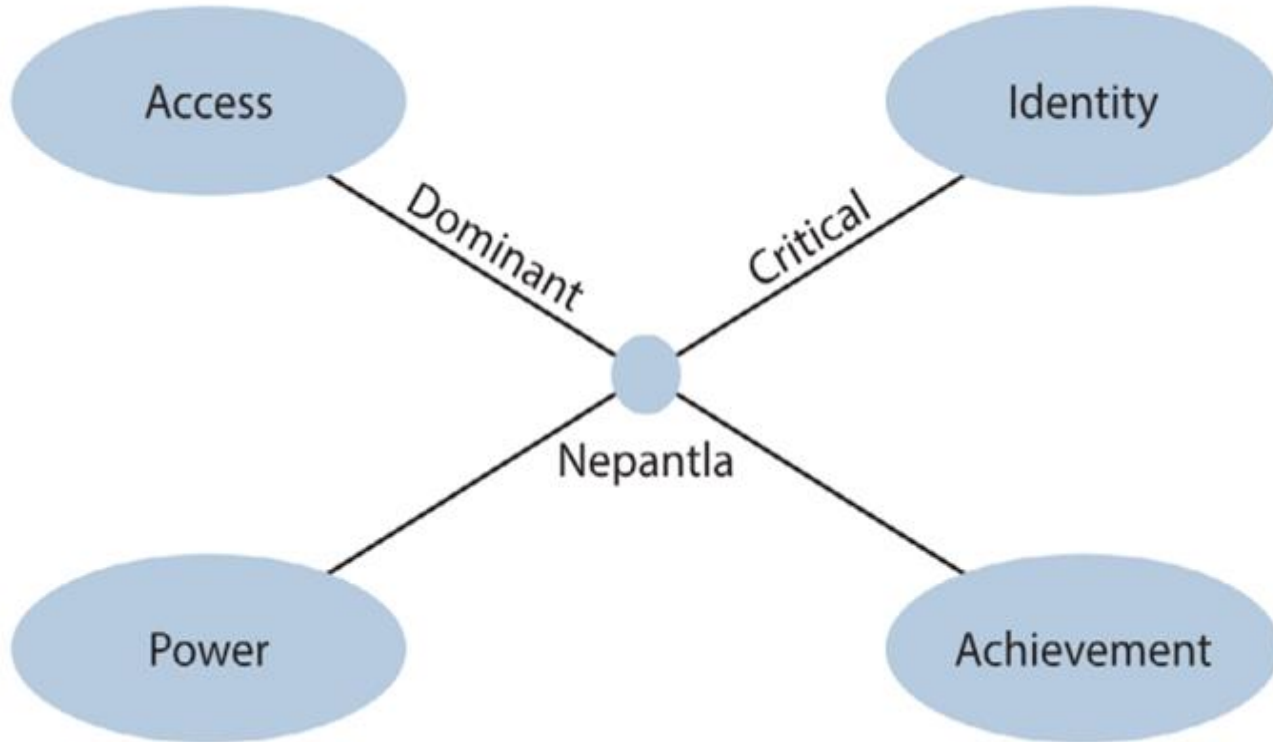
“Equitable distribution of material and human resources, intellectually challenging curriculum, educational experiences that build on students’ cultures, languages, home experiences, and identities; and pedagogies that prepare students to engage in critical thought and democratic society.” [14]

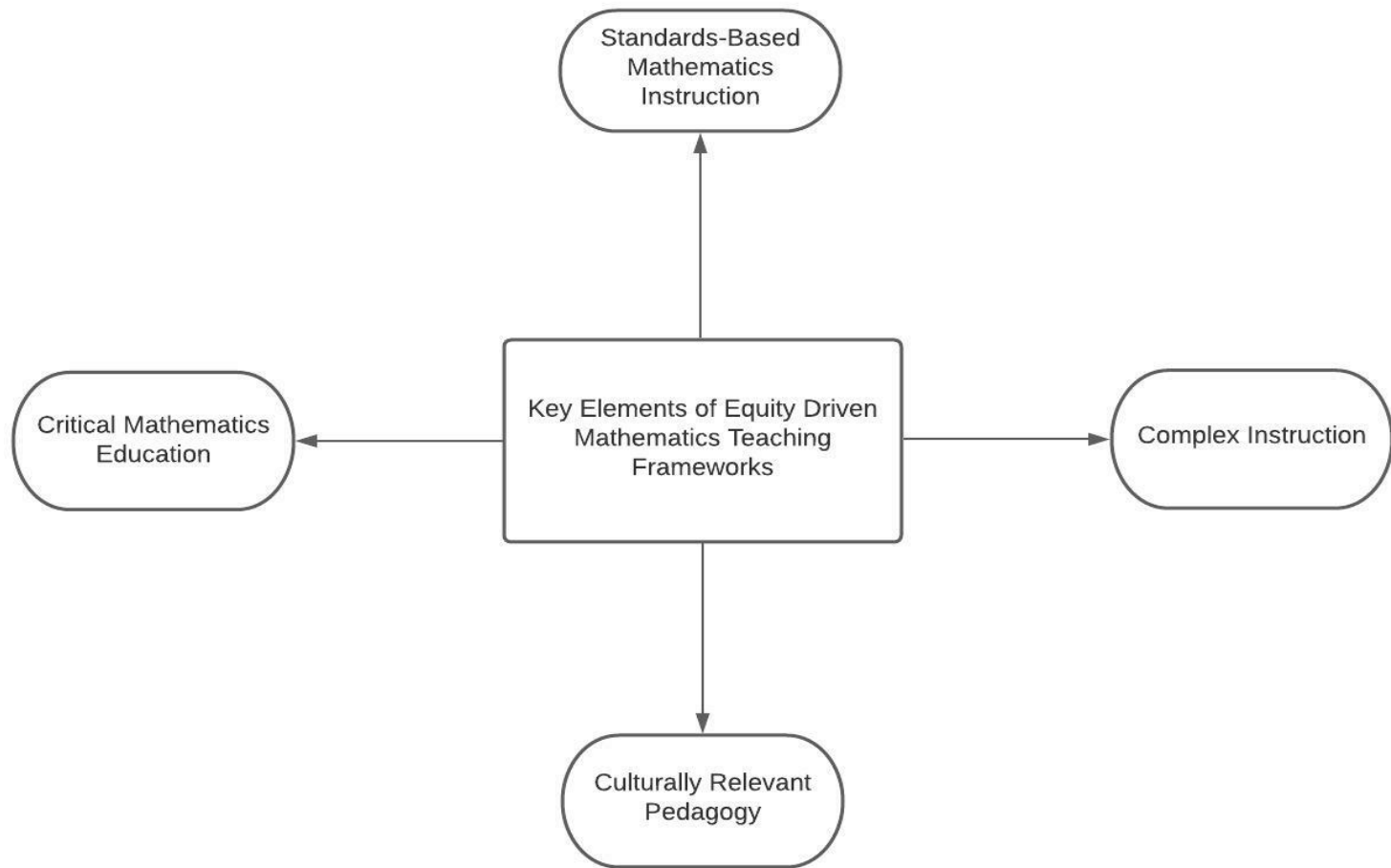
Common types of equity found in educational literature: social equity, racial equity, ethnic equity, gender equity

Barriers of Student Success

- Racial mismatch between instructor and students [10]
- Mismatch of student learning styles and instructor pedagogical styles [3, 20, 21]
- Classroom communication methods [3]
- Whiteness operates in teacher preparation programs [7]
- “White male math myth” [19]
- Deficit-oriented ideological paradigms [9]
- Discrimination [5]
- Access to quality teachers, curricula, resources, etc. [6]

Dimensions of Learning Equity [5]





Dominant Equity-Directed Pedagogical Models

Key Points: Standards-Based Instruction

- Model conceptualizes learning as engagement with mathematics that results in conceptual understanding
- Promotes mathematical understanding as part of social, discursive processes of conjecture, justification, and reasoning
- Characterized by high expectations for students and cognitively-demanding mathematical tasks
- Concern: Teachers' views about students play a central role in their mathematical task selection

Key Points: Complex Instruction (CI)

- Model views the classroom is a social system consisting of authority, roles and responsibilities, norms of behaviors, equal/unequal status, power, and influence
- All students have access to “groupworthy” tasks
- Creates a multidimensional classroom, raising expectations for contributions from all students
- Concern: Inequities of the larger society are replicated in small-group work

Critical Equity-Directed Pedagogical Models

Key Points: Culturally Relevant Pedagogy (CRP)

- Model that seeks to address academic achievement while also working to affirm cultural identity within the classroom, including efforts that seek to minimize the cultural gap between home and school
- CRP rests on three propositions:
 - students must experience academic success;
 - students must develop and/or maintain cultural competence;
 - students must develop a critical consciousness

Key Points: Critical Mathematics Education

- Model promotes a problem-posing pedagogy, designed around ideas and questions that emerge in a student's relationship with the world
- Encourages teachers and students to develop an understanding of the interconnecting relationship among ideology, power, and culture while using math as the analytical tool
- Students understand the creation of social oppression and feel empowered to seek equity
- Concern: Teacher-student relationship reinforces inequitable power dynamics



Equity-driven mathematics teaching frameworks are a nested relationship.

Key Points: Teaching Mathematics for Social Justice (TMfSJ)

- Creates opportunities to situate math in contexts that allow students to use their cultural, social, and contextual resources
- Connects mathematics with students' cultural and community histories
- Empowers students to confront and solve real-world challenges they face
- Helps students learn to use mathematics as a tool for social change
- Concern: Teachers' personal and political beliefs influence on discussions of social justice

Table Talk: Implementation

“Everybody keeps telling us about multicultural pedagogy, but nobody is telling us how to do it!”

Ladson-Billings’ response:

“Even if we could tell you how to do it, I would not want us to tell you how to do it.”

[What message do you believe Ladson-Billings is trying to portray through her response?](#)



Explanation of Ladson-Billings' Response

Use the QR code to read an explanation of Ladson-Billings' response to "how to do culturally relevant pedagogy" from Milner (2011).

[Read paragraphs 2-3 on pages 67-68.](#)



What can we do?

To help students acquire the skills to be successful in math

- Assist students in becoming responsible by creating an environment that demonstrates cultural caring and cross-cultural communication skills within classroom instruction that supports student learning.
- Provide accommodations that do not give one student group an advantage over another but considers culture as a governing principle of how individuals learn new information.

Table Talk: Equitable Practices in Your Class

1. What does the dominant or critical equity-directed pedagogical approach look like in your classroom?
1. What instructional practices do you plan to implement in your classroom that correspond to dominant or critical equity-directed pedagogical approaches?





QUESTIONS
COMMENTS
CONCERNS



Thank you for a great
experience today!



[Check out some of the
literature from today's
session here.](#)



KEEP IN TOUCH
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