



Listening being to recognize and relieve harm in mathematics teaching

Mark Hoover, Charles Phillips

► To cite this version:

Mark Hoover, Charles Phillips. Listening being to recognize and relieve harm in mathematics teaching. Thirteenth Congress of the European Society for Research in Mathematics Education (CERME13), Alfréd Rényi Institute of Mathematics; Eötvös Loránd University of Budapest, Jul 2023, Budapest, Hungary. hal-04398375

HAL Id: hal-04398375

<https://hal.science/hal-04398375>

Submitted on 16 Jan 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Listening being to recognize and relieve harm in mathematics teaching

Mark Hoover¹ and Charles Phillips²

¹University of Michigan, USA; mhoover@umich.edu

²University of Michigan, USA

Mathematics teaching routinely traumatizes students. Why, and what changes can we make so this is not so? Lipari (2009) argues that the ethical call of conscience is not a speaking, but a listening. We draw on her conceptions of listening otherwise and listening being to see and intervene in dynamics of potential harm in mathematics teaching. We analyse six cases for three features: attention to difference, prioritizing of compassion, and openness to self-transcendence. Our analysis reveals that teaching in these short episodes is uniformly listening oriented or speaking oriented, with speaking-oriented teaching common even when teaching engages students actively in discussion. Further, our analysis suggests mechanisms for routinely disrupting patterns of harm in mathematics teaching.

Keywords: Teaching, justice, listening, enactment, issues.

Introduction

For many years, we have puzzled over the trauma many people experience in mathematics classes. They are smart and capable. Why do they struggle? As we became teachers and then researchers, we continued to see students suffer and continued to wonder. We became increasingly aware of how those with less privilege experience greater trauma in mathematics classes, whether due to race, language, gender, class, or disability. This realization has led us to focus attention on how harm happens in classrooms and how teaching might better affirm students and support their humanity.

Theoretical foundations

To consider the ethical imperatives for mathematics teaching, we turn to Lipari (2009, 2010). She argues that ethics arises from listening that is committed to receiving otherness.

[T]he answer to the ethical call of conscience is not a speaking, but a listening. It is, moreover, a listening otherwise that suspends the willfulness of self and fore-knowledge in order to receive the singularities of the alterity of the other. To say that ethics arises from listening is thus to subordinate speaking to a kind of listening that speaks — a listening that is awakened and attuned to the sounds of difference rather than to the sounds of sameness. (Lipari, 2009, p. 44)

Attending to sounds of difference may run counter to what appears more natural to teachers responsible for helping children learn mathematics and succeed on tests, with a goal of helping everyone understand a body of canonical knowledge, yet teachers are also responsible to children and to not doing harm. Lipari offers ways of acting in situations where we know harm is routinely experienced, in our case, in mathematics teaching.

She begins with four presuppositions: that ethics is concerned with alleviating the suffering of others; communication constitutes culture; ethical relation is the foundational human experience; the other will inevitably be radically and utterly unknown because otherness resides beyond one's categories of thought. She identifies "bearing witness" as a central act of *listening otherwise*, thus, of

communicative moral action. Bearing witness is a refusal to turn away from suffering, which requires listening otherwise, and in so doing, becoming responsible. Lipari argues that difference, otherness, and strangeness will inevitably exceed one's knowledge, experience, and understanding, so in the listening required, compassion precedes understanding. Yet, it is not a disavowal or denial of self, but a transcendence from self-in-separation to self-in-relation. She uses the phrase, *listening being*, to convey a stance toward listening, oriented toward listening otherwise.

As a dwelling place for human being, listening being can reveal the ethical possibilities that arise when listening begins not from a speaking, but from the emptiness of awareness itself. This perhaps utopian vision of listening is not an actual state or principle, but a horizon toward which we might travel. (Lipari, 2010, p. 348)

Several scholars have called for and have begun to explore the work of listening in teaching (Hintz & Tyson, 2015; Schultz, 2003; Tyson et al., 2022), and research on teacher noticing has explored socio-political dimensions of attending to students (Hand, 2012; Louie et al., 2021). Lipari's work extends these explorations, from a philosophical foundation that replaces the cognitive response with one of care and compassion.

When considering what it takes to teach in ways that avoid doing harm, we use a conception of teaching as planning, managing, and reflecting on interactions among students, teacher, and content in environments, in pursuit of educational aims (Ball, 2018; Cohen et al., 2003; Jaworski, 1994). This theory of teaching can be used to describe an instance of teaching, but it can also be used to identify core elements that follow logically from the nature of the work and responsible choices for practice. By *work of teaching*, we distinguish between what is logically entailed in such purposeful action and what is done by any teacher or teachers at any moment in time. The warrants for what counts as work of teaching are logically based, with empirical analysis both informing and testing conceptual proposals. The concepts of *listening otherwise*, *listening being*, and *work of teaching* inform our research question. *From the perspective of listening otherwise and listening being, what is happening and might happen in mathematics teaching to inflict or disrupt patterns of harm?*

Study design and method

To investigate patterns of harm and their disruption, we analysed six short video excerpts, the first three drawn from a shared dataset developed by TWG19 members:

Video 1: A 5th grade class of 22 children in an urban primary school in Greece.

Video 2: A 4th grade partial class of 5 children in Norway.

Videos 3 & 4: Two classes of ~25 children in a summer program prior to 5th grade in the Midwest of the United States (both available at <https://tle.soe.umich.edu>).

Videos 5 & 6: Two classes of ~25 children from The Measures of Effective Teaching Extension (METX) Collection (available at <https://tle.soe.umich.edu>).

From Lipari (2009, 2010), we identified three features of listening otherwise/listening being. The first is attending to and valuing that which is different. Lipari writes about being attuned to the sounds of difference rather than to the sounds of sameness. Such attunement is the starting point for listening

being. The second is prioritizing compassion over understanding. Approaching difference with a focus on understanding instead of compassion undermines truly being open to otherness. The third is self-transcendence, where the self is called to responsibility for the other before it itself can be free. This involves a shift from self-in-separation to self-in-relation. The three features are not disjoint but are layers of the phenomenon, from more immediately actionable to more about awareness of the horizon Lipari describes. For each, we identified instances when teaching either exhibited the feature (positive) or opportunities in which it did not (negative).

Table 1: Codes for each of the three features of listening otherwise/listening being

	Attention to and valuing of difference	Compassion preceding understanding	Self-transcendence
Positive instance	Inviting difference. Attention to difference. Valuing difference. Openness to difficulty and the unfamiliar.	Tenderness and openness to other. Compassionate attention without necessarily understanding. Intervening in power to legitimize others' contributions.	Openness to being changed. Expressing self-in-relation. Attention to responsibility for other. Subordinating oneself.
Negative instance	Asking a question with a presumed answer based on one's own thinking. Insistence on one's own view. Attention to certainty, closure, categorization, and narrative flow. Appetite for the familiar.	Reasoning, desire, and will that overshadow tenderness and openness. Feeling sorry for a student. Discomfort in being implicated in a student's suffering. Paternalism that exercises power.	Disavowal or denial of self, historicity, or contingency. Expressing self-in-separation. Imposing on other.

As we identified instances, we returned to Lipari to test the fit of the instances with her arguments and to name and begin to specify them. As we identified codes, we reviewed other videos for additional instances and refinement of the codes. We then used the codes to develop interpretations of each video episode in relation to listening being.

Analysis

We offer analysis of two of the videos and discuss general findings. We choose these two because they contrast, not because they are exceptional. The lens of listening being was revealing for all.

In Video 1, having led the class through several circles divided into different numbers of equal pizzas, after the last one, which is in three pieces, the teacher asks, "How would I write that?"

- Teacher1: Three. How would I write that? Can you write that, in fractions? How would I write how to make up the whole pizza from these pieces? Like this, in order... The whole pie. How would I write it out to make a whole pie out of these pieces? *[asking a question with a presumed answer]*
- John: (comes forward to the blackboard) The whole pie?

Teacher1: Yes, the whole pie. Let's see.
 John: (writing the fraction three thirds – $3/3$)
 Teacher1: A!! And how do you make up these three thirds? *[asking a question with a presumed answer]*
 John: From three pieces.
 Teacher 1: How do you write that down? Write “equals”, how do you write that down in mathematics? *[asking a question with a presumed answer; insistence on one's own thinking]*
 John: (writes the equal sign to the right of $3/3$)
 Teacher 1: How exactly do you make three thirds for this pizza? *[asking a question with a presumed answer; insistence on one's own thinking]*

The teacher appears to have in mind the idea of writing the whole as the sum of unit fractions. The student, John, asks, “The whole pie?” With her confirmation, John quite sensibly writes “ $3/3$ ”. With John not writing what she wants, she continues to ask in different ways, with increasing insistence. Her questions have presumed answers, and she insists on her own thinking. John is listening closely to the teacher, while the teacher is also intently focused on her own thinking. She does not attend to what John might be thinking or attune her questions and comments to his thinking.

John: In ones?
 Teacher 1: What do you mean? What are the ones here?
 John: One piece
 Teacher 1: Write down the “one piece”
 John: One plus one plus one. (writes $1+1+1=3$ to the right of the equal sign, so it is now $3/3=1+1+1=3$)
 Teacher 1: Do you agree? One plus one plus one is three. Is it the same as what he's written on the board? *[reasoning, desire, and will that overshadow tenderness and openness]*
 Student: No

When John asks if she means “in ones?”, her attention briefly wonders what John is thinking and asks what he means, but she quickly returns to her own thinking and presses him to produce what she has in mind. John appears uncertain about what is being asked. At this moment, she exhibits neither tenderness for his potential embarrassment nor openness to pursue his thinking. After John has said that the ones refer to “one piece”, when the teacher asks him to “write down the ‘one piece’”, a reference to his language and ostensibly his thinking, he quite sensibly writes $1 + 1 + 1 = 3$. The teacher does not hear the reasonableness of what he has written and uses the $3/3 = 1 + 1 + 1$ to get other children to object to what John has written and reestablish the centrality of her thinking.

Teacher 1: Maria?
 Maria: Three out of three pieces.
 Teacher 1: Can we see that by the way you've written it? How can we show that it's three out of the three pieces? Let's see. *[disavowal or denial of self, historicity, or contingency; expressing self-in-separation; imposing on other.]*
 John: (erases $1+1+1=3$)

The teacher enlists children whose thinking matches her own, to counter John. Doing so suggests that the teacher's thinking is the only legitimate thinking, as if it were universal, not belonging to her, this moment, or this exchange. She establishes herself in separation from John, not in relation to him and his thinking. She imposes herself and her thinking on John, who gets the message and erases his work. The teacher completes the erasure of John by turning to other children to “help”, to speak for him.

Teacher 1: Let's help him a little. How do we write each piece of this pizza? Can someone help? Chryssa?

Chryssa: One third.
 Teacher 1: John, did you hear her? One third. And how do we make three thirds of the pizza with the one third... and two? Every piece here to make a whole pizza. How can I make a whole pizza?
 John: (writing something not observable)

With the teacher's pointed instruction, John dutifully writes " $\frac{1}{3}$ ". The teacher wants him then to write $\frac{1}{3} + \frac{1}{3} + \frac{1}{3}$ to "make three thirds of the pizza with the one third... and two," but all John can do is write what he hears her say. He likely writes $\frac{1}{3} + 2$, though we cannot see in the video. He looks to the teacher for approval, but the teacher's response convinces him he is wrong, and he erases it. The teacher points to the circle divided in thirds with $\frac{1}{3}$ written on each piece to suggest what she wants written. She again begins to enlist help from the class, but as John writes what she is wanting, she returns her attention to him and the production of her explanation.

Teacher 1: One third and? And? If I add another piece, will I get more pizza?
 Student: Yes.
 Teacher 1: So. Put down one more piece and let's see what happens. Nice. Please help him.
 John: (writing on the blackboard, not observable)
 Teacher 1: Add one more. And one more.
 John: (writing (to the right of $\frac{3}{3} =$) $\frac{1}{3} + \frac{1}{3} + \frac{1}{3}$)
 Teacher 1: Now it's three thirds. Very good. Now it's three thirds and what is that three thirds, Artemis?
 Artemis: Three pieces of the three.
 Teacher 1: It's a whole...pizza. This is a whole. What happens when we put fractional units one next to each other? What do you think? We've got one third and one third and one third. What does that give us? (pointing out on the blackboard)
 Student: Three thirds.

In this episode, difference is neither attended to nor valued. In the moments where opportunity for difference arises, it is unnoticed or quickly shut down. It is possible that the teacher believes she understands well what John is thinking, or rather what he is not thinking, what he fails to understand, but her regard is for her own thinking. When she momentarily asks what he means, she is likely asking what he means from the vantage of her own understanding of the mathematics in this situation. Her response to John is not directed by compassion, and her engagement gives no indication that she has her eye on a horizon of self-transcendence — that she is open to being changed, that she seeks finding herself, her world view, her experience, and her life in relation to John, his world view, his experience, and his life. There is no evidence that she is willing to subordinate herself and her thinking to John and his thinking, even as an initial step, a way of hearing.

We are not saying that John was harmed in this episode or that the teacher should be valuing difference or prioritizing compassion at this moment. We observe, however, that she is not doing so, that her attention is on the curriculum and her own thinking and that *listening being* is not her stance. And we ask whether these exchanges, as perhaps characteristic of interaction, might be a source of the ongoing harm people experience in mathematics classrooms, or at least a missed opportunity to affirm children, their thinking, and their lives, in ways that disrupt widespread patterns of harm.

Turning to a second case, in Video 3, the class has been working independently to identify a mark on a number line (Figure 1).

Teacher 3: Who would like to try to explain what you think the answer is? And show us your reasoning by coming up to the board? Who'd like to come up to the board and try

to tell— And you know, it might not be right. *[inviting difference]* That's okay because we're learning something new. *[tenderness in anticipation of feelings]*

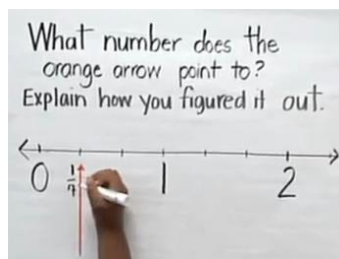


Figure 1: Codes for each of the three features of listening otherwise/listening being

The focus is on the student's thinking, without expecting it to match the teacher's thinking. The teacher does not ask for "the answer", but for what the student thinks is the answer and for the student's reasoning, without a preconceived way of thinking. This is reinforced by the teacher saying it might not be right. The notion of "right" conveys a canonical way of thinking, but as it is used here, it holds up the canon and the other on par together. The teacher ends by saying it's okay if it's not right because "we're learning something new." This suggests a compassion, a tenderness for children, anticipating that not being "right" is okay, in particular when learning.

Teacher 3: I'd like someone to come up and sort of be the teacher and explain how you are thinking about it. Who'd like to try that this morning? *[intervening in power]*

The invitation to "be the teacher" seems sincere. It may counter the inherent power dynamic, conferring a degree of legitimacy on student thinking. Instead of patronizing, it conveys a humility that holds up the other. In response, Aniyah volunteers to present her answer and walks to the front.

Teacher 3: When someone's presenting at the board, what should you be doing?

Students: Looking at them.

Teacher 3: Looking at that person- Uh-huh?

...

Teacher 3: Listen closely and see what you think about her reasoning and her answer. *[attend to difference]*

Aniyah: (Aniyah writes $1/7$ by the orange line). I put one-seventh because there's –

Toni: Did she say one-seventh?

The teacher is instructing children on how to listen, with attention to Aniyah's thinking.

Teacher 3: No agreeing and disagreeing. Just- All you can do right now is ask Aniyah questions. Who has a question for her? *[valuing difference; subordinating oneself]* Okay, Toni, what's your question for her?

Toni: Why did–

Teacher 3: Go ahead, it's your turn.

Toni: Why did you pick one-seventh?

Teacher 3: Let's listen to her answer now. That was a very good question. Can you show us again how you figured that- why you decided one-seventh? *[attend to difference]*

Asking for questions instead of agreeing or disagreeing requires setting aside one's own thinking and puts value on Aniyah's thinking. Following Toni's question, the teacher calls on children to attend to Aniyah's thinking. Aniyah then re-explains her answer, and the teacher continues:

Teacher 3: Okay, any more questions for Aniyah? In a moment, we're going to talk about what you think about her answer, but first, are there any more questions where you're not sure what she said, or you'd like to hear it again or something like that? Lakeya?

Lakeya: If it start at the- Oh.
 Teacher 3: Talk to her, please. *[attend to difference; legitimize others' contributions; subordinating oneself]*
 Lakeya: If you start at the zero, how did you get one-seventh? *[attend to difference]*
 Aniyah: Well, I wasn't sure it was one-seventh, but first, I thought that the seven equal parts. *[attend to difference; legitimize others' contributions; compassionate attention without necessarily understanding]*

Yet again, the teacher instructs the children in how to respond to Aniyah. She tells them to hold off on their own thinking while they ask questions and attend to Aniyah ("talk to her") and her thinking. Lakeya's question may arise from Lakeya's own thinking, but it leans into what Aniyah is saying. That Aniyah's response satisfies Lakeya suggests that Lakeya has taken up the goal of stretching toward Aniyah's thinking without necessarily fully understanding. In other words, not only do we see the teacher attending to difference and listening otherwise, but we also see the children learning to do so. The pattern above with Lakeya occurs again with Dante.

Teacher 3: Okay, would some- You'd like to ask another question, Dante?
 Dante: Yeah.
 Teacher 3: Yes, what?
 Dante: So, if it's at the zero, how did you know that if like if I took it and put it at the- Hold on. Which line is- What if it didn't like- What if the orange line wasn't there, and you had to put it where the one is? What if the orange line wasn't there? And how would you still know it was one-seventh to put it where the orange line is now?
 Aniyah: I don't know.

In this episode, we see the teacher actively inviting difference, valuing it, and remaining open to what may be unfamiliar and difficult, both for herself and other children. She begins by asking for someone to show their reasoning by coming to the board to explain, yet she communicates regard for the vulnerability that accompanies presenting publicly by saying that it might not be right and reassuring them. Her statements prioritize compassion for the thinking of others without imposing her thinking. In this episode, she so fully subordinates her thinking that neither the children nor observers have much sense of how she is thinking about the mathematics, though certainly it is present — in the choice of the task given, deciding that children should ask questions and not yet agree or disagree, and in evaluating Toni's question. Whether she is sincerely open to being transformed is impossible to know, but her talk and actions leave this as a possibility.

As with the first teacher, our comments are meant to be descriptive of the teaching when viewed through Lipari's lens of listening being. We do not know how students experienced this teaching, but the potential that Teacher 2's attention to difference, her compassion as a starting point for mathematical work, and her subordination of her own thinking and sense of responsibility for children's thinking, make us wonder if Lipari's conception of listening being might afford real opportunity for disrupting patterns of harm, especially for those who most often experience it.

Conclusion

At this time, our findings are preliminary. We need to continue testing and refining our codes, deepening our analysis to code for potential harm (so we can analyse patterns between listening and harm), and extending our analysis to additional data (so we can further explore patterns). Each of the six episodes was remarkable in its own way. Across the episodes we found the following:

- For the “size” of the episodes we analysed, the teacher’s orientation or stance was either altogether consistent with listening being or not (perhaps a stance of speaking being).
- Negative instances were associated with potential harm in ways that suggest how harm, often unnoticed, may routinely happen in mathematics classrooms. Indeed, we found that many of the most familiar forms of mathematics teaching, as varied as they may be, reveal a complete focus on teachers’ conceptions of the mathematics to be taught in ways that make little or no real room for children’s thinking. (Articulating the links between negative instances of these features and harm is something we plan to do.)
- Positive instances suggested mechanisms for routinely disrupting patterns of harm in mathematics teaching and learning. (Articulating these is something we plan to do.)

In closing, we note that it was easier to develop robust codes for these three features of listening being than we expected, especially for self-transcendence, which seems so abstract and ephemeral. In addition, we found that using this lens made the familiar unfamiliar in ways that promise new insight and make us excited to continue this work.

Acknowledgement

This paper is based on work supported by the National Science Foundation (grant number 1760788).

References

- Ball, D. L. (2018, April). *Just dreams and imperatives: The power of teaching in the struggle for public education*. Presidential Address at 2018 American Educational Research Association Annual Meeting, New York, NY.
- Cohen, D. K., Raudenbush, S. W., & Ball, D. L. (2003). Resources, instruction, and research. *Educational Evaluation and Policy Analysis*, 25(2), 119–142.
- Hand, V. (2012). Seeing power and culture in mathematics learning: Teacher noticing for equitable mathematics instruction. *Educational Studies in Mathematics*, 80(1), 233–247.
- Hintz, A., & Tyson, K. (2015). Complex listening: Supporting students to listen as mathematical sense-makers. *Mathematical Thinking and Learning*, 17(4), 296–326.
- Jaworski, B. (1994). *Investigating mathematics teaching: A constructivist enquiry*. Falmer Press.
- Lipari, L. (2009). Listening otherwise: The voice of ethics. *The International Journal of Listening*, 23(1), 44–59.
- Lipari, L. (2010). Listening, thinking, being. *Communication Theory*, 20(3), 348–362.
- Louie, N., Adiredja, A. P., & Jessup, N. (2021). Teacher noticing from a sociopolitical perspective: The FAIR framework for anti-deficit noticing. *ZDM – Mathematics Education*, 53(1), 95–107.
- Schultz, K. (2003). *Listening: A framework for teaching across differences*. Teachers College Press.
- Tyson, K., Hintz, A., English, A. R., & Murdoch, D. (2022). Hearing silence: Understanding the complexities of silence in democratic classrooms and our responsibilities as teachers and teacher educators. A response to "Creating a Democratic Mathematics Classroom: The Interplay of the Rights and Responsibilities of the Learner." *Democracy and Education*, 30(1), 1–6.