

# Guiding questions for assessing the metacognitiv-discursive instructional quality

English version of  
„Leitfragen zur Analyse und Beurteilung metakognitiv-diskursiver  
Unterrichtsqualität.“

Published in:

Nowińska (2016). *Leitfragen zur Analyse und Beurteilung metakognitiv-diskursiver Unterrichtsqualität*. Osnabrück: Forschungsinstitut für Mathematikdidaktik. Osnabrück: Forschungsinstitut für Mathematikdidaktikexcerpt.

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The seven guiding questions presented in this text are the core elements of a high-inferent rating system for assessing the metacognitive-discursive quality of class discussions in different school subjects. The wording „metacognitive-discursive“ has been chosen to stress that metacognitive teacher and students activities are analyzed together with discursive aspects of class discussion.

The rating system is a set of seven rating scales for assessing different aspects of the instructional quality of these activities. In the two-step rating procedure, the rater first watches the video and reads the transcript; thereby she/he interprets each verbal student's and teacher's utterance and codes metacognitive and discursive activities using a mid-inferent **category system** (p. 3). In the second step, the rater assesses the quality of these activities with regard to seven rating dimensions (quality aspects). Thereby she/he uses the video and the transcript with all codes for metacognitive and discursive activities set by her/him in the first step. Each **rating dimension** is given by an item called **guiding question** and by a **rating scale** consisting of several **answering categories**. The answering categories describe in detail how the relevant quality aspects are reflected in the class discussion. Different answering categories describe qualitatively different situations. Their order on the rating scale is based on the increasing quality of the class discussion with regard to the particular quality aspects. The rater has to choose the answering category that best describes the situation given in a class.

## 1 Category system

planning		monitoring		reflection		discursivity		
P1	indication of a <b>focus of attention</b> , in particular with regard to <b>tools / methods</b> to be used or <b>(intermediate) results</b> or <b>representations</b> to be achieved	M1	controlling of a subject-specific <b>activity</b>	R1	<b>analysis of structure</b> of a subject-specific <b>expression</b>	D1	measures to <b>improve</b> the discussion / <b>link</b> a contribution	
P1a	one step planning activity			R1a	without taking into consideration any additional rewriting or reorganization	D1a	naming of reference points or persons; asking for reference points or persons (in particular to ensure the basis of conversation); indicating missing or wrong references	
P1b	several-steps planning activity or indication of an alternative approach			R1b	with an additional rewriting or reorganization of the given expression	D1b	setting one's own contribution apart from others or stating agreement with another	
						D1c	repetition of statements said before as a basis for further reasoning or to assure oneself of things meant or written	
						D1d	activities to improve (e.g. structuring) and facilitate the discourse	
P2	planning <b>metacognitive activities</b>	M2	controlling of <b>terminology / vocabulary</b> used for a description / <b>explanation of a concept</b>	R2	<b>reflection on concepts / analogies / metaphors</b>	D2	<b>education</b> for discourse unfolding of / agreement on / asking for rules for the discourse; adherence to the rules of the discourse; asserting that rules have not been agreed for the current discourse	
				R2a	assignment of an object / an issue to a concept, classification of a concept into a concept hierarchy			
				R2b	thinking about the adequacy of concept formation, subsumption, analogy or metaphor			
		M3	controlling of <b>notation / representation</b>	R3	<b>result of reflection expressed by a wilful use of a (subject-specific) representation</b>	<b>negative discursivity</b>		
				R3a	identification / marking	ND1	superfluous contributions	
				R3b	creating a specific representation			
				R3c	like a or b, to promote understanding, to uncover a deficiency of misconceptions, or to initiate a process of abstraction or metacognition	ND1a	asking a self-answering question (asking a leading question)	
		M4	controlling of the validity or adequacy of tools and methods used, in particular with regard to a <b>planned approach</b> or a <b>modelling approach</b>	R4	<b>analysis of the effectiveness and application of subject-specific tools or methods / indication of a tool needed to achieve an intended result</b>	ND1b	repetition of things already said without adding a new point of view to the discourse (also "teacher echoing")	
						ND1X	wilful disturbing the class	
		M5	controlling of (consistency of an) <b>argumentation / statement</b>  in particular revealing mistakes or inconsistency in the argumentation / statement or conducting a stepwise or global control or controlling an alternative argumentation (that has not been presented yet)	R5	<b>analysis of argumentation / reasoning</b>  with regard to content-specific or structural aspects	ND2	<b>inadequate vocabulary</b> (in a description, comment, argumentation, statement)	
						ND3	<b>violence of rules</b> for a well-orchestrated discourse	
						ND3a	statements/ questions do not recognizable refer to the things occurred or said or the reference point is not explicit or the argumentation is fragmentary	
		M6	controlling if the <b>results</b> meet the <b>question</b>  in particular with regard to the goal of a task or question and the answer given to it (controlling the factual and the intended situation) or with regard the plausibility of the results achieved	R6	<b>reflection-based assessment or evaluation</b>	ND3b	shortcomings with regard to grammar or the sentence structure, broken sentences; at first glance comprehensible sentences in which it is not clear what is meant	
						ND3c	introducing alternative statements or proposals without setting them off against others; pretending repetition or summary of a given contribution with an essential change in the meaning and without making this change "visible"	
						ND3d	uncommented change of the reference point / meaning of the issue discussed	
		M7	revealing a <b>misconception</b>	R7	<b>analysis of the interplay between representation and conception</b>	ND3e	false logical structure of an argumentation	
		M8	<b>self-monitoring</b>			ND4	<b>no intervention</b> taken against severe disregard of discursivity rules, in particular when discourse falls into pieces;  ignoring an objection	
		M8a	subject-specific calculation					
		M8b	terminology, description, explanation of a concept					
		M8c	notation					
		M8d	tools and methods, planned approach or a modelling approach					
		M8e	argumentation, statement					
		M8f	correspondence between results and questions					
		M8g	metacognitive activity					

## 2 Guiding questions

### 2.1 Guiding question 1 and the corresponding answers

“Usage of metacognitive activities“: To what extend are metacognitive activities used in a class discussion by students on the one hand and teachers on the other hand and in their mutual interactions?

The following answers are available:

1. Metacognitive activities showing efforts for an elaborate discussion are, *if at all, practiced almost exclusively by the teacher*. It may be the case that the teacher uses her/his metacognitive activities in order to comment on the students’ input.

If there was any ambition of the teacher to introduce metacognitive thinking processes to the students (through request or certain individual metacognitive activities), this has not succeeded yet because the students *do not* seem to adopt the necessary activities perceptible for an observer.

2. Metacognitive activities are *not only practiced by the teacher but also by the students*. However, *the teacher uses many opportunities for the usage* of metacognitive activities herself/himself and does not pass it on to the learners. It may also be the case that the teacher takes a *stand on the students’ contribution frequently* through her/his own metacognitive activities.

Hence, the teacher practices metacognitive activities and encourages the students to get active metacognitively. Nevertheless, the teacher uses her/his own metacognitive activities in class noticeably. An indicator for this observation can be that the teacher practices metacognitive activities herself/himself more often instead of inviting the students to do so. Another indicator can be that the teacher makes a crucial contribution developing central ideas, thoughts and answers.

In those situations, the students usually practice metacognitive activities when prompted by the teacher. *Yet it is almost imperceptible that the students practice metacognitive activities and in consequence, contribute to the discourse progress productively.*

3. *Both teachers and students* practice metacognitive activities. *The teacher rarely uses opportunities* to include metacognitive activities herself/himself and *rarely refers to students’ contribution* by using metacognitive activities.

Hence, the teacher does use metacognitive activities, but rather invites the students to engage metacognitively instead of using her/his own metacognitive activities in class. An indicator for this case can be that the teacher more frequently prompts metacognitive activities than exercises them herself/himself. Another indicator can be that the teacher does not make a contribution de-veloping central ideas, thoughts or answers using her/his own metacognitive activities but rather encourages the students to do so.

Class discussion is again utilized to practice metacognitive activity both by the teacher and the learners. The teacher accelerates this for the learners by not embracing opportunities herself/himself, but rather passing them on to the students. *Yet an observer cannot perceive metacognitive activities on the part of the students without being prompted by the teacher.*

4. *Both teachers and students* practice metacognitive activities. The learners express themselves consistently (perhaps even over a longer period) without any intervention by the teacher and thereby show metacognitive activities.

However, the teacher rarely practices metacognitive activities herself/himself. If the teacher does focus on inviting the students to do so or on commenting students’ contribution, she/he does rarely show it. The students, however, show themselves frequently as being metacognitively engaged even without any prompting by the teacher or there are at least longer periods

in which *the students are involved in metacognitive activities within the discourse without any intervention by the teacher* (model D). Through these activities the students show that they endeavor the advancement of the discourse. Perhaps the students also request metacognitive activities. This can be an indicator for critical thinking about topics, mindsets or argumentations.

*In this case, students use the class discussion independently to exercise metacognitive activities.* Hence, these activities are perceptible for an observer without any prompting by the teacher. This may lead to the assumption that the students have integrated metacognitive activities into their habitus.

## 2.2 Guiding question 2 and the corresponding answers

“Metacognitive activities with justifications“: To what extent are metacognitive activities in combination with justifications used in a class discussion by students on the one hand and teachers on the other hand and their mutual interactions?

The following answers are available:

1. Metacognitive activities in combination with justifications are, *if at all, practiced almost exclusively by the teacher.*  
One may get the impression that the discourse is rather modest or that the argumentation is fragmentary or not targeted at all. In this case, statements which are classified as metacognitive activities rather stay assertions.
2. Metacognitive activities in combination with justifications are practiced by the learners. However, it is *not* perceptible that justifications are *part of the established teaching culture*. For example because they *rarely* occur or because the wording of imprecise, inadequate, incomplete apparent justification is not avenged. It may also not be noticeable that an argumentative, critical, elaborate discussion is targeted.
3. Metacognitive activities in combination with justifications are practiced by the learners. It is perceptible that justifications are *part of the established teaching culture*. For example because they *often* occur or because a precise and reasonable wording is demanded or an argumentative, critical, elaborate discussion is targeted.  
These justifications of students usually follow a teacher’s contribution that is categorized as a prompt to justification. *Thus, the learners do not render most justifications unsolicited.*
4. It is perceptible that justifications are *part of the established teaching culture*. On the students’ side, metacognitive activities with justifications occur repeatedly. *The learners render remarkably many justifications unsolicited which leads to the assumption that these activities are part of the learners’ habitus.* It may be the case that students ask for justifications, and control, question or reject the legitimacy of an argumentation or method.

## 2.3 Guiding question 3 and the corresponding answers

“The significance of metacognitive activities“: What significance do metacognitive activities have for cognitive processes and a sensible handling of the upcoming domain-specific content<sup>1</sup>?

**The following answers are available:**

1. The practice of metacognitive activities which would indicate a critical or sensible handling of upcoming domain-specific content through a complex argumentation, crucial arguing, analysis and justification of a (mis-)conception or through other references to the meta level of the subject is *not visible*, not locally at least, i.e. only in individual isolated students' or teachers' contributions.

It is also *not visible* that understanding processes regarding a sensible handling of upcoming domain-specific content are targeted through a synergy of the practiced metacognitive activities.

2. The local practice of metacognitive activities, i.e. only in *individual isolated* students' or teachers' contributions which indicate a critical and sensible handling of the learnt content through a complex and crucial argumentation or through a question or explanation in references to the meta level of the subject (e.g. questions about a (mis-)conception) is visible. However, *no discussion* results from the local practice of metacognitive activities which would initiate understanding processes or insights regarding the sensible handling of upcoming domain-specific content through a synergy of metacognitive activities of *various participants* and a subsequent specification of the discussed content by various students.

In this case metacognitive activities with a specific significance for the comprehension of the upcoming content can only be noticed in one isolated student's or teacher's contribution (or at least rudimentarily in a speaker<sup>2</sup> in various situations). Hence, this situation only allows the assumption that merely individuals practice special metacognitive activities. The rater<sup>3</sup> might be under the impression that only one student contributes to the clarification of the central question. Her/his contribution can absolutely have linguistic deficiencies which indicate a struggle for specification, but do not prevent the retracing of the considerations. It is important, however, that the student does not contradict herself/himself whereby a seemingly metacognitive justification might be conveyed.

3. The aspiration and initiation of findings regarding a sensible handling of the upcoming domain-specific content through a synergy of practiced metacognitive activities *in discourse* is visible. They are not only perceptible in individual isolated students' or teachers' contributions, but *at least in a short discourse*.

It may also be the case that the teacher for example practices metacognitive activities to summarize or structure and therewith refers precisely to students' contribution in the discourse. Thus, the teacher makes the progress and the argumentative participation of the students visible.

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<sup>1</sup> The term „upcoming domain-specific content“ does not pertain to „content“ in a narrow sense of a written content of a book or task. Here (and in all other guiding questions) it pertains to domain-specific aspects discussed in the lesson subject-specific terminology, concepts and conceptions, symbols, methods, especially of reasoning, using a formal language, proving, interpreting and assessing.

<sup>2</sup>The term “speaker“ includes here (and in all other passages of the guiding questions), answers and comments both female and male speakers. It was adopted from the original version of the guiding question from the book of Nowińska (2016).

<sup>3</sup> The term “rater“ includes here and in other passages of the guiding questions, answers and comments both female and male speakers. It was adopted from the original version of the guiding question from the book of Nowińska (2016).

## 2.4 Guiding question 4 and the corresponding answers

“Discursivity“: Which picture emerges in the class discussion regarding the application of discursive activities and the attempt at establishing a discursive class discussion?

The following answers are available:

1. Both the teacher and students show *no or almost no discursive activities* which are focused on thinking processes, especially on the analysis or specification of what was said and meant or rather what was depicted and presented. The rater<sup>4</sup> might be under the impression that *content-related discursive discussion is missing in order to understand the upcoming content and the individual discourse contributions* as well as in order to assess the sustainability of the individual arguments, ideas and illustrations, metaphors, analogies and symbols, which were used as tools. It may be the case that discursive activities (e.g. of organizational kind) were gathered during the classification of students' or teacher's contributions. However, these do not suffice to improve the coherence of the content.

It is not perceptible, that the teacher uses any structural or disciplinary measure in order to improve the progression of the discourse or to initiate a discursive discussion of the presented arguments, assertions, questions or comments, respectively.

Furthermore, it is not perceptible that the teacher seeks to train the students to practice discursive activities. Thus, no reasons are perceptible that would suggest that the students' behavior can change remarkably in the future. It is not perceptible that the teacher offers the students expressions in her/his interventions which they can use for their own argumentation or to refer to what was meant or presented.

2. Both the teacher and the students show discursive activities. It can be only a few on both sides. *The students do not particularly stand out for their discursive behavior regarding the analysis and specification of what was said and meant or rather what was depicted and presented.* No or almost no activities with special significance for the discursive class discussion (e.g. elaborately and precisely emphasizing of what was said, repeating of what was said as a basis for further argumentation, improvement measures or rather measures to relieve the discourses and disciplinary measures) are perceptible.

The subdivision of the answer options a and b refers to a joint effort of both the teacher and the students to develop the students' discursive competences. The teacher's behavior plays an important role in this subdivision.

- a. It is perceptible that the teacher himself/herself acts as a role model for practicing discursive activities (and that the discursive activities are possibly focused on her/his side in a notable form and frequency). This might be shown through structural measures used by the teacher to improve the progression of the discursive discussion or to initiate a discursive discussion with the presented arguments, assertions, questions or comments.

*The teacher can see to an organized progression of the discourse by leading the class discussion back on track. In her/his interventions the teacher can also offer expressions to the students which they can use as a basis for their own argumentation or to refer to what was meant or presented.* This does not have to condense in a coding of discursive activities. However, it is *not* perceptible that the teacher consistently uses disciplinary measures to influence the students' discursive behavior in the long run.

- b. A difference to answer 2a is the following:

*It is perceptible that the teacher seeks suitable disciplinary measures which trains the students to practice discursive activities, demands the compliance of the already arranged*

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<sup>4</sup>The term “rater“ includes here and in other passages of the guiding questions, answers and comments both female and male speakers. It was adopted from the original version of the guiding question from the book of Nowińska (2016).



*discourse rules or admonishes the students consistently and remarks that their contribution does not refer to anything that was discussed, written, meant or asked before.*

It may be the case (like in answer 2a) that the teacher also acts as a role model for practicing discursive activities, but it is not necessary for answer 2b. Generally the teacher's position as a role model would be less obvious due to her/his effort to train the students to practice discursive activities.

Answer 2b also includes the case that the teacher does not use any disciplinary measures or does not admonish the students because there is no specific reason like a violation of discursivity with serious consequences for the progression of discourse or the comprehension of the upcoming content. No reasons for a discursive and argumentative discussion of the upcoming contents are created.

3. Both the teacher and the students show *discursive activities*. These *occur often* and are not notably limited to the teacher regarding frequency and form. *The students stand out for their discursive behavior and therewith also contribute to the clarification and specification of the content in the class discussion.* The rater<sup>5</sup> is not under the impression that cognition oriented discursive activities are missing in order to reach clarity of what was said, written or meant.
  - a. Through the students' discursive activities it becomes clear who is referring to what point. Discursive activities of special quality by students do not stand out (e.g. elaborately and precisely emphasizing what was said, repeating an utterance as a basis for further argumentation, improvement measures or measures to relieve the discourses and disciplinary measures).
  - b. The students' discursive activities stand out for being of special quality (e.g. elaboratively and precisely differentiating of what was said, repeating an utterance as a basis for further argumentation, improvement measures or measures to relieve the discourses and disciplinary measures).

In this case, it is precisely the students who show many and possibly also high-leveled discursive activities. Generally, the teacher also performs some of these activities or demands them and structures the discourse. In this case the teacher's behavior is not decisive for this answer.

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<sup>5</sup>The term „rater“ includes here both female and male speakers. Cf. footnote 4 on page 8.

## 2.5 Guiding question 5 and the corresponding answers

“Negative discursivity“: To what extent is the conversation disturbed by negative discursivity and to what extent do the students and the teacher try to counteract these negative discourses or more specifically their consequences?

The following answers are available:

1. Negative discursive activities *disturb the teacher’s and students’ contribution in considerable form and frequency.*

There is *almost no specific or consistent effort* to counteract these discourses visible.

Negative discursivity affects the discourse negatively so that the comprehension of the upcoming domain-specific content<sup>6</sup> or an adequate usage and understanding of the terminology is more complicated or rather the course of the lesson or the practice of a compelling and argumentative discussion is prevented.

Negative discourses can have a negative impact on one or more of the potential areas (cf. 11).

2. Negative discursive activities can be seen in teachers’ and students’ contributions considerably in form and frequency.

- a. Negative discourses *affect the discourse negatively* so that the comprehension during the course of the lesson, the understanding of the upcoming domain-specific content or an adequate using and understanding of the terminology is more complicated or immediately negatively influenced.

Negative discourses can have a negative impact on one or more of the possible areas (cf. 11).

However, *a targeted reaction of the teacher* can be noticed in several situations. Consequently, the teacher notices infringements and seeks to ensure the focusing of the conversation. Also, the *endeavor of the teacher* to counteract the negative discourses with appropriate actions (such as described on page 11) *is noticeable*. However, these are *not globally effective* yet *because no clear change of the students’ behavior is perceptible*.

- b. Negative discourses *do not affect the discourse negatively* so that the comprehension during the course of the lesson, the understanding of the upcoming domain-specific content or the usage of the terminology is more complicated or immediately negatively influenced. However, through repeated *infringements* against a *sorted discourse process* (changing of reference points, contributions not related precisely to what was said or done) *a compelling discussion is prevented*. Therefore, the *class discussion* becomes *inefficient* and meandering. New thoughts of the discussion are not precisely related to what was discussed before so that no relevant insights result.

*The teacher* keeps the course of the lesson focused visibly for the observer. After infringements against a sorted discourse process, she/he *interferes through locally correcting and structuring* in order to keep the discourse focused. Thus, the teacher *does not derive any rules for the following discourses* and *does not take any disciplinary measures or admonitions*. It is not expected that the students’ conversational behavior changes to a discursive habitus in the long run.

- c. Negative discourses *do not affect the discourse negatively* so that the comprehension during the course of the lesson, the understanding of upcoming content or the usage of the terminology becomes more difficult immediately.

In this possible answer, two conceivable cases are subsumed.

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<sup>6</sup>The meaning of the term “content“ is explained on page 7 in footnote 1.

In both answers it can happen that the students or the teacher as well use *inadequate wording* several times or express themselves imprecisely or with incomplete sentences. However, *the lesson's context is still perceptible*. The occurring negative discursive activities do not immediately influence the learning processes negatively. In this case, the teacher is neither expected to prompt control after every imprecise contribution nor to perform such control activities herself/himself and through this, interrupt a line of thought.

In the first case, *infringements* against a *sorted discourse process* (changing of reference points, contributions not related precisely to what was said or done) do (almost) **not** occur at all. *An effort* to counteract the negative discourses precisely and consistently is, therefore, in this case usually *not clearly recognizable*. The rater<sup>7</sup>. does not assess this as misconduct.

In the second case, *the dialogue is disturbed* through the usage of inadequate terminology or through local disintegration of the lines of discourse (which rarely is the case). In such a situation, *endeavor* and an effective application of appropriate actions (as for instance described on page 11) to counteract the negative discourses precisely and consistently are *clearly recognizable*. There are no negative consequences of infringements against discursivity on the discourse.

3. **None** of the interlocutors show remarkable *negative discursive activities*.

In this case, negative discourses can occur *only occasionally* and cannot have negative consequences on the discourse, the understanding of upcoming domain-specific content or for the learner's adequate usage of the terminology. The teacher's engagement is not necessary in order to maintain the discourse.

### Measures against serious impact of the negative discourses

Measures that improve the discourse after negative discourses in order to prevent serious consequences can vary.

- They can refer to the usage of inadequate terminology through control, self-monitoring activities and corrective actions. These measures should be applied if there is a special significance in the context of the analyzed scene and if it is relevant to understand the upcoming content or for a reasonable intercourse with the terminology.
- The measures can be used in order to guarantee the basis of the discussion. This is especially important if the lines of discourse fall apart, reference points or the meaning of the used terminology are changed uncommented or a lack of precision complicates the communication. In this case, the measures can be a specification and structuring of what was said and meant, or rather a delimitation and specification of different arguments, conceptions and perspectives.
- Endeavors for a discursive teaching culture can become apparent through admonition and reference to already fixed discourse rules or through agreeing upon new discourse rules.

### Impact of the negative discourses

Answering guiding question 5, the focus is on the *consequence* of the registered negative discourses. This can be revealed diversely in different areas.

- The negative discourse can seriously affect lacks of linguistic representation, e.g. the linguistic precision (ND3b) or the usage of adequate vocabulary for description or commenting (ND2). Hence, they can negatively affect the understanding of the upcoming domain-specific content and the adequate usage of terminology.
- Fragmentary argumentations, incomprehensible or only superficially understandable statements which not clearly show what is meant or what they relate to or rather which relevant contribution they bring to the discussed question (ND3b) may locally lead to an intellectual chaos.

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<sup>7</sup>The term "rater" includes here both female and male speakers. Cf. footnote 4 on page 8.

In this case, the negative discourses prevent a compelling and argumentative examination and complicate the understanding of the upcoming domain-specific content.

- These consequences can also result from – on first sight “harmless“ – frequent repetition of what was already said without introducing new aspects (ND3a) as well as repeating what was already said and changing the meaning significantly (ND3c). Both behaviors can lead to apparent discourse and to “talking past one another“. In this case infringements against discursivity negatively influence the understanding of the upcoming contents as well because the structure and content of the argumentation stay obscure.
- The understanding of the upcoming content can be aggravated or even prevented through asking of questions on a “topic“ that will be discussed in class without a direct and noticeable argumentative connection to the topic itself. Neither the questions nor the answers are included in the argumentation so that for instance the impression of gaps in the chain of reasoning arises (ND3a). Furthermore, contributions on different levels (e.g. statements on examples versus general statements, facts versus subjective attitudes or convictions) can be given in such conversations without pointing out and clarifying differences or rather finally structuring them. In this case, an un-commented changing of reference points or meaning of what was already discussed (ND3d) often occurs and the rater can miss activities of the categories **M5**, **M6**, **R5** and **R6** as structuring measures of what was already said. Even if problematic questions are asked and without reason-ing disregarded in a conversation and when cognitive conflicts – which are related to the central topic of the conversation – are not elaborated but rather minimized, a conversation like this can impede the understanding of the upcoming content.
- Moreover, leading questions and the “teacher echo“ (ND1a, ND1b) have a negative impact, if they impede independent thinking or the insight of students in the upcoming facts and argumentations in longer periods of the lesson.

If the mentioned aspects of the negative discourses occur frequently and stay unpunished and un-commented, the negative impact can have serious consequences for an intellectual, competence-oriented development of the students *in the long run*.

## 2.6 Guiding question 6 and the corresponding answers

“Debates“: To what extent are debates perceptible in the class discussion?

**The following answers are available:**

1. There are no phases during the lesson that meet the criteria of a debate.
2. There are phases during the lesson that meet the criteria of a debate between the learners in a weakened form.  
The cases described in answers 3 and 4 do not occur.
3. There is one longer phase of compelling discussion of a topic which is, however, lead by the teacher for the most part.  
The case described in answer 4 does not occur.
4. There are phases that fully meet the criteria of a debate between learners (*not* in a weakened form).

In guiding questions 1 to 5 the focus of the assessment of the metacognitive-discursive teaching culture lies on the occurrence of particular activities and their influence on the class discussion or rather their significance for the insights of the learners regarding a reasonable handling of the upcoming contents<sup>8</sup> in the relevant sequences. In the answers no explicit judgment is made about how the teacher and students use these activities to structure a compelling and possibly very high-leveled debate or rather when a high-leveled topic or a potentially complex question of a student or teacher cannot manage to relate various aspects (arguments, ideas, perspectives, meanings) argumentatively to each other or differentiate them from one another, respectively.

Amongst others, this missing judgment plays an important role for the assessment of the lesson’s quality: The social context of the lesson, which is defined by the diversity of the learners, their previous knowledge, experience and beliefs, is of significance for the process of the corporate construction of knowledge. This diversity does not automatically contribute to a cumulative construction of individual knowledge and can only be constructively used for the learning process if the resulting differences in the individual student’s way of thinking are made perceptible in a discursive exchange of arguments and are disputed properly. This demands for the concentration of the attention and of what was said on the relevant aspect and a precise argumentation. Whether this succeeds, is assessed in guiding question 6. Unlike the other guiding questions, both metacognitive and discursive activities as well as their influence on each other are covered in this guiding question. It is to be assessed if these activities – at least in short phases of the class discussion – are accomplished so that a compiled discussion of a question, an argument or an answer is the result.

So, in guiding question 6 a qualitative aspect of the local structure of the lesson’s discourses and the incorporation of metacognitive and discursive activities are taken into account.

A metacognitive-discursive discussion of a “topic“ is of special quality if the class discusses a question compellingly, argumentatively and discursively over a longer period. These phases of the lessons are called “*debates*“.

It may be the case that a debate only takes place because a teacher contributes to the conclusiveness of the debate through intervention over a longer period und therewith ensures a structured and fo-cused discourse between the learners. The teacher can participate in the debate with discursive comments to focus the class discussion. However, she/he can also contribute to the conceptual progress of the class discussion using her/his own metacognitive activities. In both cases does the teacher lead the debate.

It may happen that the students independently (i.e. successive and without any initiation and argumentatively leading contributions by the teacher) refer to other students’ contributions using their

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<sup>8</sup>The meaning of the term “content“ is explained on page 7 in footnote 1.

metacognitive and discursive activities and justifications. In such a case their contributions usually have a controlling and reflected character and occur together with discursive activities with which the individual speakers locate their position in the conversation, possibly distinguish themselves from what has already been said in a well-founded way or give their consent in a well-founded way. This is a debate between the learners. On the category bar this would be model D.<sup>9</sup>

Experience shows that debates between learners – in the mentioned sense – are especially rare in a public class discussion. More often there are only debates between learners in a weakened form. In such debates metacognitive activities – like demanded for model D – are practiced, but without any remarkable explanation and without any elaborately discursive character. A common basis for the communication must be perceptible, however. Negative discursive activities of the area of category ND3 (violations of rules for a structured course of discourse), especially uncommented change of the reference points, are not to occur. The rater<sup>10</sup> must be under the impression that all contributions are comprehensible for both – the students and the teacher.

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<sup>9</sup>At least three student's contributions succeed each other, which indicate a conversation between them. An intervention of the teacher like interfering in the conceptual processes of the conversation, does not occur. Only one of the three student's contributions cannot be matched with a code of metacognition or discursivity (cf. Nowińska, 2016, S. 67f.). The presence of model D does not particularly say anything about the metacognitive and discursive quality (e.g. the verbosity level, the complexity) of the classified activities. Therefore, it is important to look at what was said when identifying and assessing debates.

<sup>10</sup>The term „rater“ includes here both female and male speakers. Cf. footnote 4 on page 8.

## 2.7 Guiding question 7 and the corresponding answers

“Sophisticated discourse“: To what extent do metacognitive and discursive activities occur in the discourse (among the students themselves, in interactions of students and the teacher or among the teacher herself/himself) that at least discern approaches for a mental (e.g. conceptually or methodically) specification about the consideration of sophisticated questioning – especially considering the meta level?

The following answers are available:

1. not observed

This answer is intended for two different cases which clearly differ in the starting point of the class discussion.

*In the first case* the class discussion is not focused on a sophisticated question and no starting point emerges which possibly or even necessarily brings up such a question to prevent difficulties in understanding, mistakes and misconceptions.

*In the second case* the class discussion yields a starting point which makes it *necessary* to bring up such a question in order to ease the following learning process and to prevent or correct misconceptions. However, a question to be expected on the basis of this challenging starting position is not specified and the expected discourse is not initiated. One may get the impression that the teacher did not adequately assess or ignore or recognize the complexity and the learning conducive potential of the starting point of the class discussion.

2. The expected metacognitive and discursive activities due to a sophisticated question are – at least for a skillful outsider – only *partially* perceptible. However, they are not used for a targeted specification and to clarify the question, its complexity and importance.

A reason for the failure of a sophisticated discourse can be a lack of specification of anchoring the aspects and positions in the discussion by an individual speaker<sup>11</sup>. As a consequence, un-commented changes (which the individual speakers are probably not even aware of) of reference points, word meanings, perspectives and argumentative bases can occur. Another reason can be a lacking elaboration of (ir-)relevance and significance of the different approaches. Consequently, the class discussion runs without a perceptible aim and without a perceptible intellectual progress.

The lacking specification can hinder a progress of the class discussion in the way that individual students (and possibly even the teacher) do not recognize that they talk past one another. Therefore, they do not feel the need to differentiate their position from the opinions and argumentations of the others.

An *endeavor* to change this is, especially by the teacher, *not perceptible*. She/he does not take measures to make the (ir-)relevance of individual contributions for the sophisticated question com-prehensible. Also, at the end of the class discussion, there are no constructive aids (e.g. reflection of the structure of the individual argumentations or the control of the legitimacy of the mentioned arguments) and there are no reasonable and elaborated admonitions perceptible which may explain why they miss the question.

3. The metacognitive and discursive activities that are expected due to the sophisticated question are only *partially* perceptible. The class discussion runs with the same weaknesses as described in answer 2.

In contrast to the situation that is described in answer 2, however, *an endeavor of the teacher* concerning the specification or structuring of what was already discussed is *perceptible*. The teacher takes measures to clarify the (ir-)relevance of individual contributions for the sophisticated question. She/he may also interfere – at least at the end of the class discussion –

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<sup>11</sup>The term “speaker“ includes here and in other analog passage as well as answers and comments both female and male speakers. Cf. footnote on 7.

with constructive assistance (e.g. reflection of the structure of the individual argumentations or the control of the legitimacy of the mentioned arguments) or with reasonable and elaborated admonitions and explains why they missed the question. The teacher's actions are not effective yet because the learners do not specify or critically inquire their positions.

4. The metacognitive and discursive actions that are expected from the individual learners due to the sophisticated question are *at least partially* perceptible *and* therefore yielded into the class discussion so that *the significance of the according contributions for the specification of the question is perceptible for other students as well*. This can become visible when the students or the teacher specifically refer back to these contributions and explain their relevance.

It can also be the case that several approaches that are relevant for the specification of the sophisticated question are related to each other and critically analyzed. This influences the following class discussion significantly and helps to structure the previous argumentation and positions.

It can also be that an initially frayed class discussion becomes significantly facilitated through the teacher's support and subsequently pursues on a sophisticated argumentative level.



## References

Nowińska, E. (2016): *Leitfragen zur Analyse und Beurteilung metakognitiv-diskursiver Unterrichtsqualität*. Osnabrück: Forschungsinstitut für Mathematikdidaktik.