

A close-up, slightly blurred photograph of a pencil and a ruler on a piece of graph paper. The pencil is in the foreground, pointing towards the right. The ruler is positioned diagonally across the frame. The background shows the grid lines of the graph paper and some faint, illegible markings.

# YOU GET WHAT YOU PLAN OR WORSE:

USING DIALOGIC INQUIRY TO FOCUS ON  
STUDENT TALK IN MATHEMATICS

Linda Griffin and Kasi Allen, Lewis & Clark College  
TOTOM Annual Conference, Sept. 11, 2015

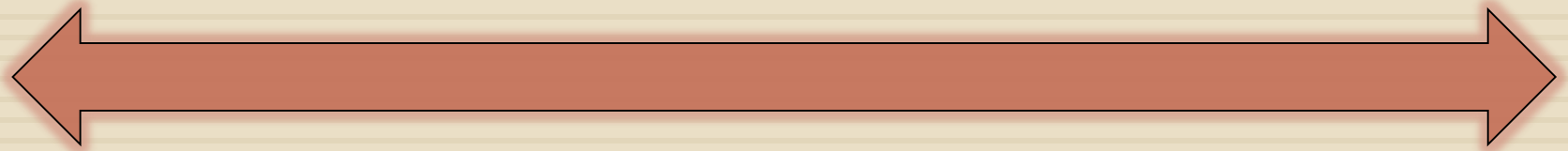
# Session Goals

- Share a tool for measuring dialogic indicators in mathematics instruction
- Discuss preliminary research findings about preservice teachers' use of dialogic indicators in mathematics instruction
- Brainstorm additional uses for the tool and further areas for research



# Definitions and Background

# Monologic-Dialogic Continuum



## MONOLOGIC

The teacher has exclusive control over discussion. Teacher introduces topics, nominates students, asks questions, and evaluates answers.

## DIALOGIC

Students participate in the collaborative construction of knowledge. They share control over the key aspects of classroom discourse.

# Dialogic Teaching Principles

Teaching is dialogic if interactions are...

- **Collective**: Students address learning tasks together.
- **Reciprocal**: Students listen to each other, share ideas, and consider alternative viewpoints.
- **Supportive**: Students express their ideas freely without fear of embarrassment over “wrong” answers, and they help each other to reach common understandings.
- **Cumulative**: Students build on answers and other oral contributions and chain them into coherent lines of thinking and understanding.
- **Purposeful**: Classroom talk, though open and dialogic, is also planned and structured with specific learning goals in mind.

# Robin Alexander (2010)

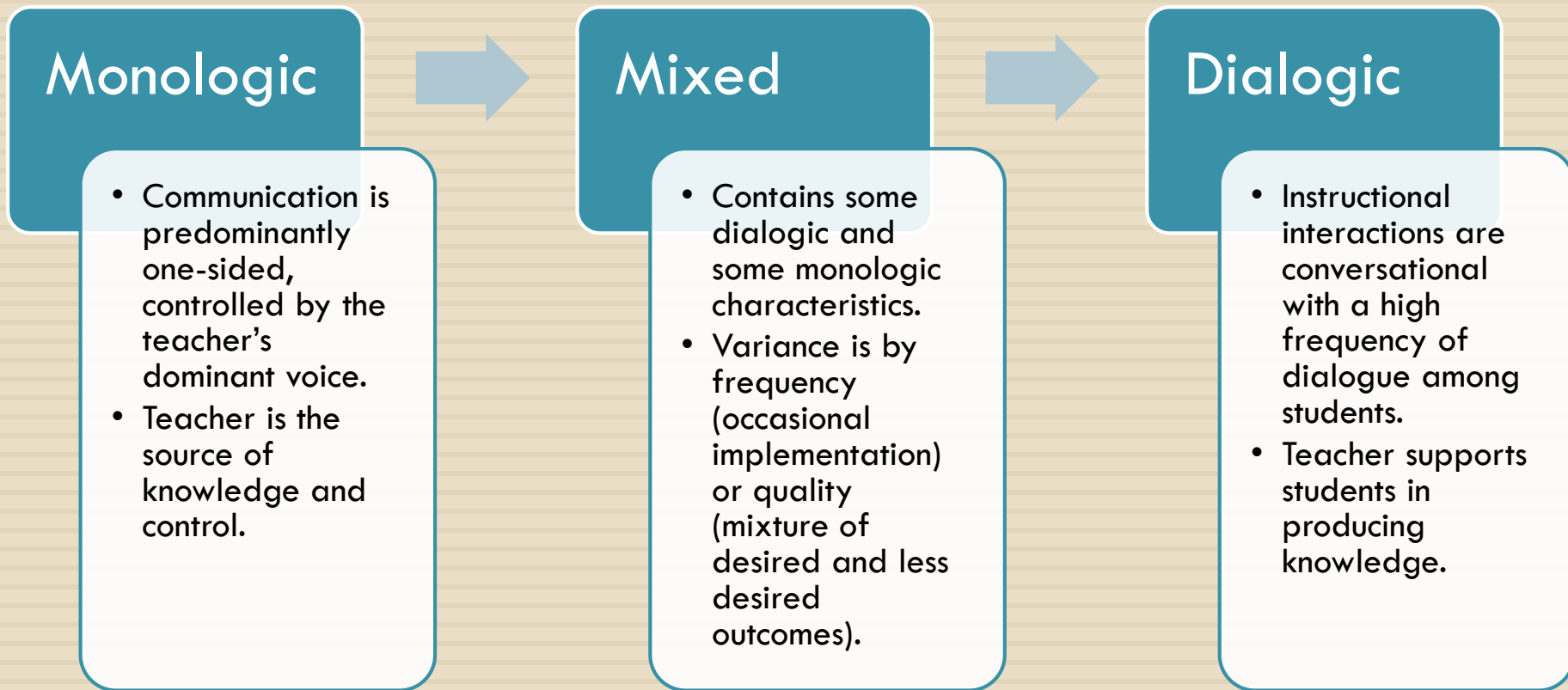
- “The use of inquiry dialogue assumes that students are active participants in their own learning process, who learn by negotiating new understandings in interaction-rich communities of practice...
- ...Yet, despite the recognized pedagogical value of a genuine dialogue, teachers rarely use it in their classrooms.”

# Alina Reznitskaya (2015)

- “One reason for the persistence of monologic talk in a classroom is the lack of instructional resources that can support evaluation and modification of teacher practices.”

# Measuring Dialogic Inquiry

## □ Levels of Dialogic Inquiry





# The Dialogic Inquiry Tool (DIT)

## Instruments

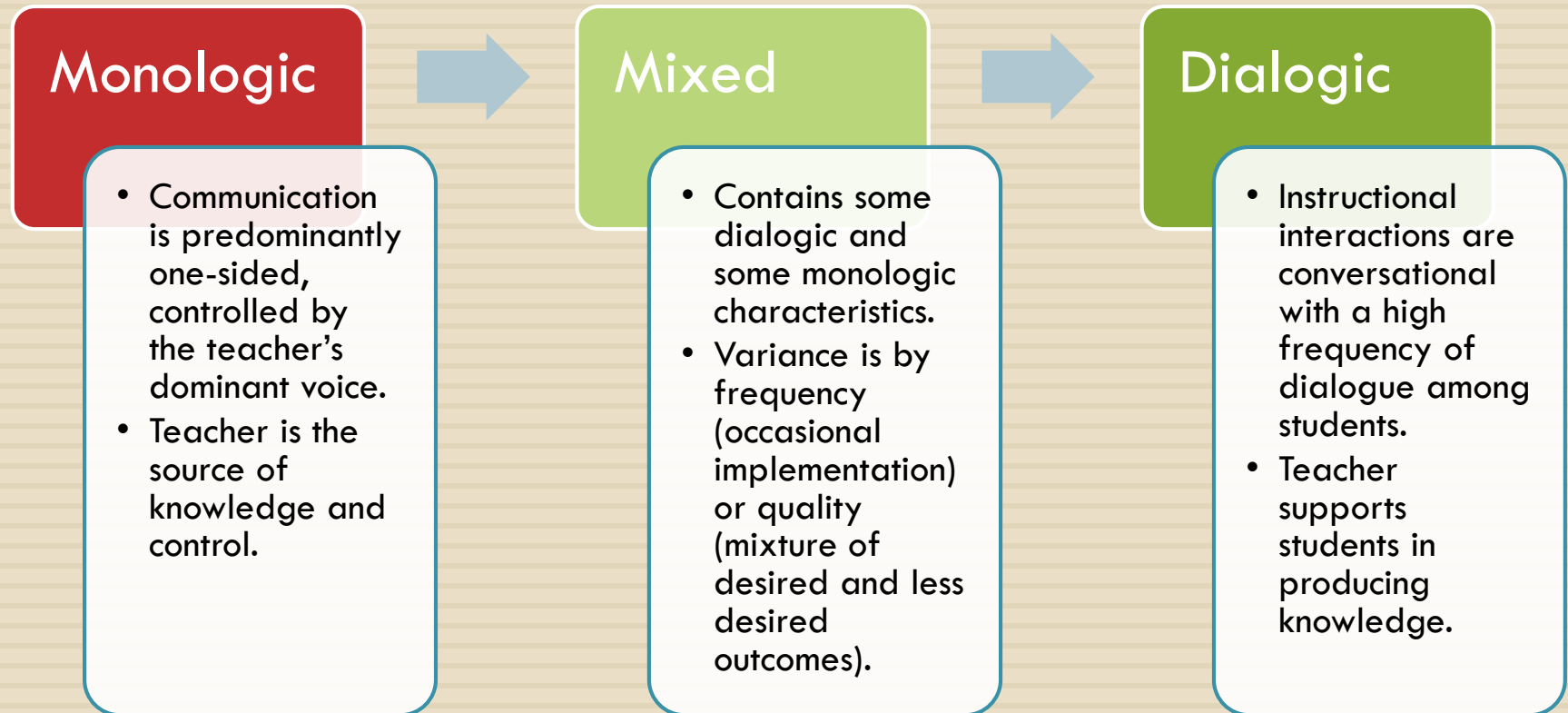
### DIT rubric used to evaluate written lesson plans (i.e. planned instruction)

Indicator	Monologic teaching	Mixed Monologic/Dialogic	Dialogic
Authority	The teacher anticipates being in authority for the entire lesson with exclusive control over discussion content and process.	The teacher intends to occasionally allow some students to freely engage in discussion. Most of the time the teacher plans to control turn-taking, prescribe	Students will share responsibility for the substance of the discussion. Partner work and small group work comprise the majority of time planned for the lesson with students making decisions

### DIT Rubric used to evaluate the lesson as taught (enacted lesson)

Indicator	Monologic	Mixed Monologic/Dialogic	Dialogic
Authority	The teacher has exclusive control over discussion content and processes. The teacher nominates (calls on) students, asks questions, initiates topical shifts, and evaluates answers.	The teacher provides occasional opportunities for students to engage in the discussion. These are rare and may involve only a few students. Most of the time the teacher controls the turn-taking, prescribes topic choice, and reshapes the discussion to align with specific content.	Students share the major responsibilities for the purpose a substance of the discussion. They manage turns, ask questions, react to each other's ideas, suggest topical shifts, and propose procedural changes.
Questions	Teacher questions target of recall of specific facts. These are simple questions with one correct answer.	The teacher asks questions of mixed quality, including complex, open-ended questions. Open questions are often	The discussion centers on truly open and cognitively challenging questions. The questions from the teacher and students target higher

# Unfavorable vs Favorable Outcomes



# Research Context

- Initial study conducted by doctoral candidate, “Elementary preservice teachers’ use of dialogic teaching” (Swingen, 2014).
- Compared planned vs enacted lessons across the six dialogic indicators.
- Used interviews to identify the factors promoting or inhibiting participants’ use of dialogic teaching strategies.

# Follow-on study

- Isolated the subset of the original data pertaining to planned and enacted lessons in mathematics.
- Research questions:
  - ▣ What patterns emerge regarding shifts in dialogic levels from planned to enacted instruction across the six indicators of the DIT?
  - ▣ What trends can be found among the dialogic indicators enacted at the monologic level?



# Re-examination of Swingen's data

# Data from nine math lessons

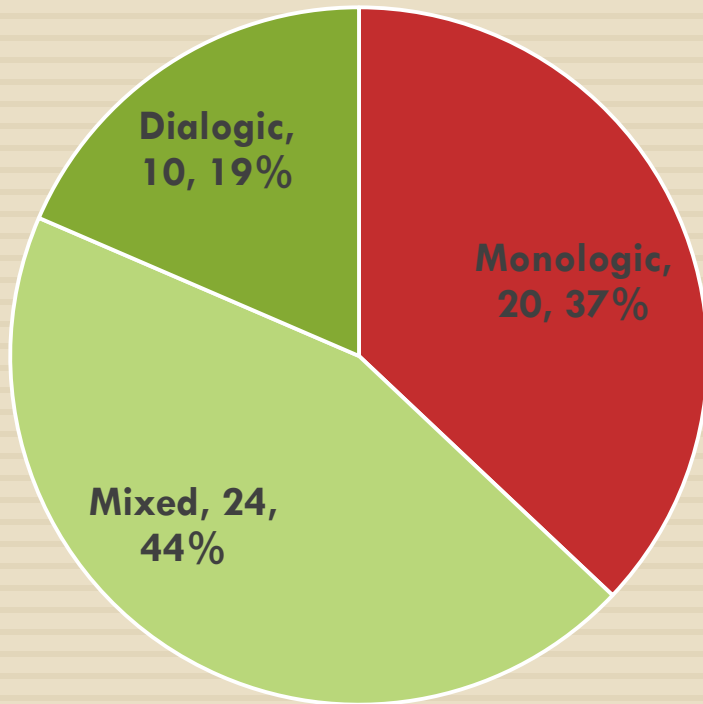
	Authority			Questioning			Feedback			Meta-Level			Explanation			Collaboration		
	Plan ned	Enac ted	Shift	Plan ned	Enac ted	Shift	Plan ned	Enac ted	Shift	Plan ned	Enac ted	Shift	Plan ned	Enac ted	Shift	Plan ned	Enac ted	Shift
L1	Mixed	Mixed	NC	Mono	Mono	NC	Mixed	Mono	Down	Mono	Mono	NC	Mixed	Mixed	NC	Mixed	Mixed	NC
L2	Mixed	Mono	Down	Mono	Mono	NC	Mixed	Mixed	NC	Dialog ic	Mono	Down	Mixed	Mono	Down	Dialog ic	Mono	Down
L3	Dialog ic	Dialog ic	NC	Dialog ic	Dialog ic	NC	Dialog ic	Mixed	Down	Dialog ic	Mono	Down	Mixed	Mixed	NC	Dialog ic	Dialog ic	NC
L4	Mono	Mono	NC	Mono	Mono	NC	Mixed	Mixed	NC	Dialog ic	Mixed	Down	Mono	Mixed	Up	Mixed	Mono	Down
L5	Mixed	Mixed	NC	Mixed	Mono	Down	Mono	Mono	NC	Mono	Mono	NC	Mono	Mixed	Up	Mixed	Mono	Down
L6	Mono	Mono	NC	Mono	Mono	NC	Mixed	Mixed	NC	Mixed	Mono	Down	Mono	Mono	NC	Mixed	Mono	Down
L7	Dialog ic	Mixed	Down	Mono	Mixed	Up	Mono	Mixed	Up	Mixed	Mono	Down	Dialog ic	Mixed	Down	Mixed	Mixed	NC
L8	Mono	Mono	NC	Mixed	Mixed	NC	Mixed	Mixed	NC	Mono	Mono	NC	Mixed	Mixed	NC	Mono	Mono	NC
L9	Mixed	Mixed	NC	Mixed	Mono	Down	Mixed	Mono	Down	Mono	Mono	NC	Mono	Mono	NC	Mono	Mono	NC

# Research Question #1

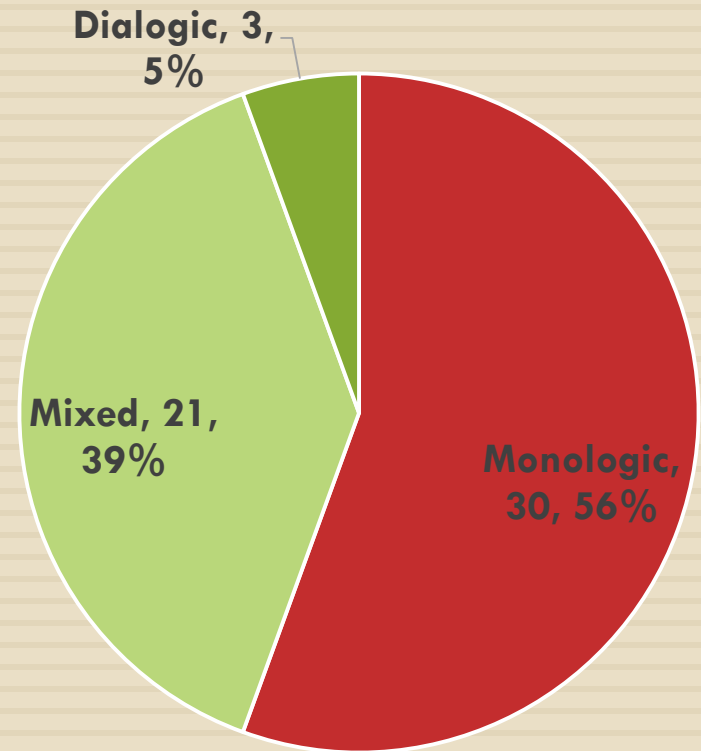
- What patterns emerge regarding shifts in dialogic levels from planned to enacted instruction across the six indicators of the DIT?

# Indicators planned vs enacted

Instances in Planned Lessons

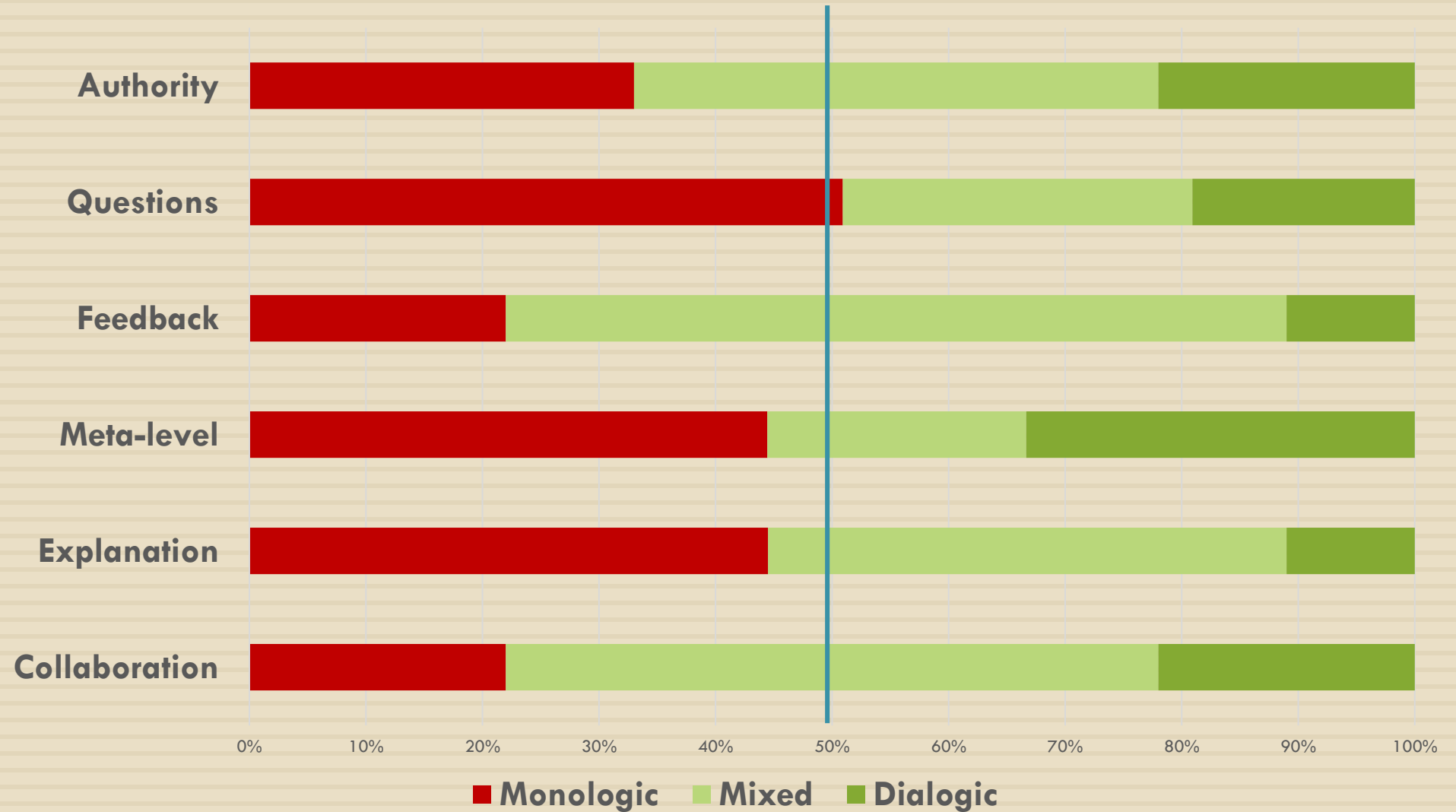


Instances in Enacted Lessons

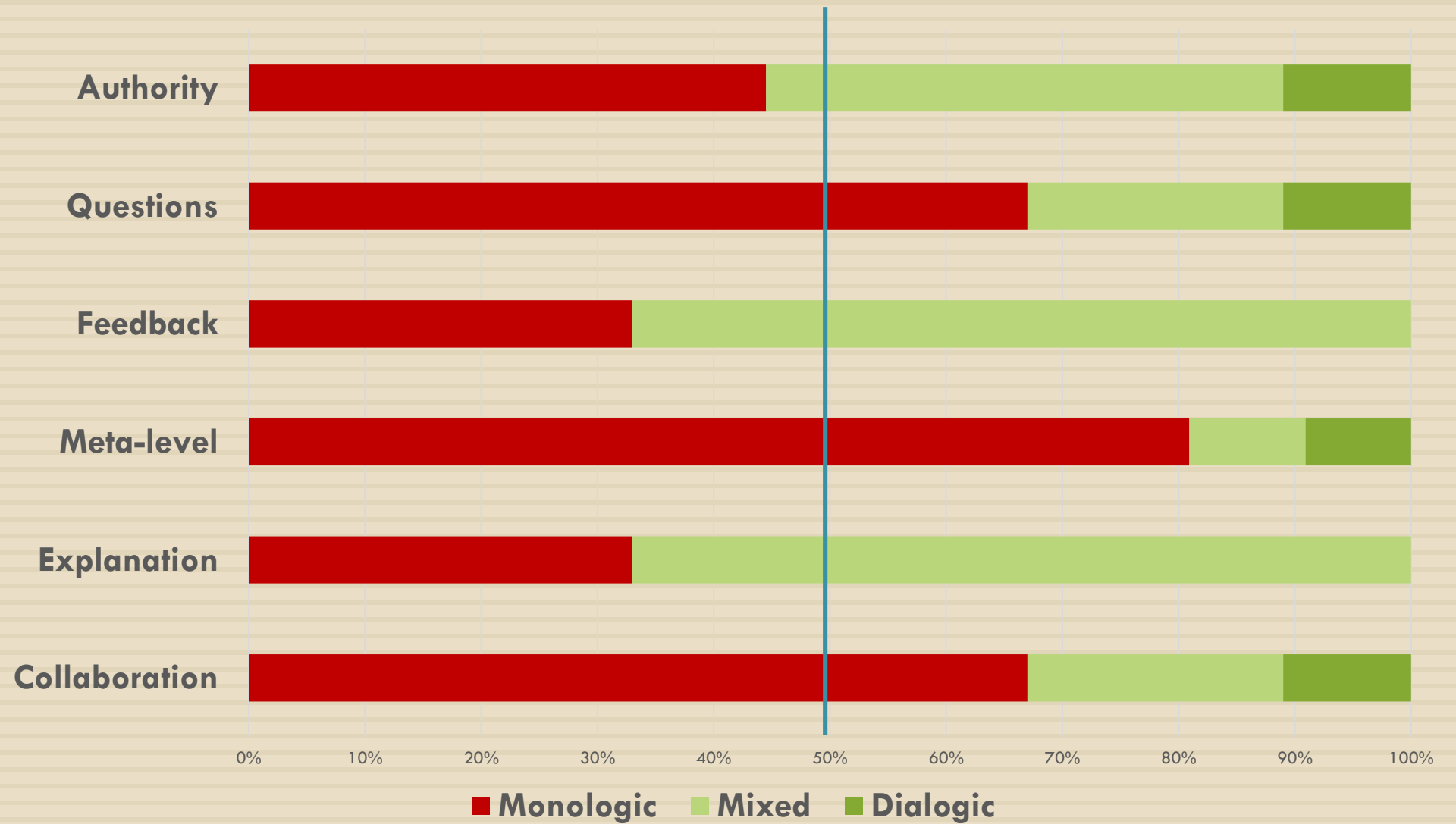




# Indicator by Level--Planned



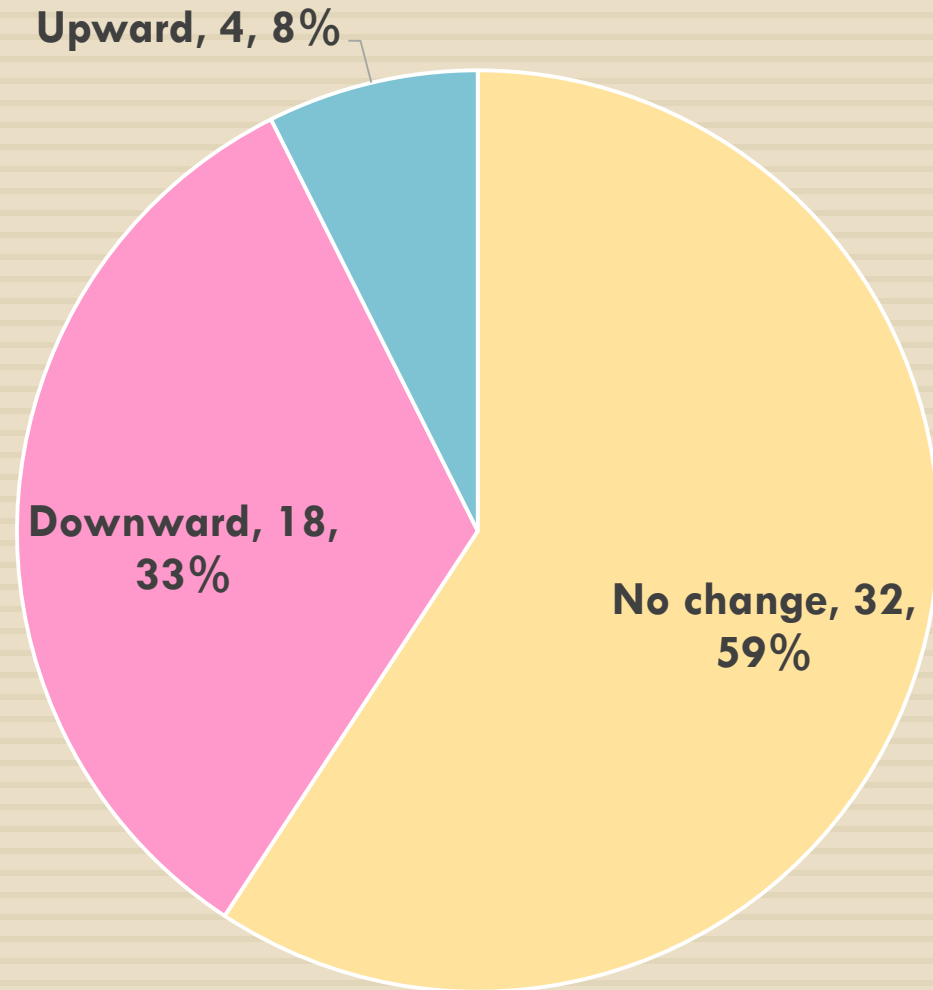
# Indicator by Level--Enacted



# A Closer Look at These Data

	Enacted MONO	Enacted MIXED	Enacted DIALOGIC
Planned MONO	16	4	0
Planned MIXED	11	13	0
Planned DIALOGIC	3	4	3

# Shift in DIT level: Planned to Enacted

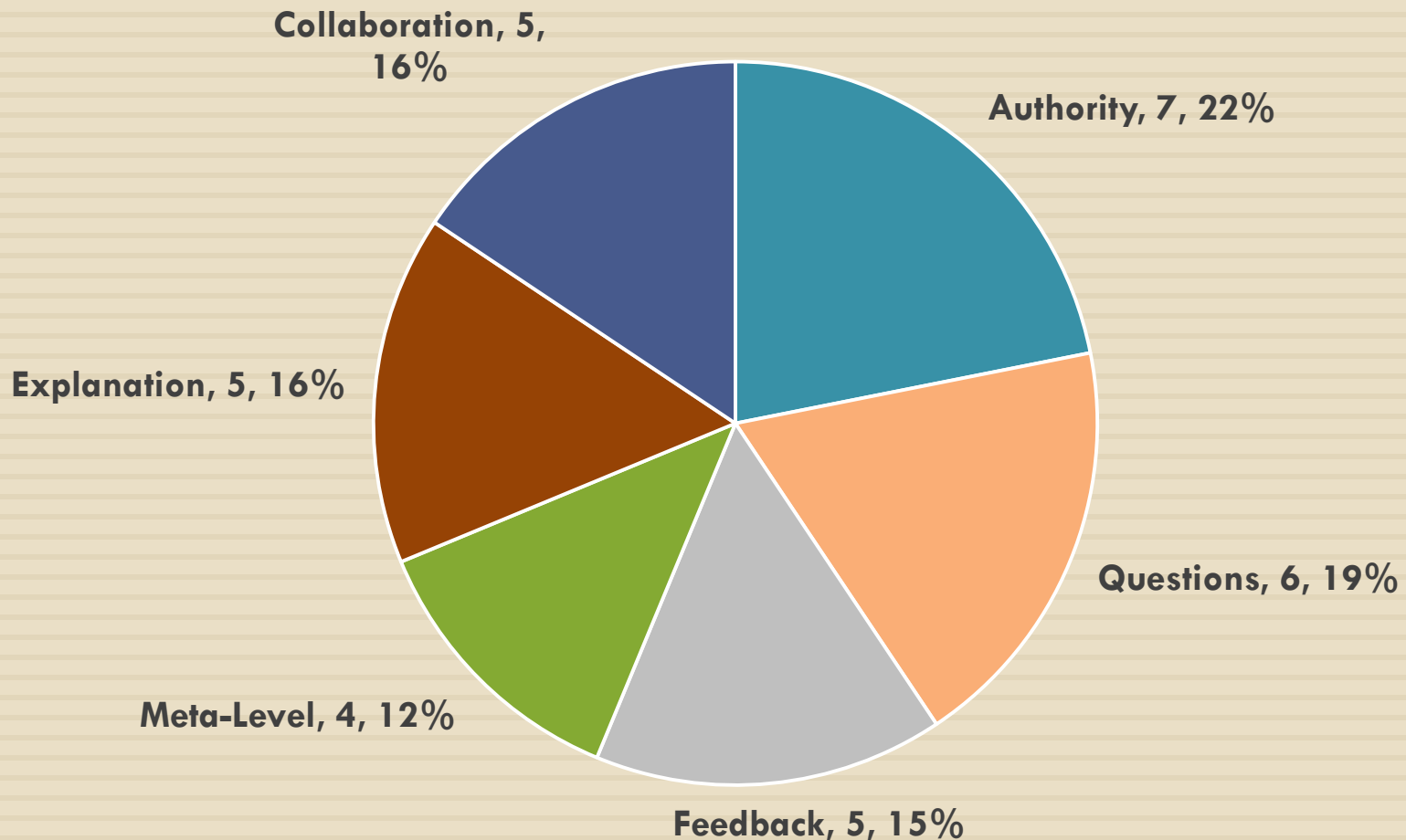


# Which dialogic level was most consistently enacted at the level it was planned?

	Enacted MONO	Enacted MIXED	Enacted DIALOGIC	No change as a % of the row
Planned MONO (20)	16	4	0	$16/20 = 80\%$
Planned MIXED (24)	11	13	0	$13/24 = 54\%$
Planned DIALOGIC (10)	3	4	3	$3/10 = 30\%$

# Which DIT indicators were most consistently enacted at the level planned?

## Subset of Data: No Change from Planned to Enacted By Indicator



# Upward and downward shift

	Enacted MONO	Enacted MIXED	Enacted DIALOGIC
Planned MONO	16	4	0
Planned MIXED	11	13	0
Planned DIALOGIC	3	4	3

## Upward shift (blue)

- Too few data points to make conclusions.

## Downward shift (pink)

- Planned dialogic and enacted mixed (4) was considered a “favorable” outcome and not analyzed further.
- Planned mixed or monologic and enacted monologic (14) will be considered in RQ2.

## Research Question #2

- What trends can be found among the dialogic indicators enacted at the monologic level?



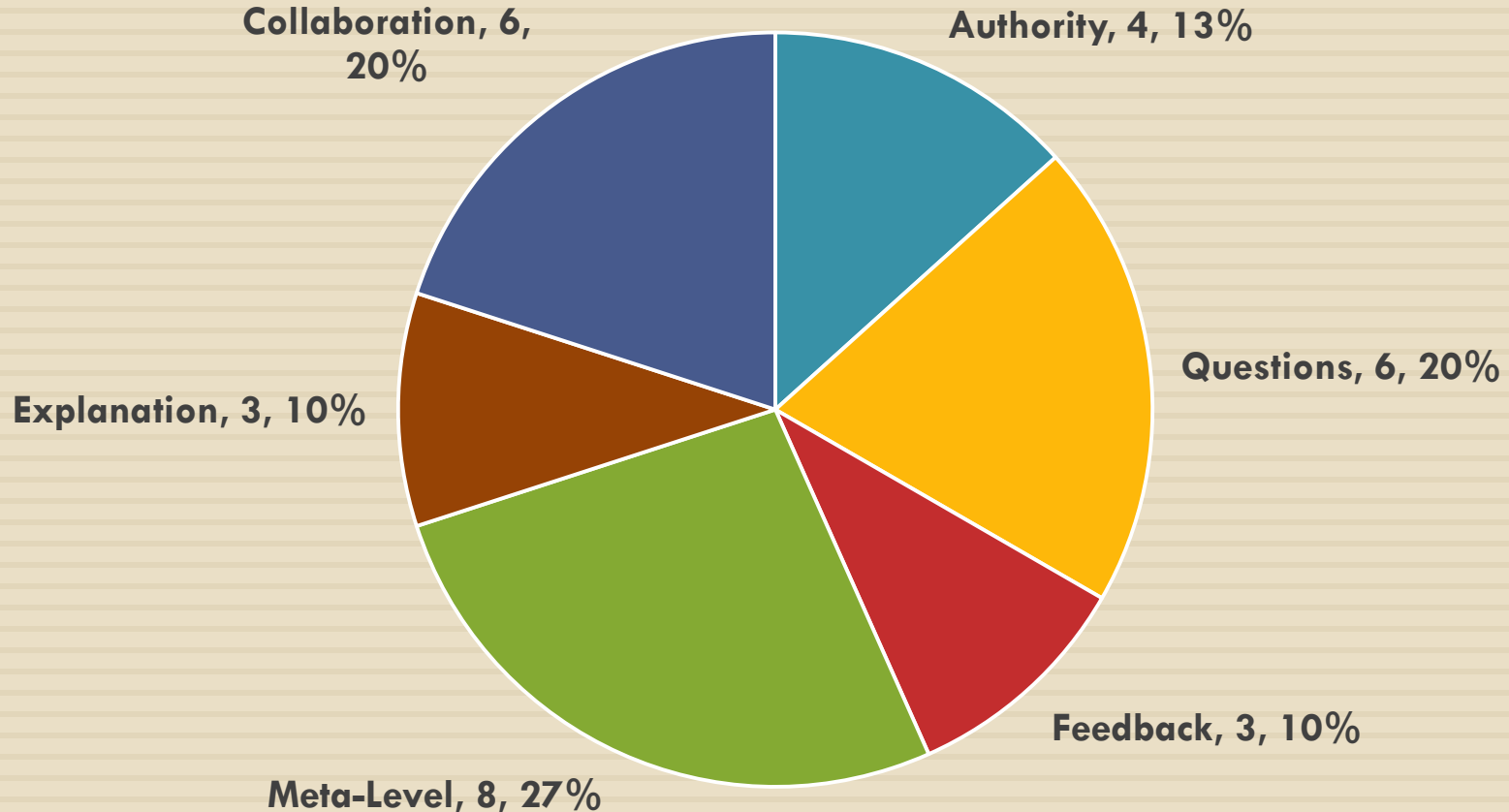
# Instances of monologic enactment

	Enacted MONO (30)	Number planned at each level as a percent of all monologic enactments
Planned MONO	16	$16/30 = 53\%$
Planned MIXED	11	$11/30 = 37\%$
Planned DIALOGIC	3	$3/30 = 10\%$

“You get what you plan or worse,” holds up among this subset of data. When considering only the instances of monologic enactment, 53% were planned as such and 47% represent a downward shift of one or two levels.

# Which indicators were most often enacted at the monologic level?

## Subset of Data: Monologic Enactment By Indicator





# Implications

# Observations and Implications 1

Observation	Implication
<p>These data are limited.</p>	<p>Additional data collection would allow us to confirm/disconfirm and find new trends.</p> <p>Fall-Spring we will collect data from approximately 30 preservice teachers (elementary and secondary) with three observations each for a total of 90 lessons and 540 data points.</p>

# Observations and Implications 2

<b>Observation</b>	<b>Implication</b>
<p>Shifts from planned to enacted are uncommon and when they occur they are downward.</p>	<p>Planning matters.</p> <p>Teacher educators need to develop strategies for identifying potential monologic teaching practices in planned lessons and helping preservice teachers alleviate them as much as possible.</p>

# Observations and Implications 3

<b>Observation</b>	<b>Implication</b>
Monologic teaching dominates.	<p>Enhance teacher candidates' ability to envision math taught in dialogic ways by:</p> <ul style="list-style-type: none"><li>• MTE explicitly modeling dialogic teaching.</li><li>• Using the DIT as a lesson planning tool.</li><li>• Sharing the DIT with cooperating teachers.</li></ul>

# Observations and Implications 4

<b>Observation</b>	<b>Implication</b>
<p>Some dialogic indicators present more challenge than others.</p>	<p>Isolate and unpack the more challenging indicators and address them specifically.</p> <p>Explore why these are harder to implement than others and work on the underlying road blocks.</p> <p>Help preservice teachers self-monitor and identify triggers that cause them to revert to monologic practices.</p>

# Discussion



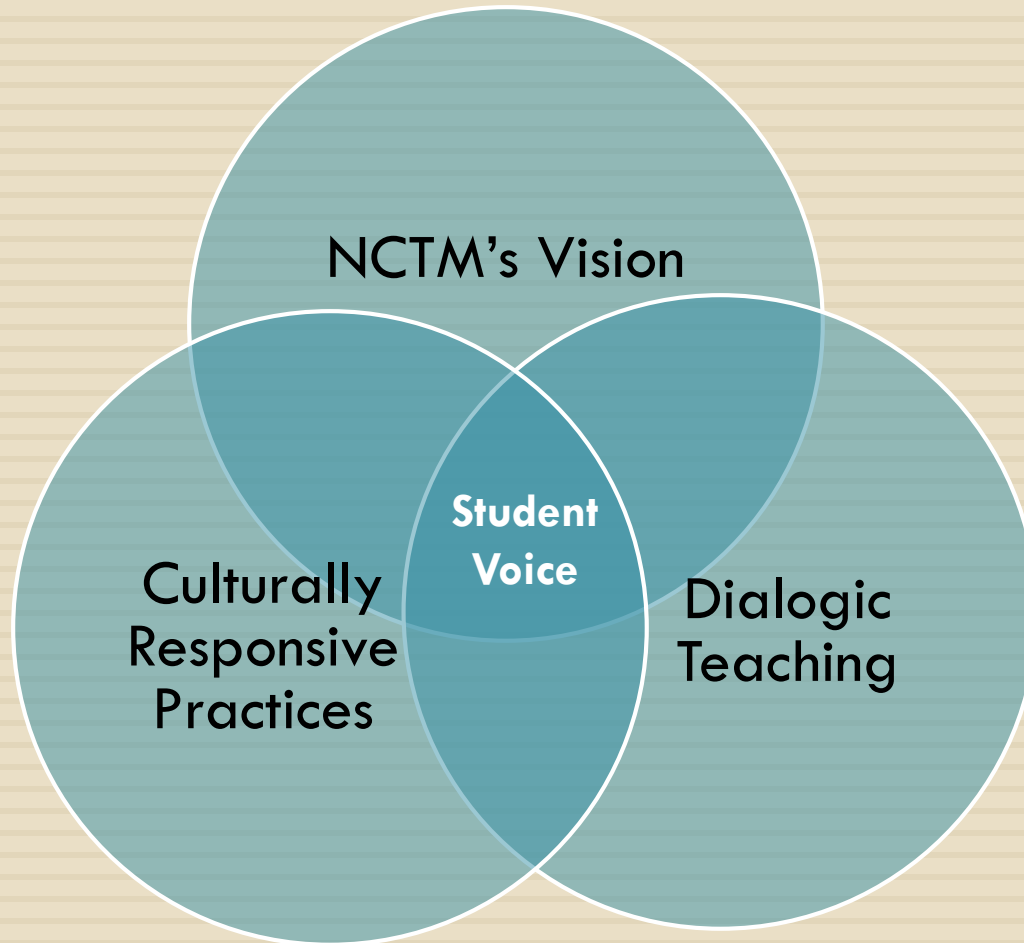
What other observations and implications come to mind for you?

What questions do these preliminary data raise in your mind?

What are some additional uses for the tool (DIT)?



# Student Voice at the Nexus



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