Promise and Pitfalls of Crafting Coherence Around a District-Wide Vision for Equity-Centered Mathematics Instruction

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Opening Reflection

What does equitable mathematics instruction mean to you?

Study Context

Part of a larger foundation-funded study of curricular and instructional reform led by Mathematica

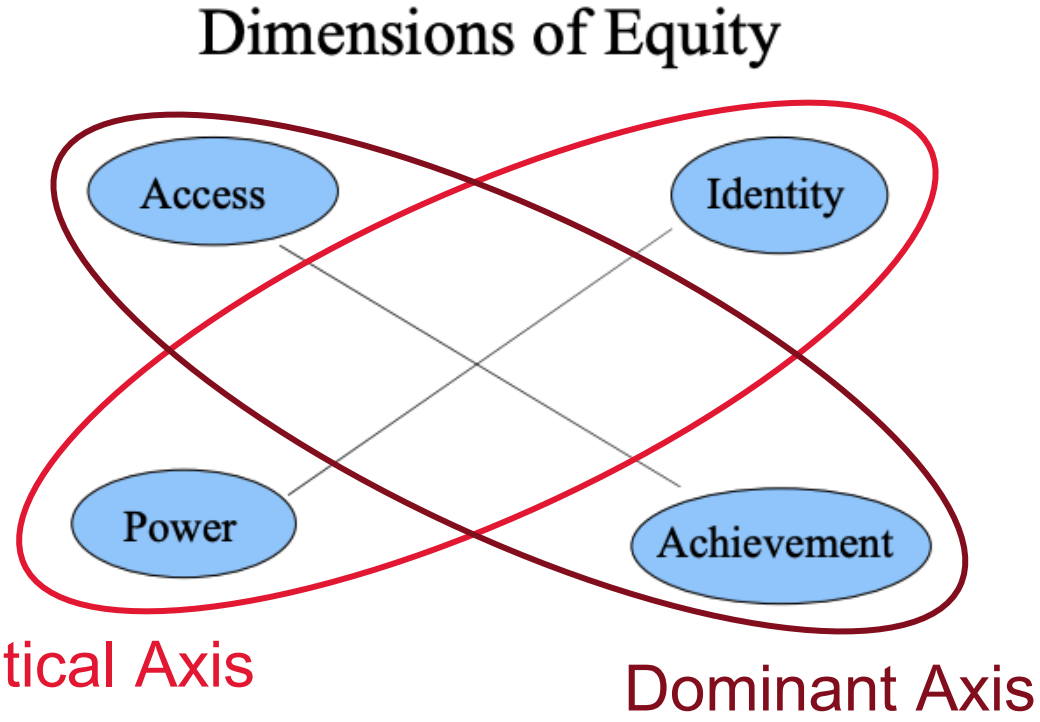
- Middle school mathematics
- 4 large, urban districts

Purpose and Questions

We focus on district **visions**.

1. **What are** district visions for equitable mathematics, and are they **shared** across leaders?
2. How are those visions **supported**?
3. What **barriers** do districts face in enacting them?

Gutiérrez's axes of equitable mathematics

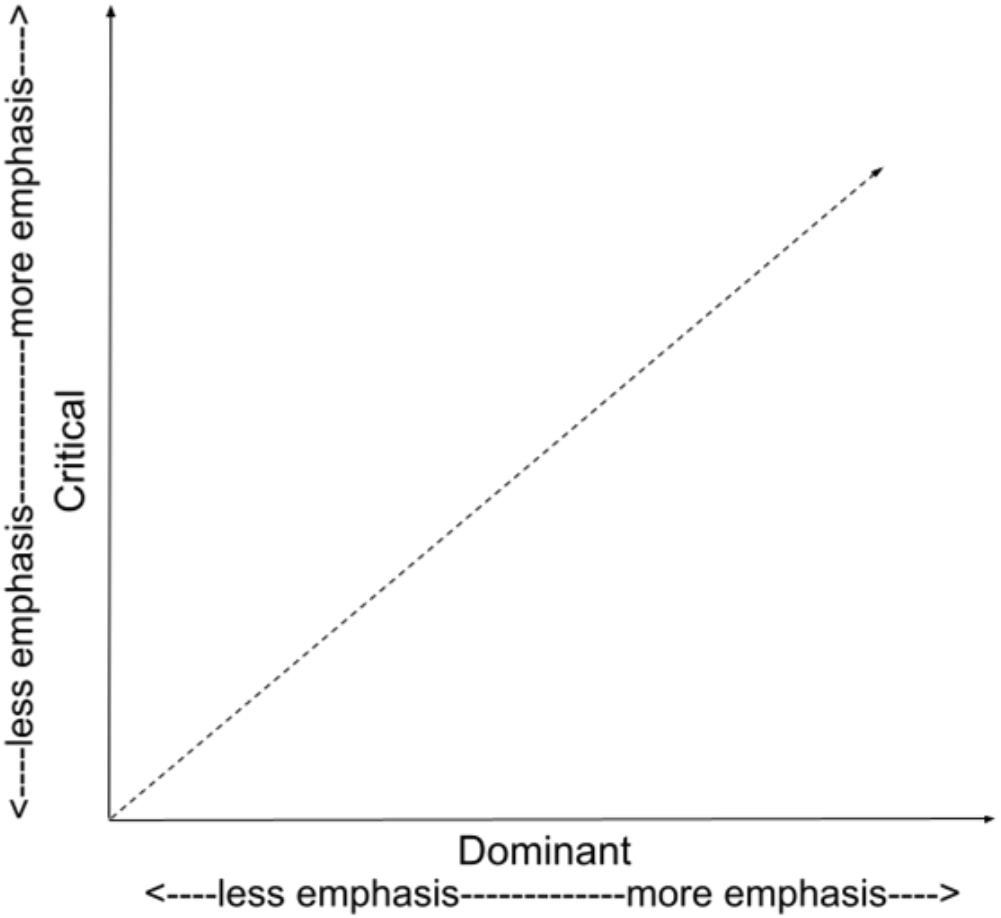


Gutiérrez (2009, 2011)

Activity

Place a **BLUE** sticky note on the visual to represent where your *own instruction* falls on the spectrum of these axes.

Place a **GREEN** sticky note ro represent where your *school or district* falls.



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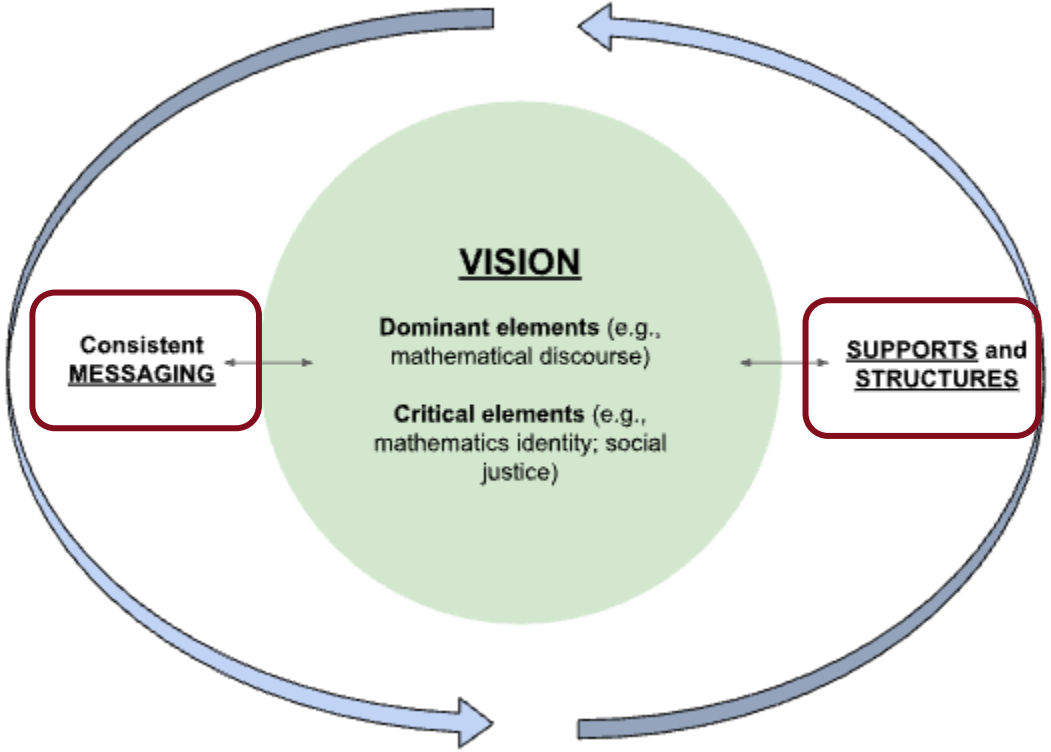
Gutiérrez (2009, 2011)

Conceptual Framework



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Developed from Gutiérrez (2009, 2011) axes of equitable mathematics

Methods & Analysis

Multiple case study design (Yin, 2018) of four districts

- 35 semi-structured interviews of district and school administrators
- Publicly posted vision documents
- In one district: observations 19 professional learning sessions

The Four Cases

District	Geographic Location	Total Schools in District	Total Schools in Sample	Enrollment (K-12)	Mathematics Proficiency (SY 2018–19)	District Student Demographics
City Center	Midwest	~100	8	~30,000	Grade 6: 24% Grade 7: 24% Grade 8: 28%	63.8% Black/African American; 17.4% Hispanic/Latinx; 14.4% White; 1.2% Asian; 3.3% Other Race; 10.2% EL**
Localville	West	>100	6	>100,000	Grade 6: 32% Grade 7: 30% Grade 8: 29%	7.3% Black/African American; 74% Hispanic/Latinx; 10% White; 5.67% Asian; 3% Other Race; 21.3% EL; 76% FRPL
Nicetown	East	>100	7	>100,000	Grade 6: 34% Grade 7: 31% Grade 8: 30%	24.8% Black/African American; 39.8% Hispanic/Latinx; 16.5% White; 13.8% Asian; 5% Other Race; 13.3% EL; 71.9% Students Living in Poverty
Sainchester	West	>100	14	~90,000	Grade 6: 46% Grade 7: 46% Grade 8: 41%	7.4% Black/African American; 44.5% Hispanic/Latinx; 23.6% White; 14.4% Asian; 10% Other Race; 19% EL; 55.3% FRPL

Findings

1. District visions tended to focus on dominant rather than critical dimensions of equity.
2. Even when critical dimensions were a part of the vision, they received substantially less attention than dominant dimensions in supports like PL.
3. Districts faced common barriers to supporting a vision—especially, leadership turnover and competing demands.

Finding 1: District visions tended to focus on dominant rather than critical dimensions of equity.

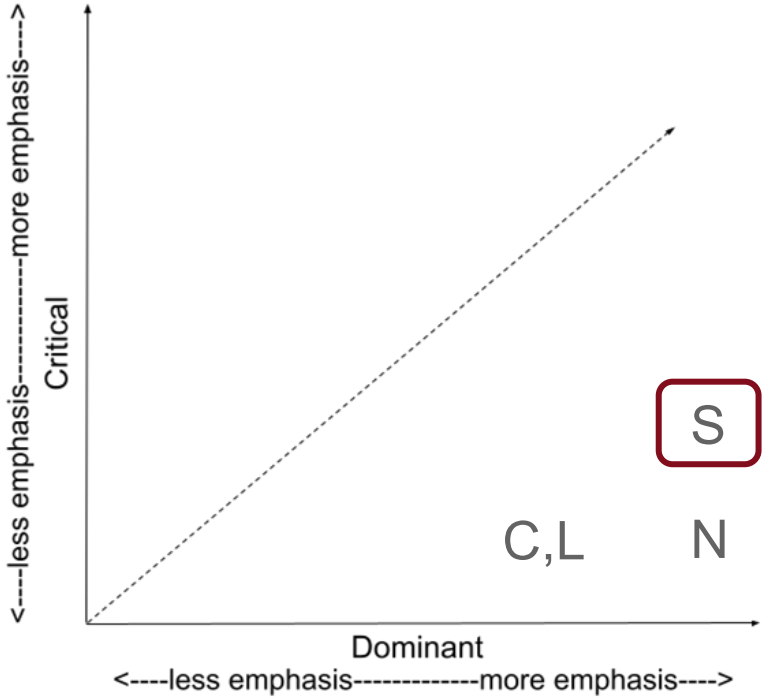
Axis	Criterion	City Center	Localville	Nicetown	Saintchester
Dominant	Conceptual mathematics and high cognitive demand				
	Real-world application				
	Mathematical problem solving, sensemaking, and reasoning				
	Mathematical discourse				
	Multilingual learner support and scaffolding [dominant & critical]				
Critical	Mathematics Identity				
	Engaging student funds of knowledge				
	Power in the classroom				
	Empowerment for social justice				

In only one district did district and school leaders share a common vision around dominant and critical elements.

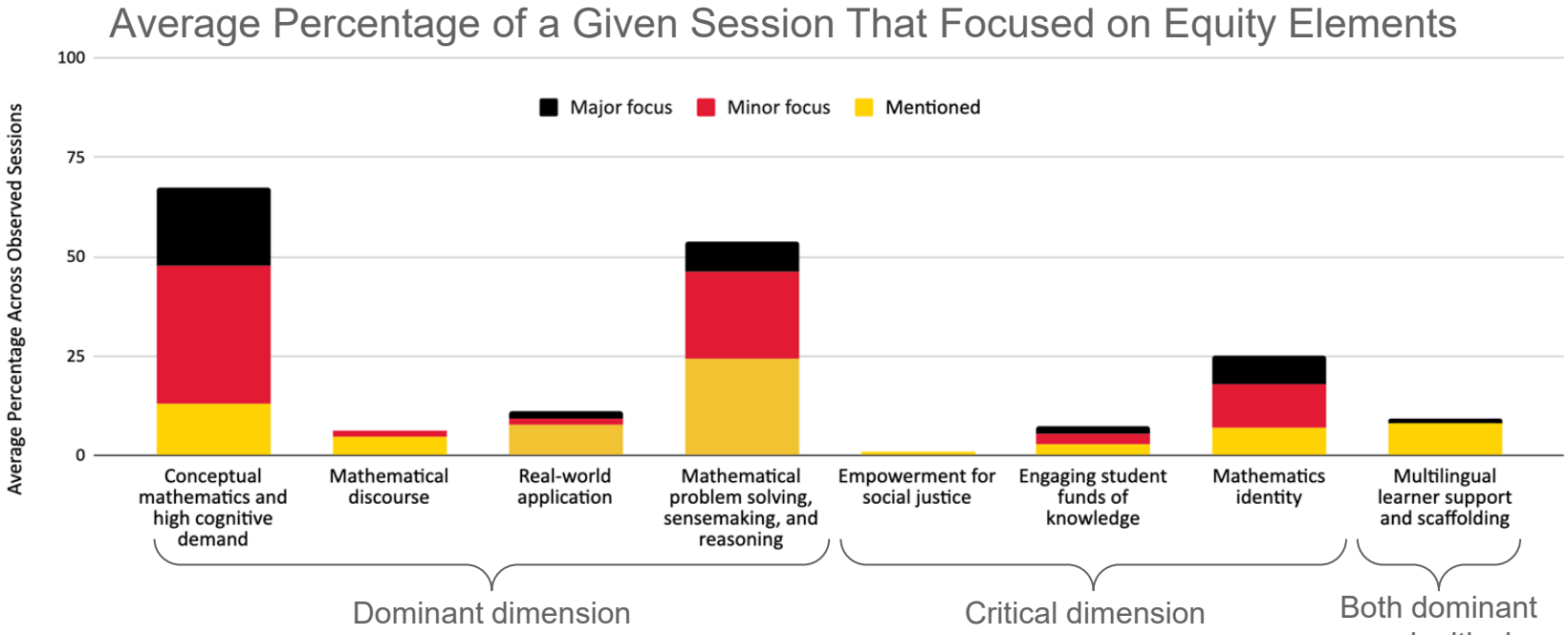
Shared vision in this district was supported by consistent messaging, especially from district leadership.

Finding 2: Even when critical dimensions were a part of the vision, they received substantially less attention than dominant dimensions in supports like PL.

Analysis of supports and structures for operationalizing vision



Finding 2: Even when critical dimensions were a part of the vision, they received substantially less attention than dominant dimensions in supports like PL.



Finding 3: Districts faced common barriers to supporting a vision—especially, leadership turnover and competing demands.

“Every time we have a new leader come in, everything is revamped.”

- Localville school leader

“I haven't had the administrative support that I need to really focus on [cultural responsiveness], to be honest with you. I do know the importance of it, but we haven't gotten there yet.”

- City Center school leader

Final Reflection

Are our findings consistent with your experiences?

What does it look like to support the critical dimensions of equity?

Takeaways and Implications

The current landscape of mathematics prioritizes dominant dimensions of access and achievement, making it harder to maintain a focus on critical dimensions of identity and power.

Truly transforming instructional systems requires meaningful integration of both dominant and critical dimensions into instructional visions and practices.

School leaders need specific mechanisms to support making sense of and enacting critical dimensions of equity.

Thank you!

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Appendix

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Finding 1: District visions attended to dominant elements of equitable mathematics far more than they did critical elements.

City Center

District Vision:
“rigorous curriculum fostering the development of problem solvers and critical thinkers”

School Leaders:
Students should be “grappling with [a task] and trying to figure out how they would approach this new problem that they have never learned about.”

“We have to expose them to the grade level materials, but somehow we still have to close those gaps as well so the differentiated groups is one way that we can get that done.”

Saintchester

District Vision:
“engage students in rigorous and relevant mathematics to solve problems associated with personal, civic, and professional contexts”

School Leaders:
“It's about connecting how math is involved in life and how [math is] not this big scary thing, but a thing that we use all the time and here's how.”

“Students are working together. They're communicating, they're solving those math problems together.”

Finding: In only one district did district and school leaders share a common vision, which was supported by consistent messaging (especially from a district champion).

"The representative at the district level who is in charge of the math work, she's got this contagious happiness about math. Every opportunity she gets, she reminds us of what the district's vision is."

- Saintchester school leader

City Center Instructional Visions

- District centered around dominant dimensions
  - Academic Rigor and mathematical problem solving
  - Peer collaboration
  - Emphasis on standards and achievement
  - Limited specificity
    - 3 sentences
- **School leader visions: aligned with dominant dimensions but split**
  - Ambitious mathematics and “productive struggle”
  - Standards and achievement

Localville Instructional Visions

- Some focus at district on dominant and critical
  - Primary focus: dominant
    - Conceptual understanding and mathematical rigor
      - “Standards-based assignments”
  - Secondary focus: critical
    - Validate students’ lived experiences
    - Students “see themselves as mathematicians”
- **School leader visions reflected dominant but not critical dimensions**

Nice Town Instructional Visions

- Integration of dominant and critical dimensions into district vision
  - Collaboration, discourse, and student voice
  - Cognitive demand and high expectations
  - “Leveraging student cultural and linguistic competencies in the mathematics classroom”
  - “Address issues of power and privilege in mathematics”
- **Inconsistent school leader visions with minimal attention to critical dimensions**
  - References to district priorities, but with less criticality
    - Want students to know, “[know] that their elders were all mathematicians and scientists”

Saintchester Instructional Visions

- Integration of dominant and critical dimensions into district vision, with narrow focus
  - Mathematical identities, experience joy and belonging in mathematics
  - Real-world problem solving
  - Communicating mathematical reasoning and student voice
- **School leader visions reflected dominant and critical dimensions**
  - “I'm looking for students to develop a love for math and then really see themselves as mathematicians”
  - Two interpretations of shifting power to elevate student voice
    - Disrupt the “dominant culture of schooling”
    - Collaboration as a way to increase achievement

RQ1: Districts attended to dominant elements of equitable mathematics far more than they did critical elements and in only one district did district and school leaders share a common vision

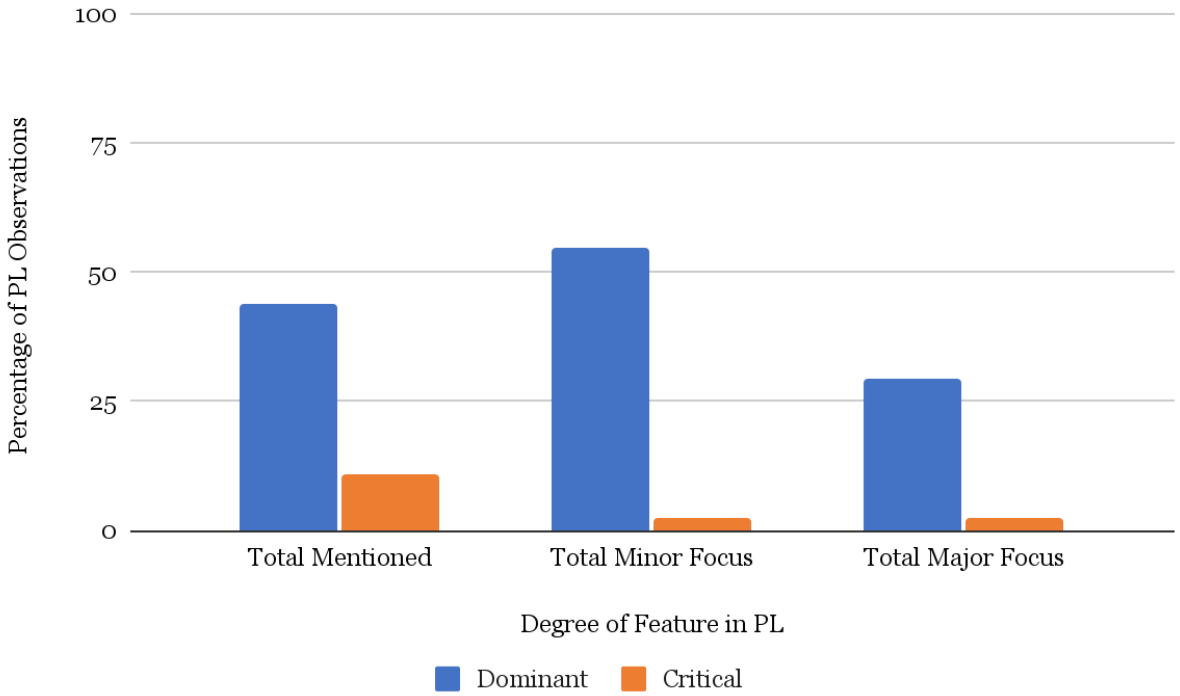
District	Substance of district vision	Nature of alignment between school and district leaders	School leader mathematics instructional visions
Center City	Centered around dominant dimensions	Partial alignment	Half focused on ambitious math, half focused on grade-level rigor and achievement
Localville	Some focus on dominant and critical dimensions	Limited alignment	Varied, but among dominant rather than critical dimensions
Nice Town	Rich integration of dominant and critical dimensions	Limited alignment	Varied, but among dominant rather than critical dimensions
Saintchester	Rich integration of dominant and critical dimensions	Well-aligned	Similar themes of both dominant and critical dimensions, but dominant still more common

RQ2: Shared vision was supported by consistent messaging, but supports tended to focus on dominant rather than critical dimensions

- City Center
  - Repeated messaging from the district, but emphasized different foci
- Localville and Nice Town
  - Fragmented communication from the district
- Saintchester
  - Repeated communication from district
  - Influence of district-level mathematics lead
    - “She's not just talking about it. Her actions are matching her words…She'll make sure that if you need support, she's there for you. She won't back down from hard conversations. And she's got a lot of data and resources that will help support our students.”
  - Holistic assessment aligned with vision

RQ2: Shared vision was supported by consistent messaging, but supports tended to focus on dominant rather than critical dimensions

- Mechanisms for supporting vision, such as PL, showed lack of emphasis on critical dimensions
  - Critical initiatives that did exist, were not math specific



RQ3: Common barriers exist to coherence around district equity-focused visions, especially the critical elements of those visions

- Competing demands at every level
  - Leaders believe in importance of critical dimensions, but perceive them as deprioritized
    - Commitments not paired with the “action, funding, or any commitments or any accountability across our system” to enact true change
- Instability and leadership turnover
  - Superintendent changes risk frequent shifts in priorities and organization
    - “Every time we have a new leader come in, everything is revamped.”
  - Relying on individual leaders rather than institutionalizing change