Purpose and Theoretical Framework

• In light of the NGSS [1], researchers have begun to re-examine the role of language in knowledge construction.
• Researchers often code talk at the utterance-level to make claims about how teachers and students engage in meaning making. Frame, conversation, and interaction analysis, are some examples: [2,3,4,5].
• Few have examined the role of metadiscourse (MD) and what it signals about how teachers and students engage in knowledge construction [6]. We aim to develop an analytic framework for identifying and coding MD, and consider what MD might reveal about knowledge construction in science classrooms.

Analytic Framework

• We applied existing MD frameworks [6,7] in an interactive, dialogic elementary classroom, but neither sufficiently characterized the talk in our classroom context. To develop a new framework, we identified and categorized MD into two types with related subcodes:

  Organizational: MD that signals different parts of the talk. Used to guide the reader through the (verbal) text, and facilitates ways of engaging in ongoing conversation.

  Evaluative: MD that reflects one’s stance, attitudes, and points of view toward the content. To involve the reader in the argument.

• Our resulting framework contains some elements (but not all) from these previous frameworks, as well as some newly introduced elements that allowed us to characterize the ways MD was used in a dialogic and interactive context.
• In total, our analytical framework contains 9 Organizational subcodes and 14 Evaluative subcodes.

Scholarly Significance

Despite a rich body of literature examining the role of language in knowledge construction, few researchers have examined the role of MD and what it signals about the ways teachers and students engage in knowledge construction through talk [6]. We argue that MD analysis contributes to our understanding of this. Our ongoing work involves more analysis of classroom talk using our MD framework to further demonstrate these and other patterns in the ways teachers and students use MD.

Applying the analytical framework:

Nature of Knowledge Construction in a third grade class discussion

The TEACHER uses Evaluative MD like for everyone, we should, it’s easier, to indicate that the work answering her question is shared, to indicate her stance toward the content being discussed and the value of what is discussed.

Excerpt #1

Teacher: The answer is for everybody. Why is it good to use a thermometer? What do you think? Okay, Amanda.

Amanda: Because it’s easier.

Teacher: What? Amanda: It’s easier. Teacher: It is easier [to what]? Zoey [correcting behavior].

Amanda: To tell if it’s hot or cold.

Teacher: Okay. We, should use a thermometer because [pauses to let student finish sentence]. Amanda: To tell if it’s hot or cold?

Teacher: It’s easier, yes. Very good Amanda. Okay, thank you Amanda. Maria?

Maria: That, it’s good by using it to, um, what’s the thing?

Teacher: Thermometer. Maria: Thermometer, because um you can know which um how much are the things that [pauses]. You could like know what, what is the answer and then you could write it on the paper.

Teacher: Oh it’s, oh you can know what is the answer. Yes, Tony. Why is it better to use a thermometer?

Excerpt #2

Ariel: But I have a question, um

Teacher: Okay, what’s your question?

Ariel: If this is, I know that it’s only a liquid but when you put it in something cold or hot, why did it, um, it, how could it go up or down?

Teacher: Okay, um, can you please say your question again?

Ariel: Um, for example, if you put it here [points to a cup of water] how could it, how could it move up or down?

Teacher: If this is alcohol?

Ariel: Uh huh.

Teacher: Right? So your question is why? Why the alcohol is doing this? Going up and going down?

Ariel: [nods yes]

Teacher: Oh, good question. Who knows the answer why? Yes, Ricky?

Ricky: You, you uh, because. [turns the thermometer over in his hand and looks at the back side]

Teacher: Yes?

Leo: Ricky, he says…

Teacher: Shhh, listen. Listen to his ideas, okay?

Leo: Ricky, he says, “oh maybe they um, or maybe they put like um batteries or energy so it could move up or down.”

The STUDENTS use Evaluative MD like to tell if, you can know, how much, you could to indicate the experiences they were drawing on to support their answers to the teacher’s questions.

Both TEACHER and STUDENTS use Organizational MD like because, it is easier to, thank you, and then, to topicalize, connect utterances, to or indicate the end of a focus on a speaker’s idea or contribution.

Both TEACHER and STUDENTS use Organizational MD like but, okay, your question, why, and because to topicalize, connect utterances, and to refer to one another’s utterances.

MD markers in excerpt #1 give us indicators of the frame: giving and reinforcing information.

MD in excerpt #2 gives us indicators of the frame: pursuing a student’s unexpected idea or question.

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