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From judgmental evaluations to productive conversations: Mathematics teachers' shifts in communication within a video club

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The study reported here explored how secondary mathematics teachers, participating in a school-based video club, communicated with each other and with the facilitator along the different sessions of the club. Specifically, their evaluative comments were analyzed, with respect to the non-judgmental norms that this club aimed to nurture. Three types of evaluative comments were identified, reflecting varying degrees of teachers' capability to interpret and discuss observed teaching moves while attributing possible rationalizations to the filmed teacher's decisions. It was found that the amount of highly judgmental comments decreased as the club proceeded, allowing for a more productive communication.

Keywords: Video club, school-based professional development, peer-discussions.

Introduction

Video club is a form of professional development that has become known since the early 1990's (Sherin, 2004; Sherin & van Es, 2009). In a video club, a group of teachers meet on a regular basis, usually under the guidance of a facilitator, to watch and discuss classroom video selected according to a certain aim. Different video clubs vary in their goals, agendas and the frameworks employed to direct teachers' conversations. For example, a video club can be established around the aim of enhancing teachers' proficiency to notice and analyze students' mathematical thinking (Sherin, Jacobs, & Philipp, 2011; van Es & Sherin, 2008). Another case is a club focusing on a certain teaching proficiency, such as running class discussions (Coles, 2010). Video clubs can be school-based, or alternatively region or university-based, but in general groups are meant to be small enough (usually 5-15 participants) to allow for genuine peer-conversations and sharing of ideas and insights.

One of the core issues associated with conducting video clubs is establishing norms of discussion. Apart from the basic intent to ensure a climate of trust, where teachers feel safe to raise ideas, norms also "orient individuals to one another, as well as to how information is communicated, what constitutes an idea worthy of investigation, and how to make sense of one's practice" (van Es, 2009, p. 104). Different video clubs may embrace different norms, according to their focus, goals and agenda. However, there is an apparent consensus in the literature that teachers' comments slipping into evaluations, judgments or negative reactions, lead to discussions with little value (Coles, 2010; Jaworski, 1990; van Es & Sherin, 2008).

In this paper we report on a study conducted within one video club, in which we explored the types of evaluative comments made by teachers and followed their frequency along a sequence of sessions. In the following, we describe the context of this club and the emergent research question, present a brief account of the data collection and analysis means, and demonstrate central findings.

Context, rationale and research question

The video club studied was conducted as part of a professional development project named VIDEO-LM (Viewing, Investigating and Discussing Environments of Learning Mathematics), developed at the Weizmann Institute of Science in Israel. The project is aimed at promoting secondary mathematics teachers' reflective skills, as well as their mathematical knowledge for teaching. A large collection of videotaped lessons serve as learning objects and sources for discussions with groups of teachers within video clubs. The videos are taken, in a sense, as "vicarious experiences" which allow for indirect exploration of one's own perceptions on the practice of mathematics teaching, through the observation of unknown peers in action (Arcavi & Schoenfeld, 2008; Karsenty, 2018). Peer-conversations are guided by the use of an analytic framework, comprised of six viewing lenses through which the lesson may be discussed: (1) mathematical and meta-mathematical ideas around the lesson's topic; (2) explicit and implicit goals that may be ascribed to the teacher; (3) the tasks selected by the teacher and their enactment in class; (4) the nature of the teacher-student interactions; (5) teacher dilemmas and decision-making processes; and (6) beliefs about mathematics, its learning and its teaching as inferable from the teacher's actions (for further details on the framework and its utilization, see Karsenty & Arcavi, 2017; Karsenty 2018).

VIDEO-LM clubs maintain an agenda based on the working assumption that the filmed teacher is acting in the best interest of his/her students. Thus, observers are required to "step into the shoes" of the filmed teacher in an attempt to understand his/her goals, decisions and beliefs. This 'exercise' of attributing reason to another teacher's moves is meant to encourage reflective thinking about the span of possible actions and decisions available within teaching situations. VIDEO-LM facilitators attempt to establish nonjudgmental norms of discussion, through the redirection of highly evaluative comments into "issues to think about"; instead of judgmental comments about the filmed teacher's decisions, participants are asked to consider alternative paths and their ensuing tradeoffs.

To date, more than 70 VIDEO-LM clubs were conducted across Israel. The specific club at the focus of this study was a school-based club, held during 2017 in an urban high school in the center of Israel. The school's population is characterized by a high proportion of low achievers, and most students study mathematics towards the basic level of Matriculation[1]. The mathematics department includes 7 teachers, 5 of them with a teaching experience of over 30 years, and 2 with under 10 years of experience. Only 2 teachers in this team teach the higher Matriculation mathematics tracks exclusively, whereas the other 5 teach mainly in the basic track. The facilitator of this VIDEO-LM club (the second author of this paper) is a member of this department. Although being the youngest teacher in the team, he is the only one who has taken a VIDEO-LM facilitator course and had become a qualified facilitator, and his colleagues all agreed to participate in the club under his lead.

Setting

The club met 8 times during the year (about once a month), with each session lasting around 2 hours. In a preliminary discussion with the head of department, it was decided that the club will focus on

[1] In Israel, the mathematics Matriculation exam is obligatory for receiving a Matriculation certificate, and can be taken in one of three levels: basic, intermediate or high.

videotaped lessons filmed in low-track Matriculation classrooms, due to the characteristics of the school mentioned above. In the first 6 sessions, the facilitator (henceforth: YP) selected videos of teachers unknown to the team, from the VIDEO-LM collection. In the 7th session, YP showed a video of his own teaching, and in the last session the group watched a lesson taught by one of the other teachers, who volunteered to be videotaped for this purpose.

Rationale and research question

This video club enabled investigation of a situation that is less explored in the literature on video clubs for mathematics teachers; unlike most cases, where the facilitator is external to the group, here the facilitator was a fellow-teacher from the same team. This situation potentially allows for intimacy among participants, who are familiar and comfortable with one another, with no outsiders present. This was an interesting opportunity for us to study what teachers talk about, and how they communicate. The emerging research question was thus the following: What characterizes the peer-conversation taking place in a school-based VIDEO-LM club, facilitated by a member of the group?

Data collection and analysis

Data was collected mainly through video recordings of 7 out of the 8 sessions (one session was audiotaped). The recordings were supplemented by a researcher journal where YP documented his insights. The content analysis performed on the collected data included the following steps:

1. Preforming a coarse transcription of all the recorded data from sessions, and identifying recurring themes/issues of interest.
2. Selecting sessions for in-depth analysis. Of the six sessions in which videos of unknown teachers were discussed, we decided to select the first two and the last two (# 1,2,5,6) to enable a perspective on shifts over time. In addition, the two sessions in which videos of team members were discussed (# 7,8), were also selected for analysis. These six sessions were then fully transcribed.
3. Segmenting transcripts into units of analysis. The basic unit was defined to be an idea unit, i.e., a transcript section in which one idea appears, whether in a single turn or along a number of turns.
4. Classifying each idea unit into one of the themes detected in step 1, using the Atlas.ti software.
5. Identifying categories within each theme (e.g., within the theme of evaluative comments, levels of evaluations were identified).
6. Systematically categorizing all turns of talk according to the identified categories. This classification was validated by two researchers.

Findings

One of the interesting themes identified in step 1 of the analysis, was teachers' evaluative comments. About 18% of the idea units were classified within this theme. As described earlier, VIDEO-LM clubs attempt to establish nonjudgmental norms of discussion. Thus, it was interesting for us to categorize types of evaluative comments and examine whether there were any shifts in the teachers' adherence to the expected norms. In this report, we focus solely on this issue.

We identified three categories of evaluative comments. These categories are stated and illustrated below. Due to space limitations we limit the illustrations to examples from 2 sessions.

Category (a): Decisive negative judgment towards teaching moves observed in the video.

This category was characterized by keywords such as ‘you cannot do this’; ‘unacceptable’; ‘it’s disturbing'; ‘I would never do that’; ‘it hurts to see this’, etc.

Example (a)1.

In Session 1, teachers watched a lesson on the topic of exponential growth and decay, given in a low-track 11th grade. When asked to relate to the teacher’s decisions that they have noticed, the following conversation evolved between the facilitator and one of the teachers:

94	Sapir:	Another decision of the teacher that’s disturbing, to me personally it’s extremely disturbing, the children are passive, there’s no textbook to read from, he writes the question and answer on the board for them… which is pretty organized, okay, but […] I wouldn’t have written the question, only the answer. But the children see the question in front of their eyes in the textbook. That is, to me it was very disturbing that the children sit like that [crosses her arms] like…
95	YP:	So let’s ask the same question again. The teacher arrived in class, apparently in the beginning of the year, and said “you have no textbook” […] He arrives and decides to write the exercises on the board, one by one. We’ll see it also later, each exercise he writes on the board, the question and sub questions…
96	Sapir:	What’s the advantage in this? I don’t…
97	YP:	I’m asking you.
98	Sapir:	I don’t see an advantage.

In this communication, Sapir not only harshly criticizes the teacher’s decision not to use a textbook, but also rejects any attempt to find a possible reason for it. Her use of words such as "extremely disturbing", "very disturbing" and her refusal to respond to YP's requests to take the teacher's viewpoint, are all signals of a high level of negative judgmental talk.

Example (a)2.

In Session 2, teachers watched a lesson in analytic geometry in a low-track 12th grade, introducing the concept of a canonical circle. At a certain stage the teacher, together with the students, arrived at the equation $x^2+y^2=13^2$, by applying the Pythagorean theorem to a triangle drawn in the first quadrant (with one side on the x-axis, another side parallel to the y-axis, the point (x,y) as the edge of the hypotenuse, and R=13). Then, he asked what if y=0, wrote on the board $x^2=13^2$ and under this, following a student’s answer, wrote x=13. He then showed the point (13,0) on the graph. Following the video, Olga criticized the fact that the teacher did not state the negative solution, -13:

507	Olga:	You can’t write that and not say a word.
508	Iris:	You can.
509	Olga:	You can’t.
510	Iris:	You can.
511	Olga:	No.
512	Iris:	In a weak class you can.
513	Olga:	No.

This communication between Olga and Iris is an example of an unproductive argument. It starts with a back and forth "you can, you can't" exchanges, devoid of any justifications. Then, after three such exchanges, Iris brings in a justification based on the circumstances of this being ‘a weak class’, to which Olga simply answers 'no', without relating to the content of Iris' claim. Later in the session, when the facilitator brings forward the issue of the teacher’s beliefs, Olga returns to her objection:

601	YP:	What, in your view, are the teacher’s beliefs about the students’ role in the lesson, about the teacher’s role in the lesson?
602	Olga:	Okay, I relate this to what we talked about, let’s say… If I would have heard such a thing like $x^2=13^2$ and the answer… I would have said to the students, [I would have] stopped and said to the students, do you agree with what I wrote? I give them the floor and I want to hear their response.
603	YP:	Okay, and what did he [the teacher] do?
604	Olga:	He didn’t do such a thing, at all.
605	YP:	So what is his belief, derived from that?
606	Olga:	So maybe like Iris says, that he didn’t want to cut the flow and he continues, but I think it’s unacceptable.
[…]		
631	YP:	Did you perceive any belief that he might have regarding low achievers? Let go of yourself for a moment, detach yourself. […] did you see anything that you can say “I think that his credo about low achievers is XYZ”, did you see something like that?
632	Olga:	There are several things here that, let’s say, bother me
633	YP:	Not what bothers you…
634	Olga:	No, when I begin, let’s say, with these students, I would start differently.

In the above episode, we see Olga solely focusing on what she sees as undesirable teaching moves [602, 632, 634], despite the recurring request of the facilitator’s to “detach herself” and to state the teachers' beliefs [605, 631, 633]. Although, in line 606 she feebly cites Iris’s reasoning in response to this request, she immediately goes on to state that it is "unacceptable".

Category (b): Disagreement with moves observed in the video, and proposing an improvement.

This type of disagreement often came in the form of suggestions, sometimes as if the filmed teacher was present in the room, and avoided decisive negative judgments. Keywords are ‘you need to’; ‘you should’; ‘it’s worthwhile’; ‘I’m used to’; “I’m not sure about this’, etc.

Example (b)1.

In session 1, Uri relates to the teacher’s choice to introduce exponential growth and decay as a case, or continuation, of geometric series:

142	Uri:	[the teacher says that] exponential growth and decay is like a geometric series and that’s it. It’s a little different, you need to explain, from daily life. I even would have given an example of materials that decay, even just an example of a person loosing 3 percent of his weight, like, what is decay?

Example (b)2.

In the video screened in session 2, the students phrase a definition of a circle which is incorrect: "a circle is a central point with all points at the same distance from it". The teacher writes it on the board, and gradually refines it by erasing and replacing several words, until the written definition is "a circle is all the points that are at the same distance from a certain point". Olga comments:

380	Olga:	Also it's worthwhile to explain what was not good.
381	YP:	Ah, you think this is something that's missing?
382	Olga:	I think it's missing.
383	YP:	But could it be that it would harm the students had he explained what was not good?
384	Olga:	I think it's important to explain, to make an emphasis on it.

Clearly, Olga's words "it's important to explain", as well as Uri's words "you need to explain", signify a more tolerant and less negative critique than the ones raised by Sapir and Olga, as demonstrated above. Such moderate disagreements are more likely to open up inquiries shared by the group, rather than a direct clash as seen earlier in Example (a)2.

Category (c): Inspecting possible reasons for observed teaching moves, even if the speaker disagrees with them or testifies that s/he would not have performed such moves in his/her class.

This category is less characterized by specific keywords, and more by whole sentences that convey a complex view on the subject at hand, as demonstrated in the next example.

Example (c):

This example goes back to the issue of writing "$x^2=13^2$; x=13". In contrast to Olga, Iris expresses a much more elaborated stance towards the choice not to write x=-13 on the board:

490	Iris:	Perhaps it's a flaw… I would not leave on the board $x^2=13^2$ and then x=13, I would not leave this on the board.
491	YP:	Yes, I saw that it bothered you in the middle [of watching the video].
492	Iris:	Yes, you saw that I flinched. So I would have written x_2=-13, I would show that these are exactly these symmetrical points that we talked about, but I think he gained more than he lost by not paying attention to it, I think it's…
493	YP:	It bothered you, but…
494	Iris:	It's to his credit that he didn't correct this.
495	YP:	Why do you think, why didn't he correct it? Obviously he knows that it's plus-minus.
496	Iris:	[…] he didn't want to linger, he wanted to continue in the same line… I think it's nice, I'm not sure I could have done this.

Category C, as exemplified in Iris' stance, demonstrates the ability to view a certain practice from the perspective of another person.

In addition to these three categories of evaluative comments, we identified a fourth category associated with evaluation, which we termed "adhering to non-evaluative norms". This category included all turns in which an explanation to the observed teaching actions was offered, without personal reservations, or turns in which the speaker objected to judgmental comments of peers.

The frequency of all four categories across the six analyzed sessions appear in Table 1.

Category	Session 1	Session 2	Session 5	Session 6	Session 7	Session 8
(a) Decisive negative judgment	26.67%	21.74%	20.75%	67.74%	0.00%	0.00%
(b) Disagreement, proposing improvement	34.67%	33.70%	0.00%	22.58%	20.00%	47.06%
(c) Justifying a different perspective	8.00%	32.61%	18.87%	9.68%	50.00%	17.65%
(d) adhering to non-evaluative norms	30.67%	11.96%	60.38%	0.00%	30.00%	35.29%

Table 1: Frequency of turns classified to categories a-d, out of all turns classified as evaluative

As can be seen, the amount of decisive negative judgmental comments decreased over the sessions, with the exception of session 6. We note that YP was displeased with his facilitation of session 6, and that this session merits a closer analysis, not carried out yet, in order to better understand its occurrences. We also note that the lack of judgmental comments in the last two sessions may be partly attributed to the fact that the videos were of lessons taught by team members, present in the discussions. We conjecture that gradual adaptation to the VIDEO-LM norms, combined with sensitivity to colleagues, has brought up this absence of decisive negative judgments.

Regarding the other types of evaluative comments, that are more productive in nature, no patterns were discerned in the analyzed data.

Theme	Session 1	Session 2	Session 5	Session 6	Session 7	Session 8
Evaluation	31.58%	17.78%	10.53%	16.67%	9.09%	8.33%

Table 2: Frequency of idea units classified to the theme of evaluation, out of all classified idea units

Inspecting the frequency of idea units classified to the theme of evaluation (see Table 2), clearly shows that teachers allocated less and less of their attention to the act of evaluation (again, with the exception of session 6), hence more attention was given to other foci of discussion (e.g., pedagogy oriented towards low achievers). We see this shift as a positive one; if the video is used more as an artifact around which to raise issues of practice, and less as a source for criticism, it is more likely that reflective thinking will take place.

Discussion and Conclusions

Our goal in this study was to examine the characteristics of peer-conversations taking place in a school-based VIDEO-LM club, facilitated by a fellow teacher who was an integral part of the group. We focused on one of the most important norms of VIDEO-LM sessions: avoiding judgmental talk. We constructed a categorization system that helps to distinguish between different types of evaluative comments. This is, to the best of our knowledge, a novel endeavor. The types of evaluative comments found in our analysis differ in their degree of potential productiveness: while type A is clearly unproductive (and this coheres with conclusions of previous studies), in type B teachers are able to move slightly beyond criticism and offer suggestions for improvements of teaching moves. However,

they still can only see the situation from their own perspective, thus their "span of possibilities", or teaching repertoire, does not seem to expand. In type C evaluations, teachers move beyond their own perspective and provide a rationale for a teaching decision that they themselves would probably not have taken. This is a form that seems to be at least partially productive as it offers revisiting one's habitual practices. Finally, type D comments can be seen as productive as they may result in reflecting upon and perhaps modifying one's own practice.

Our findings show a decrease in evaluative discourse over the course of the year, at least in type A comments. This is an encouraging finding, as it points to shifting towards more productive forms of discussions. For facilitators, the awareness of the process by which such a decrease can occur is of practical importance. For researchers, this methodology can provide a fruitful path towards a better understanding of how and under which circumstances evaluative talk can be decreased.

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