NO NEED TO FOCUS INTERACTIONS?
WHAT THE CONSTRUCT OF NOTICING SHOWS ABOUT TEACHERS’ SUPPORTS IN MATHEMATICS CLASSROOM

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The article aims at widening the discussion of emerging learning opportunities in mathematics classrooms, from a perspective of researching classroom interactions to the reconstruction of teachers’ professional visions on these interactions. For investigating learning opportunities from this second perspective, the construct of ‘noticing’ is applied to investigate teachers’ perspectives on classroom interactions, presented in videos of more or less successful learning situations.

WHY FOCUSING ON INTERACTION?

Qualitative research on classroom interactions is a well-established research field in mathematics education. Especially learning opportunities are focused from a lot of different perspectives. One of these perspectives is the interactionist approach, which arose in Math Education in the later 1970th and takes the interplay between learner and teacher within (classroom) interactions as the core for all issues of methodological theory. Here, learning takes place by the participation in the process of negotiation of mathematical meaning. Vice versa, the interaction processes determine what is learned by what is negotiated (cf. Bauersfeld et al., 1985). This long tradition of research shows that teachers are required to establish productive interactional pattern in classrooms which enable students to participate in substantial discourses instead of mathematically unproductive interactional pattern (for example the funnel pattern). However, also almost 40 years later, recent studies still rarely reconstruct these kinds of discourses in which teachers offer support for participation (Jablonka, 2003).

Thus the question arises, what are the backgrounds for that lack of supports within classroom communications? Is it because the teachers are faced with “blooming, buzzing, confusion of sensory data” (Sherin & Star, 2011, p.69) during instruction and do not attend emergences of mathematically rich processes of negotiation of meaning? Or are there maybe other reasons?

WHY FOCUSING ON TEACHER NOTCING?

To gain insights into backgrounds why many teachers do not regularly act supportively within the classroom, the construct of noticing can be seen as a fruitful starting point, because “… what teachers attend to as they teach is highly consequential” (Schoenfeld, 2011, p. 224): amongst others it can determine their further acting and attending in classroom. Hence, to investigate the perception of teachers’ concerning supports in mathematics classroom promised to reconstruct relevant backgrounds for teachers’ support in classroom interaction. To analytically grasp the focus of teachers’ attention, Sherin (2007) referred to the theoretical construct of professional vision, that relates teachers’ perception out of action with their actions in classroom as professional knowledge-based consequences.
“For teachers, professional vision involves the ability to make sense of what is happening in their classrooms. […] As a teacher observes a classroom, he or she is constantly reasoning about what is seen, and this drives where and how the teacher will look in the future. … [I…] describe professional vision as consisting of two distinct subprocesses; (a) selective attention, and (b) knowledge-based reasoning.” (Sherin 2007, p. 23)

Typical for Sherin’s approach is to relate what teachers notice on videos (hence out of action) to how they might be prepared to act in classrooms (in action). The reconstruction of teachers’ professional vision allows hence to draw conclusions on reasons for teachers’ acting in classroom and can be in a second developmental level used in PD Programs to shift teachers’ attention, if it is necessary.

METHODOLOGY

Data gathering in group discussions with teachers

Sherin (2007) investigates teachers’ attention out of action in so-called video-clubs, wherein they were stimulated by a video of a Math lesson. Also within the here presented research study InterPass group discussions, we gather data on the professional visions of interactional relieved teachers within four discussion groups of 5 to 10 teachers each. While Sherin (2007) took ‘normal’ classroom interactions, we stimulated the teachers by selected sequences of some more and some less supportive moves of teachers to draw conclusions on these specific interactional patterns. At the beginning of the discussion, the only impulse that was given to the teachers were to focus on the interaction between the video-graphed students and teachers. In total about 400 min. of group discussions was videotaped and transcribed.

Data analysis

The qualitative analysis of the transcripts was conducted by a mixed methods approach that contains a qualitative reconstruction of the discussion motives and a systematic categorization of these motives. Therefore four methodical steps were necessary to sequence the discussion and develop the different categories: (1) Split the transcript in interactional units, (2) Descriptive reconstruction of thematic motives of teachers’ perception (both steps were realized by using methods of the interactional theory of teaching and learning mathematics, cf. Bauersfeld et al., 1985), (3) Structure the multitude of descriptive motives into main categories (e.g. ‘focus on interactional aspect’ or ‘evaluate a single action’) and sub categories and consolidate the definition of categories, developed inductively by the reconstructed motives and paradigmatic examples (this step was realized by using the approach of documentary method, cf. Bohnsack, 2007). In a quantifying step (4), the categorization scheme was tested with respect to interrater-reliability and then applied to determine frequencies of turns within every main category.

SELECTED RESULTS FROM THE ANALYSIS OF TEACHER DISCUSSION GROUPS

Of course, counting frequencies of turns in which motives and categories (re-)appeared in the group discussions cannot be treated as a standardized measure. However, it gives a very insightful first tendency on different relevancies set in teachers’ professional vision. Especially the frequencies of turns focusing on ‘interactional aspects’ and on ‘instructional aspects’ as well as the number of turns that ‘evaluate single actions’ were surprising (cf. Fig. 1): While the category ‘interactional aspects’ contains motives like the negotiation of meaning just as the interactional allocation of
addressee and participation status, the ‘focus on instruction’ contains different methodical and didactical aspects (for details cf. Vogler, in press). Within the category ‘evaluation of single actions’ all turns were counted that center descriptions, feedback and evaluation of only a single action of one of the participants.

Each discussion group is characterized by the high frequency of turns focusing on instructional aspects and the evaluation of single actions and the comparably rare moments focusing interactional aspects (only 8% of all turns).

Inspired by that quantitative overview, we started to examine these categories again on the micro level and found out that interactional aspects mostly were focused to explain or legitimate why teachers act in a specific way to deal with requirements of the classroom management and the content that should be thought (for further details cf. Vogler, in press). Processes of negotiating meaning were just focused two times within all discussion groups. Also the evaluation of teachers and especially students acting is argumentatively connected within the discussion: the teachers focus the contributions of students often concerning their matching with lessons goals. This motive is also the prominent one within the perception of instructional aspects: almost 70 percent of the turns focus explicit or implicit on reaching lessons goal. In contrast the search for motives concerning subject specific learning opportunities were never mentioned from the teachers within group discussions.

**CONSEQUENCES OF TEACHERS FOCUS OF ATTENTION FOR EMERGENCE OF LEARNING OPPORTUNITIES WITHIN MATHEMATICS CLASSROOM**

Analyzing teachers’ noticing by reconstructing motives of their selected attention can give some beneficial insights into backgrounds for more or less successful supports for participation and learning. So it is remarkable that also teachers who do not need to act immediately but observe a video focus on reaching lessons goals rather than perceive mathematically rich negotiation processes. Thus, this focus is not a matter of teachers’ pressure of acting in time while managing classroom discussion. From the high frequency of focusing evaluation single contributions within the videos, one can conjecture that this lack of attention might be effected through the absence of criteria for analyzing supportive interactional processes. Although teachers were begged to focus on interactional aspects in the beginning of the discussion, they seemed to be unable to pick that focus out as a central theme.
The analysis also grasps an impact of the inner rationality of teachers focus of attention and their acting within their classrooms: In spite of researching classroom interactions and describe demands for supportive moves within classroom interactions, teachers seem to share the opinion that they are in need to keep track of lessons goals to produce verifiability of the conveyed contents of their subject (cf. Prediger et al., in press). This rationality also displaces the desired behavior by researchers to focus mainly on individual participation that lead to a conceptually rich development of students’ mathematical thinking. Vice versa also students are hardly able to participate in interactional pattern that focus the development of mathematical thinking as for example argumentative or explaining formats.

As a consequence there is the need for PD programs to deal with this analyzed focus of attention of teachers to shift the unilateral perception of procedures within mathematics classroom to a fruitful examination of supportive moves within the process of negotiating rich mathematical concepts.

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References


