



# Teachers' Referencing of Public Records of Student Mathematical Thinking

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## Public Record

*Public records* of a student's thinking and the class discussion of that thinking are physical and visual representations (on, for example, a whiteboard) that hold some degree of permanence and are visually accessible to all participants within a classroom.

## Referencing

- *Explicit referencing* is a teacher's physical or verbal actions or combination of actions that directly draws attention to the public record or a piece of the public record. Physical actions include gestures towards specific or general parts of the public record and editing the public record (e.g., emphasizing an existing piece of the public record by circling and underlining). Explicit verbal actions include speech that draws attention to the public record in some way (e.g., naming student thinking, using locator words).
- *Implicit referencing* is a teacher's verbal action that alludes to the public record or a piece of the public record. Implicit verbal actions include the use of pronouns and generic statements that include objects in the PR.

## Background & Methodology

- This study is part of a larger project investigating how teachers can productively use instances of high-leverage student thinking to support a class to better understand a mathematical idea (see the QR code next to the title).
- The participants were 12 secondary mathematics teachers that enacted classroom discussions around a mini-task.
- We characterized the nature of teacher referencing using a set of codes organized around *explicit* and *implicit referencing*.
- We compared the coded instances in order to describe the ways teachers' referencing the public record supported or hindered their pedagogical use of those public records.

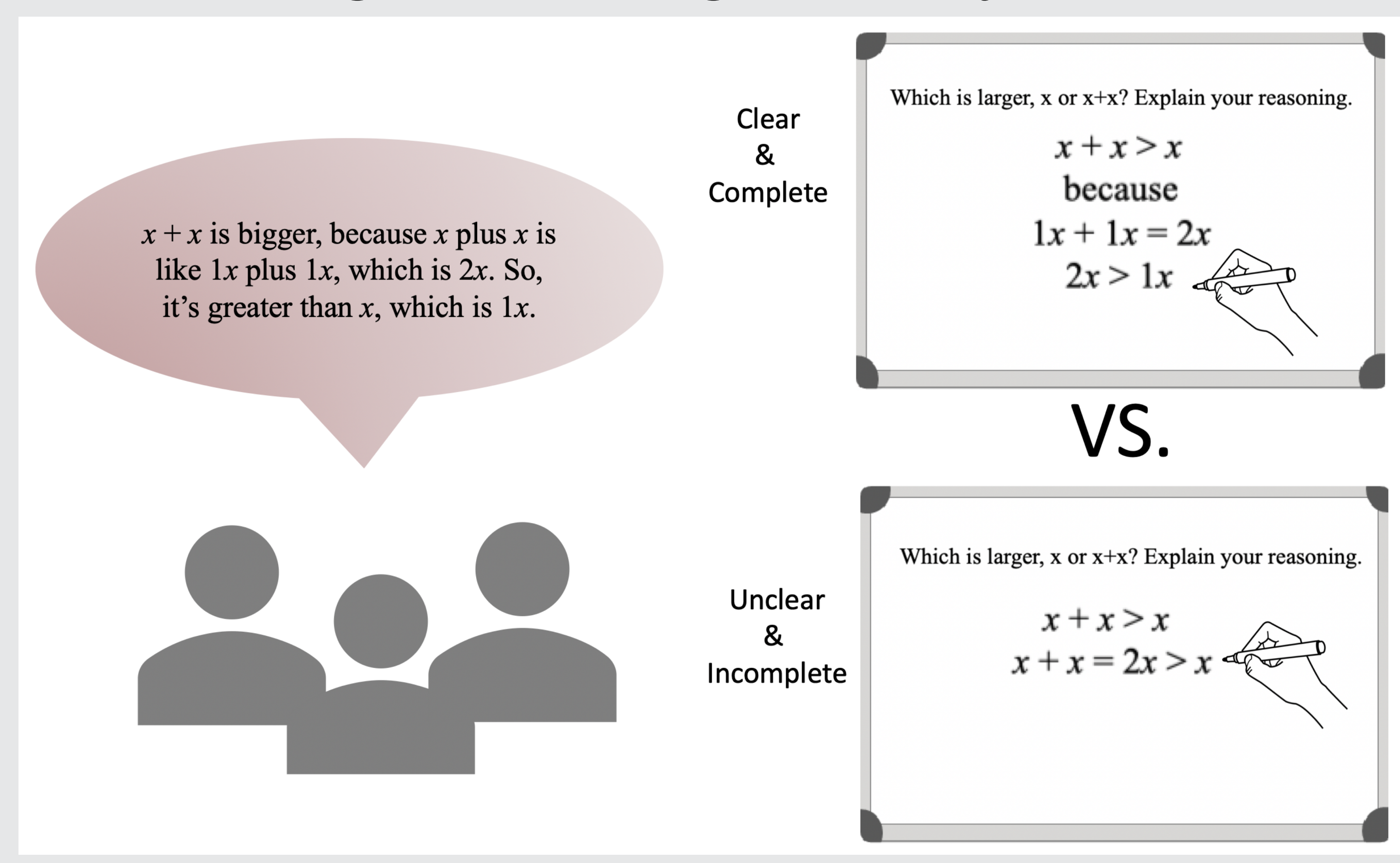
## Acknowledgements

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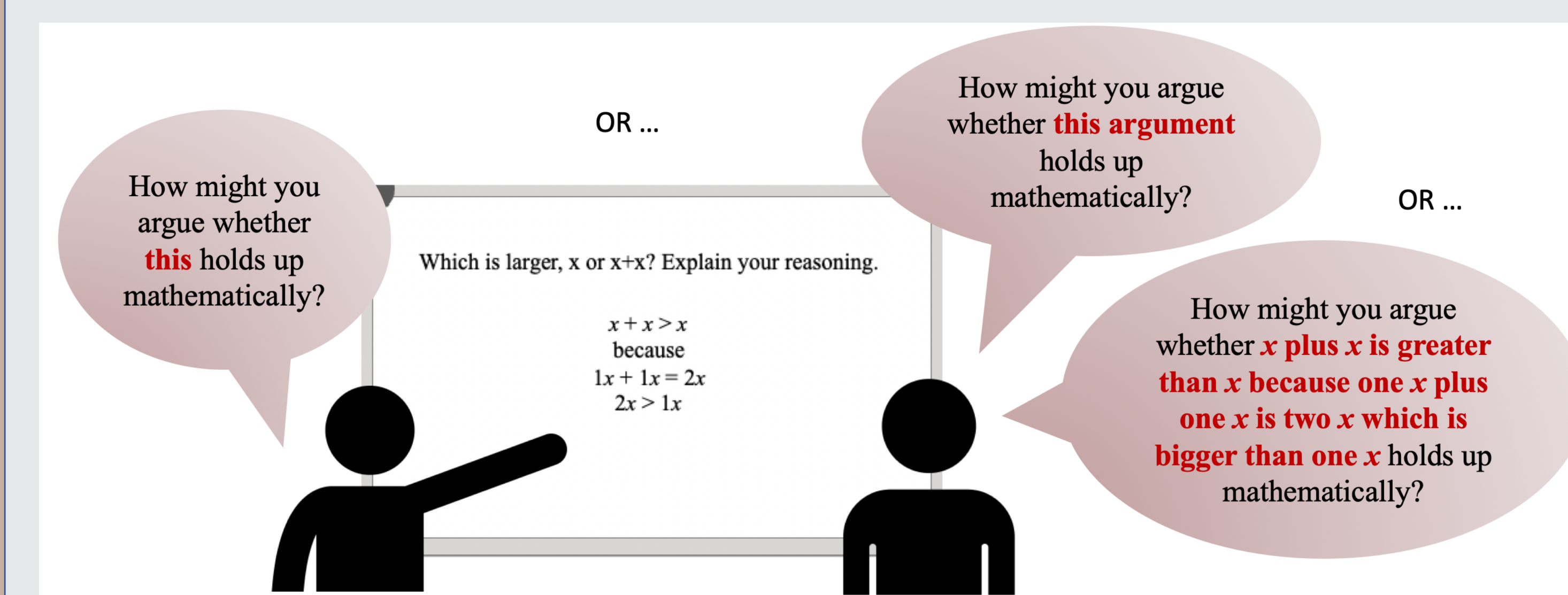
## Overarching Claim

Teacher referencing of public records can help establish, offer, and connect students' contributions during discussions in order to make mathematical ideas explicit.

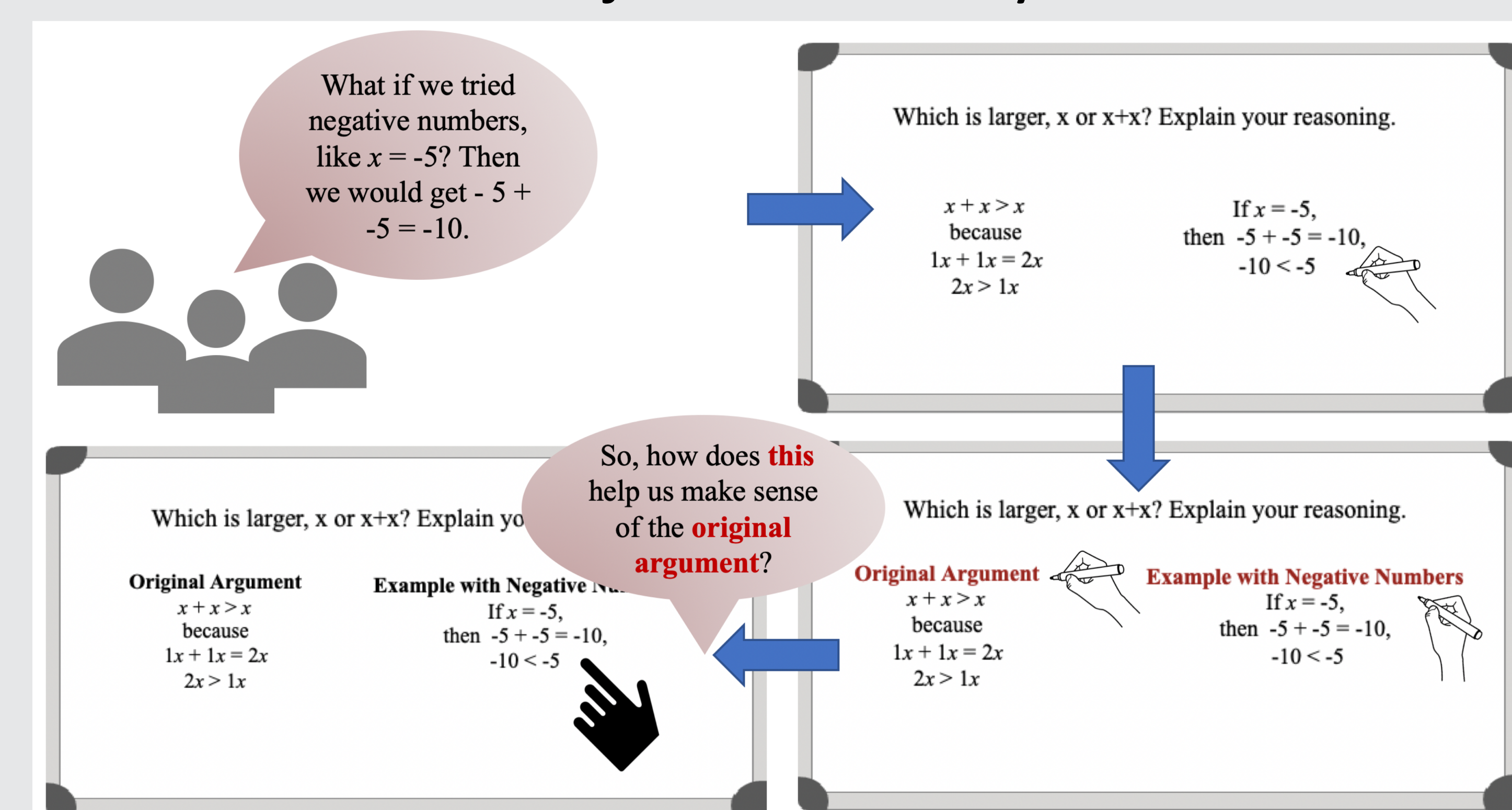
1. Clearly and precisely capturing a student's contribution in the public record is key for establishing the thinking as an object.



2. When a teacher offers a student's contribution to the class to make sense of, referencing the public record orients students to the object of consideration.



3. Referencing helps connect students' contributions during a discussion by directing students to the objects that they are to connect.



4. Referencing focuses students on pieces of a public record that are important for making the mathematical idea(s) in a discussion explicit.

