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What?, Wow!, and Hmm...:
Video Clips that Promote Discussion of Student Math Thinking

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Professional development programs incorporate the use of artifacts to promote mathematics teacher learning about a variety of topics, such as discourse, problem solving, and technology. Like many others, we use video of classrooms specifically to promote teacher exploration of student thinking about mathematics. We find, however, that not all video segments are equally effective — some classroom video excerpts lead to more substantive discussions than others. In our experience, it is not always the excerpts that we, as researchers, find most interesting that end up being productive for teachers. For this reason, we decided to engage in a program of research designed to help us understand what it is about certain video excerpts that makes them stimulating for teachers.

Our work takes place in the context of video clubs in which groups of mathematics teachers watch and discuss excerpts of videos of their classrooms (Sherin, 2000). We often serve as the video club facilitator, and in that role videotape participants' classrooms and select video excerpts to bring to the meetings. Because video from all participants' classrooms is typically viewed, the video club environment provides an opportunity to view a wide range of classroom practices.

SELECTING VIDEO CLIPS FOR TEACHER LEARNING

Prior research has, to some extent, considered the issue of how to design video excerpts to promote teacher learning. Much of this research focuses on technical considerations, for example, the importance of the sound quality and video camera positioning in the classroom (Roschelle, 2000). Similarly, some researchers discuss the advantages and disadvantages of particular recording formats, and the implications for how the recordings can be used by teachers (Brophy, 2004). In addition, researchers such as Lampert (2001) and Goldman-Segall (1998) discuss the inherent subjectivity of videotaping, and explain that video is not simply an objective reproduction of an event, but one perspective (that of the videographer) of what took place.

Other researchers, in contrast, look at the context in which the video is made. For example, there is general consensus that for video to be useful for teachers it must be authentic, and not staged. Along the same lines, some argue that teachers learn best when the video is representative of teaching contexts similar to their own (Brophy, 2004). Similarly, some argue that video need not illustrate best practices to be valuable, but that video which illustrates dilemmas that teachers encounter can also be quite constructive for teachers (Lampert & Ball, 1998; Seago, 2004). In our work, we extend beyond these broad considerations of the substance of video excerpts. In particular, we look closely at specific features of video that serve to illuminate student mathematical thinking for teachers.

a video case with the video episode as its centerpiece and includes four basic elements: situating the work, doing mathematics, viewing and discussing video, and linking to

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practice. The module map below helps to illustrate the activity flow of the module's eight sessions (figure 1).

THE MAPLETON VIDEO CLUB

The data presented in this paper are drawn from a year-long video club with seven fourth and fifth-grade teachers at an urban elementary school we refer to as Mapleton. The teachers met once or twice a month for a total of 10 meetings across one school year. Typically, videos from one or two teachers' classrooms were shown at each meeting, so that each teacher had an opportunity to share video on at least two occasions.

Administrators at the school and in the district invited university researchers to organize and facilitate the Mapleton Video Club. The purpose of the video club was to provide teachers with an opportunity to investigate the mathematical thinking of students in their classrooms. To that end, researchers videotaped in a few teachers' classrooms each month, and from those lessons selected excerpts to share at the meetings. There were a few instances in which teachers suggested specific portions of the video to use in the video club, but more often those decisions were left to the researcher-facilitator. In all, 26 video clips, averaging five minutes each, were shown across the 10 meetings. The clips represented a range of mathematical topics, as well as different types of classroom activities. The video club meetings were videotaped and transcribed for later analysis.

Characterizing Video Clips and Discussions of Student Thinking

As a first step towards our goal of understanding the types of video clips that prompt discussions of student thinking we investigated key features of the video clips shown in the Mapleton Video Club and the corresponding teacher discussions of these clips. In particular, we identified three features of the video clips that allowed us to distinguish different ways that video portrays students' mathematical thinking. We also identified criteria for establishing whether the teachers' discussion of the clip was *more* or *less* productive.

We claim that three dimensions of video reveal important differences in the student thinking exhibited: (a) the extent to which a video clip provides *windows* into student thinking, (b) the *depth* of student mathematical thinking shown in the video, and (c) the *clarity* of the student thinking portrayed. *Windows* refers to the types of evidence of student thinking provided in a video, such as verbal statements, written work, and gestures. *Depth* refers to the extent to which students are exploring substantive, rather than superficial, mathematical ideas. Finally, *clarity* concerns the ease with which a viewer can understand the ideas students share.

To examine this claim, all 26 video clips from the Mapleton Video Club were coded independently by two researchers as high or low on each dimension.[1] Inter-rater reliability was 85%. The resulting coding of the clips revealed a range along all three dimensions. (See Table 1 on page 34.)

Second, we characterized whether the teachers had productive discussions of the student thinking portrayed in the video clips. To do so, we analyzed three dimensions of the teachers' conversation: (a) the degree to which teachers focus on understanding student thinking, (b) the extent to which teachers explore substantive mathematical ideas, and (c) the extent to which teachers are engaged in joint sense-making concerning the interactions shown in the video. Specifically, discussions in which teachers consistently considered student ideas as objects of inquiry, discussed rich mathematical ideas, and responded to and built on each others' comments were considered *more productive.* Discussions in which this was not the case were considered *less productive*.[2] To be clear, those segments of discussion coded as less productive were not necessarily unproductive discussions; in some, but not all, of these segments the teachers had worthwhile discussions of topics other than student thinking: ability grouping, general and specific features of the mathematics curriculum, and the district stance towards mathematics learning. We chose to analyze only whether the discussions were useful discussions of student math thinking, as that was the focus of our professional development sessions, and hence the intended purpose for each video clip.

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1 In previous analysis, the video clips were coded as low, medium, or high on each dimension, with very few "medium" codes resulting (less than 10% out of 78 ratings). For the purposes of this paper, the medium rating was removed and those clips were re-coded.

2 Interestingly, teachers' discussions were generally either strong or weak across all three categories. For example, there were no cases in which teachers consistently discussed substantive mathematical issues, but the discussion consisted of isolated and disjoint comments. For more information, see Sherin, Linsenmeier, & van Es, 2006.

TABLE 1. *Criteria for Characterizing Video Clips of Student Mathematical Thinking*

		Low	High
Windows into Student Thinking	Is there evidence of student thinking in the video clip?	Little evidence of student thinking from any source (e.g., very few comments from students)	Detailed information from one or more sources (e.g., student narrates and provides written account of solution strategy)
Depth of Student Thinking	Are students exploring substantive mathematical ideas?	Task is routine for student; calls for memorization or recall on part of student (e.g., student applies known algorithm)	Student engages in math sense-making, works on task at conceptual level (e.g., student devises invented strategy)
Clarity of Student Thinking	How easy is it to understand the student thinking shown in the video?	Student thinking not transparent (e.g., "What is that student talking about?")	Student thinking transparent; viewer sense-making not called for or single interpretation obvious (e.g., "She gives a very clear explanation.")

IDENTIFYING TYPES OF VIDEO CLIPS

Looking across our coding of the video clips and the video club discussions, we identified several patterns in the ways that particular combinations of *windows, depth,* and *clarity* resulted in more or less productive discussions of student thinking among the teachers (see Appendix A). In particular, in what follows, we describe six types of video clips: three that we have found lead to more productive discussions and two that typically did not lead to productive discussions. We also describe one clip type that initially resulted in less productive discussions but, over time, was a valuable resource for promoting productive discussion in the video club. As shown in Table 2, each type of clip represents a unique combination of *windows, depth,* and *clarity* of student thinking.

In presenting the six clip types, we discuss not only the three dimensions of video discussed above (*windows, depth,* and *clarity*), but also explore the relationship between clip type and several factors. To be clear, a number of factors that we examined appear to have no relationship with clip type. For example, the video excerpts varied widely in length, with the shortest lasting less than two minutes and the longest lasting a total of nine minutes. There was no connection, however, between clip length and clip type; in other words, a longer clip did not

TABLE 2. *Types of Video Clips of Student Thinking*

Video Club Discussion Type	Video Clip Type	Description	Characteristics of Student Thinking *Windows*	*Depth*	*Clarity*
More Productive Discussion	What?	"What is going on?"	High	High	Low
	Wow!	"I never thought of that!"	High	High	High
	Hmm…	"There's something interesting here."	High	Low	Low
Productive Over Time	Blip	A short burst of depth	Low	High	Varied
Less Productive Discussion	So What?	"I get it, but what's the point?"	Varied	Low	High
	Huh?	"I'm confused, but what's the point?	Low	Low	Varied

necessarily allow for greater *windows* into student thinking, more *depth* of student thinking, or higher *clarity* of student ideas. In addition, the video excerpts we selected portrayed students working on a wide variety of mathematical topics, from equivalent ratios, to decimals, to area and perimeter, yet no topic was more likely to produce video clips of a particular type.

Productive Video Clips Of Student Thinking

We identified three clip types that consistently led to productive discussions of student thinking. The *What?, Wow!,* and *Hmm…* clips are all high in *windows* but vary in the combination of *depth* and *clarity* of student mathematical thinking that they portray.

The *What?* Clip

What? clips are high in *windows* and *depth*, but low in *clarity*; in other words, they provide evidence of what students are thinking and the thinking is mathematically substantive, but something about the students' ideas is unclear. At the end of a *What?* video clip, we often find ourselves asking "What?" just happened. In our experience, these clips prompt teachers to explore student thinking in an attempt to answer that question.

In one *What?* video clip, for example, the teacher asks a student to explain the reasoning he used to obtain an incorrect answer to the following problem: if 1 inch represents 50 miles, then 1/2 inch represents how many miles? The student has said that the answer is seventy-five, and persists in this belief even though he acknowledges that "half a pizza is smaller than one whole pizza," and even though he essentially calculates the correct answer of twenty-five in the course of his explanation of why seventy-five is the answer. The teachers in our video club found this combination of both correct and incorrect reasoning very intriguing and spent quite a bit of time teasing apart the different aspects of the students' answer in order to reach a conclusion about what he understood.

What? clips often, although not always, involve students who explicitly express some sort of confusion about the mathematics they are doing, or students who obtain the incorrect answer to a problem. Mathematical mistakes, particularly in the context of reasoning and problem-solving, seem to be ready fodder for exploration. Perhaps student mistakes are inherently more interesting because there are so many different ways for students to do or think something that is mathematically incorrect. In contrast, when students obtain a correct answer, teachers are more often able to — rightly or wrongly — mentally fill in the blanks in a student's solution and at least believe that they understand the student's work. To be clear, some *What?* clips do illustrate a student who has provided a correct answer. However, in these cases, the student does not articulate his or her work clearly, and his reasoning is not transparent. Such clips, therefore, can be confusing for teachers who view them.

Another important feature of the *What?* clips that we identified concerns the context in which students shared their ideas. Specifically, *What?* clips took place either during whole class discussion or during interactions in which individual students were presenting their ideas at the board. In both cases, the classroom teacher verbally interacted with the student, asking questions about his or her ideas or methods. This teacher-student interaction was likely an important factor in promoting both high windows and high depth in these clips.

The *Wow!* Clip[3]

Wow! clips, like *What?* clips, are high in both *windows* and *depth*. In contrast to *What?* clips, however, *Wow!s* are high in clarity. Thus, students in *Wow!* clips are engaged in in-depth problem-solving and reasoning, but the viewer is left with little confusion about what students are doing or saying. *Wow!* clips are thought-provoking, and lead to productive discussions of student thinking, not because they provide teachers with something to figure out, but because they provide teachers with new insights into how to think about the mathematics that is presented in the classroom; teachers understand what is going on, but there is something interesting about the student thinking anyway.

Wow! video clips come in two varieties, those that contain innovative student methods and those that contain student errors. In the innovative clips, students use correct, but non-standard, solution methods. The viewer is able to

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[3] As can be see in Appendix A, of the five Wow! clips we identified, four resulted in *more productive* discussions, while the discussion of one clip was coded as *less productive.* We believe this was the case because the video clip viewed immediately prior to this one came from the same teacher's classroom and portrayed a similar part of the lesson. Thus the teachers had, in a sense, already discussed the student thinking portrayed in this video clip and had no new ideas to add.

understand the students' work, but is excited about the new ideas and wants to pursue them further. For example, in one of our video club meetings, a teacher began the discussion of a *Wow!* clip by saying, "I would have never thought of doing it that way!"

While *What?* clips are often based on student mistakes that are confusing in nature, *Wow!* clips may contain fairly easy to follow student mistakes. These student mistakes, while understandable, can lead teachers to attend to aspects of the mathematics that they might otherwise not have noticed. For example, in one video clip a student is attempting to calculate the area of a rectangular figure, but repeatedly confuses perimeter and area. In their discussion of the video, the teachers in our video club realized that this perimeter versus area distinction was one that they probably needed to consider and make more explicit than they had in the past.

Like *What?* clips, *Wow!* clips primarily drew from participant structures in which the classroom teacher plays a significant role, such as instances in which there were whole class discussions, in which students were presenting solutions at the board, or in which the teacher was talking with an individual student. As before, the teacher-student interaction was likely an important factor in promoting both high windows and high depth in these clips. Interestingly, one of the *Wow!* clips takes place in a student-to-student context, involving a pair of students working without their teacher. In the video club discussion of this clip, a Mapleton teacher comments that one of the students "was acting like she was the teacher there." It seems that, while *What?* and *Wow!* clips may require the active participation of a teacher, that role can occasionally be taken on by students.

The *Hmm…* Clip

Hmm… video clips are high in *windows*, but low in *depth* and *clarity*. In other words, the thinking portrayed is routine and algorithmic in nature, but despite the use of routine thinking, something about the students' ideas is unclear. *Hmm…* clips, like *What?* and *Wow!* video clips, are good prompts for productive discussions of student thinking.

In addition, we found that *Hmm…* clips always involve student mistakes and confusion. Although the student mistakes may be on a superficial level mathematically, the teachers talk about the mathematical concepts underlying these mistakes in order to understand them. In doing so, the teachers go beyond the mathematics in which the students in the video are engaged, and have a discussion that is mathematically substantive.

In one *Hmm…* clip, a pair of fourth-graders is practicing their single-digit multiplication facts in the context of a card game. The only talking in the video clip is short comments such as, "I got forty-eight," and "sixty-four, I guess I win." There is gestural evidence, however, of students counting to reach their answers. The students in the video are merely practicing multiplication, but teachers who watch the video clip are curious about why the students make certain mistakes. In particular, the teachers want to know whether the students actually understand the concept of multiplication, even though they often give incorrect answers. For the teachers, making decisions about what the students do and do not understand involves having a mathematically rich, very productive discussion about student thinking.

In our experience, *Hmm…* clips take place in the context of what we call the "student-to-student" participant structure, that is, in cases in which a group of students is working together without the significant presence of a teacher. When students work together there is often a lot talking and gesturing, leading a "student-to-student" video clip to be high in *windows*. However elementary school students, on their own, do not always effectively question each others' ideas or ask for further explanation. Thus, a video clip without the involvement of a teacher is more likely to be low in *depth* and *clarity*.

Productive Over Time

While most clip types appear to lead to only *more productive* or *less productive* discussions of student mathematical thinking, one type of clip, the *Blip*, actually became more productive over the course of the video club; of the five *Blips* shown in our video club, the first three led to less productive discussions of student thinking, whereas the final two led to more productive discussions. Perhaps the easiest way to understand the nature of a *Blip*, which is low in *windows*, high in *depth*, and varies in its degree of *clarity*, is to think of it as a "fleeting" *What?* or *Wow!* — for much of the clip, there may be no significant student ideas, but the clip contains short glimpses into what students are thinking. In these short bursts of depth, the student ideas may be clear or unclear, but the ideas themselves are thought-provoking.

In addition to being the only type of clip that prompted multiple productive, and multiple unproductive, discussions of student thinking, *Blips* are also the only type of clip with low windows that we have seen lead to productive discussions of student thinking. In fact, we believe it was precisely the low windows that lead to its variable effectiveness. Specifically, in related research, van Es (2004) explains that early in the Mapleton Video Club meetings, the teachers were not skilled at identifying key moments in the video that required closer attention, particularly moments in which interesting student thinking was visible. Thus, we infer that if students' ideas were represented in much of the clip, teachers were more likely to attend to these ideas; in contrast, if a student's idea was mentioned only briefly, it was not likely to gain the attention of the teacher. Over time, however, van Es found that the participants in the Mapleton Video Club developed a more refined ability to notice student thinking. Therefore, later in the series of video club meetings, it seems more likely that they could productively attend to the kinds of short bursts of deep student thinking that *Blip* video clips contain. In a sense, the "small windows" in Blip video clips are like the peepholes in apartment and hotel room doors; much of the time, nothing can be seen through them, but if one is looking in just the right way, quite a lot is revealed.

It is worth noting, also, that all instances of *Blip* video clips came from whole-class discussions. These were cases in which, in the midst of discussion, a student raised a substantive idea, sometimes making an insightful, correct comment and at other times making an mathematical error. In a *Blip* video clip, however, the idea is not pursued by the teacher. Instead, the teacher may simply correct any mistakes or acknowledge that a new idea has been raised, and then move on without further discussion.

Unproductive Video Clips of Student Thinking

We have found that two types of video clips consistently lead to less productive discussions of student thinking. It seems that a lack of mathematical *depth* in conjunction with certain degrees of *windows* or *clarity* can cause a video clip to be uninteresting for teachers. *So What?* clips combine low depth with high clarity, whereas *Huh?* clips combine low windows with low depth. Furthermore, in both cases, these clip types are represented by a variety of participant structures. This suggests that no particular classroom arrangement will guarantee a productive combination of *windows, depth,* and *clarity*.

The *So What?* Clip

So What? video clips vary in the degree of *windows* they contain, but are low in *depth* and high in *clarity*. These video clips lead to unproductive discussions of student math thinking because neither the mathematics nor the students' ideas themselves are thought-provoking. The students' ideas are clear, so, unlike with *What?* and *Hmm…* clips, there is no work to be done to understand what the students are thinking. In addition, the mathematics in *So What?* video clips is routine and based on rote-recall, so there is little motivation to explore the mathematical ideas that are raised in the video clip. A *So What?* clip is easy to understand, but is simply not very interesting.

The *Huh?* Clip

A *Huh?* video clip is low in *windows* and *depth*, but can vary in *clarity*. The combination of low windows and depth means that, even if student ideas are unclear, teachers may not feel that it is worth making the effort to figure out what students are thinking. Thus, discussions of the student thinking in *Huh?* clips tend to be unproductive. In contrast to a *Hmm…* clip, *Huh?* clips do not have sufficient windows to be used as a jumping off point for trying to understand confusing student ideas. Furthermore, in contrast to a *Blip*, in which the substantive mathematical ideas counterbalance the minimal evidence, the mathematics in a *Huh?* clip is not thought-provoking.

In one *Huh?* video clip, a group of students is filling out a worksheet that begins by telling them that a single sheet of paper contains 2,000 dots, and then asks how many dots would be on five pages, fifty pages, five hundred pages, and so on. The worksheet is essentially an exercise in correctly using place-value in numbers that are multiples of ten. The clip contains very little evidence of student ideas because the students only give partial explanations of their answers, and we cannot see what the students are writing on their worksheets. In their discussion of this video clip, the teachers in our video club spent a significant amount of time just trying to decide whether students were answering the worksheet questions correctly; while the teachers are attempting to make student ideas an object of inquiry, they cannot move on to interpret the meaning of student comments, or to think about the mathematics involved, unless they are able to first accurately identify student ideas. At one point in the discussion of this video clip, a teacher makes the telling comment, "Oh, who cares about the…dots anyway." This teacher is acknowledging her frustration that even if she were able to eventually understand the ideas contained in this video clip, they would not be of a significant nature — and thus worth the effort — anyway.

The *Double Whammy* Clip

Double Whammy video clips are not truly an additional type of clips, but are merely those video clips that fall into both the *So What?* and *Huh?* categories. In other words, *Double Whammy* clips are those that contain low windows, low depth, and high clarity of student thinking. We consider *So What?* and *Huh?* video clips to be separate types because they lead to unproductive discussions for different reasons. The existence of *Double Whammy* clips, however, may still be significant. It is our hypothesis that, while *So What?* and *Huh?* video clips might occasionally lead to productive discussions,[4] it would be particularly difficult to have a productive discussion about a *Double Whammy* video clip because such clips are "doubly" problematic.

DISCUSSION

When originally selecting the 26 video clips to be used in the Mapleton Video Club, we had neither the video clip dimensions (*windows, depth,* and *clarity* of student thinking) nor the video clip types in mind. Our goal had been to pick "good" clips where "something interesting was happening." In retrospect, our view of "interesting" student thinking was closest to the *What?* clip, this is excerpts that involved substantive, but confusing, thinking on the part of students. Our belief was that these clips would prompt teachers to want to explore and understand the student ideas portrayed.

We were not surprised to learn that *Wow!* clips also lead to productive discussions of student thinking. While the clarity of these clips meant that teachers might not be prompted to understand student ideas per se, we still expected teachers to be interested in the deep mathematical concepts underlying those ideas. The lesson of the *What?* and *Wow!* clips is that, at least in the context of sufficient evidence, teachers do consistently become engaged with the substantive mathematics in a video clip, regardless of the clarity with which students present their thinking.

In contrast, we were surprised to learn that teachers were able to have productive discussions of student thinking even when discussing a video clip in which students were not exploring mathematics in a substantive way. As researchers, we did not find the *Hmm…* clips nearly as engaging as the *What?* and *Wow!* video clips, but in the course of analyzing the Mapleton Video Club data, we discovered that, in the right context, routine and algorithmic mathematics can still provide a useful prompt for teachers.

Prior to conducting the analysis of the Mapleton Video Club data, we expected *Blip* video clips to lead to productive discussions far more consistently than they did. As part of our belief that high depth was a key component of "good" video clips, we thought that any clips that contained mathematical depth would be good. As researchers, we had become skilled at finding moments of mathematical depth, however fleeting they might be. As it turns out, the teachers in our video club did not have the needed experience to be able to focus on these shorter instances of depth. *Blips* were always interesting to us as mathematics education researchers, but teachers needed time and experience to see them.

Other clip types, namely the *So What?* and *Huh?* video clips, were unproductive as we had expected. The selection of these video clips arose from the constraints of running a video club, but the inclusion of such video clips allowed us to confirm our hypothesis that low depth in combination with either high clarity (the *So What?* clip) or low windows (the *Huh?* clip) will indeed make it difficult for teachers to have productive discussions of student thinking.

What, then, are the lessons that we can learn from our knowledge of these six video clip types? The first lesson is that we must be careful about using *Blips* in professional development. That is not to say that video clips containing only short bursts of student sense-making should never be shown, but that they should be saved until after teachers have honed their interpretation skills. The second lesson is that, while eliminating *Blips* from the collection of useful video clips — at least at first — may appear to limit the range of productive clip types, the addition of *Hmm…* clips also expands it. This knowledge gives teacher educa-

[4] Clearly, factors other than the video clip can affect the nature of the teachers' discussion, for example, who is present at any particular meeting, or the teachers' familiarity with the lesson that is viewed. In fact, in the first Mapleton Video Club meeting, the teachers have a productive discussion of student thinking in the context of a *Huh?* clip. We believe this was due to the strong direction provided by the facilitator in an attempt to establish norms of analysis.

tors additional flexibility in selecting video to use with teachers. One need not look for the "perfect" lesson; one need only look for a useful combination of *windows, depth,* and *clarity* to use at the right time.

Our interest in identifying types of video clips initially stemmed from our use of video in video clubs. In this context, we faced two constraints in selecting appropriate video clips: (a) we wished to show video from all participants' classrooms, yet student thinking was exhibited quite differently across teachers' instruction, and (b) in contrast to many professional development programs which have a long time span over which to produce the ideal video clip, we were required to choose clips once or twice a month from only a small number of observations. Without the flexibility to search through many hours of video in order to find the best excerpt, it was particularly important to us to be able to predict what kinds of video clips would lead to productive discussions of student thinking.

We believe this research will not only be useful in conducting future video clubs, but also has implications for teacher education and professional development more broadly. For those designing video-based professional development materials, it can be valuable to be aware of the different clip types that may lead to more or less productive discussions. Even when professional developers have time to search for video across many classrooms, they may find that this research provides a useful framework for focusing their attention.

Furthermore, in mathematics education in particular, a wide range of video-based materials are available. Teacher educators who select from among these materials often draw from multiple sources at different points in a course. The clip types presented here can serve as a guide to such instructors of what might be useful and why.

While the work presented here adds to our understanding of the role of video in teacher learning, additional questions remain. In the future, we hope to explore what teachers learn from viewing and discussing different types of clips. We suspect that viewing multiple kinds of clips will provide the most benefits for teachers as they develop their skills in interpreting student thinking in different contexts. We also wish to explore how to most effectively facilitate different types of clips. For example, understanding that in *Hmm…* clips the goal is to have teachers move beyond the mathematics that the students explore might influence the types of questions the facilitator poses to the group. Other research might also want to explore how video clips can promote productive discussions of topics other than student thinking. We suspect that the methods presented here can be adapted for such purposes.

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APPENDIX A

Six of Types of Video Clips Identified in the Mapleton Video Club

		Characteristics of Student Thinking			CODING OF VIDEO CLUB DISCUSSION
		WINDOWS	DEPTH	CLARITY	
WHAT?		**HIGH**	**HIGH**	**LOW**	**MORE PRODUCTIVE**
Video Club 3	Clip B	High	High	Low	More Productive
Video Club 5	Clip A	High	High	Low	More Productive
Video Club 6	Clip B	High	High	Low	More Productive
Video Club 7	Clip A	High	High	Low	More Productive
Video Club 8	Clip D	High	High	Low	More Productive
Video Club 8	Clip E	High	High	Low	More Productive
Video Club 10	Clip D	High	High	Low	More Productive
WOW!		**HIGH**	**HIGH**	**HIGH**	**MORE PRODUCTIVE**
Video Club 2	Clip C	High	High	High	More Productive
Video Club 3	Clip A	High	High	High	More Productive
Video Club 7	Clip B	High	High	High	More Productive
Video Club 8	Clip C	High	High	High	More Productive
Video Club 9	Clip B	High	High	High	Less Productive
HMM…		**HIGH**	**LOW**	**LOW**	**MORE PRODUCTIVE**
Video Club 4	Clip A	High	Low	Low	More Productive
Video Club 10	Clip A	High	Low	Low	More Productive
BLIP		**LOW**	**HIGH**	**VARIED**	**VARIED**
Video Club 1	Clip A	Low	High	Low	Less Productive
Video Club 2	Clip B	Low	High	High	Less Productive
Video Club 8	Clip A	Low	High	Low	Less Productive
Video Club 9	Clip A	Low	High	High	More Productive
Video Club 9	Clip C	Low	High	Low	More Productive
SO WHAT?		**VARIED**	**LOW**	**HIGH**	**LESS PRODUCTIVE**
Video Club 2	Clip A[1]	Low	Low	High	Less Productive
Video Club 6	Clip A[1]	Low	Low	High	Less Productive
Video Club 8	Clip B	High	Low	High	Less Productive
Video Club 10	Clip B[1]	Low	Low	High	Less Productive
Video Club 10	Clip C[1]	Low	Low	High	Less Productive
HUH?		**LOW**	**LOW**	**VARIED**	**LESS PRODUCTIVE**
Video Club 1	Clip B	Low	Low	Low	More Productive
Video Club 2	Clip A[1]	Low	Low	High	Less Productive
Video Club 4	Clip B	Low	Low	Low	Less Productive
Video Club 6	Clip A[1]	Low	Low	High	Less Productive
Video Club 10	Clip B[1]	Low	Low	High	Less Productive
Video Club 10	Clip C[1]	Low	Low	High	Less Productive

[1] These video clips appear in both the *So What?* and *Huh?* categories. We refer to them as *Double Whammy* video clips.