

Metadiscourse in Knowledge Building: A question about written or verbal metadiscourse

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ABSTRACT

In Knowledge Building (KB) research, the metadiscourse concept has been taken in use more in recent years. Still, the definitions seem to be quite simple and vague. In this paper, I therefore review how the metadiscourse concept is used in some selected research papers. By comparing these papers, I discuss the degree of similarities and differences in the use of the concept within the field. In addition, I propose a typology that includes both written and verbal metadiscourse and which may be relevant when analyzing knowledge building discourse.

1. Background

Research question

In recent years, more knowledge building (KB) researchers have started to use the metadiscourse concept (Scardamalia & Bereiter, 2006; van Aalst, 2009). Still, the definitions seem to be simple and vague. In this paper, I therefore ask:

How is the metadiscourse concept used within knowledge building research?

I will review how the metadiscourse concept is used by analyzing some selected research papers. A comprehensive definition of metacommunication developed by Baltzersen (2013) will be used as an analytical framework. This metacommunication concept is similar to the metadiscourse concept, although it has some analytic limitations because it only focuses on talk about talk. Still, the definition of metacommunication is considered as relevant enough and is introduced in some detail in Part 1. In Part 2, I review how the metadiscourse concept is used within knowledge building research. Furthermore, in Part 3, I summarize my findings by comparing the use of the metadiscourse concept in the different research papers. I also present a typology that includes both written and verbal metadiscourse.

The metacommunication concept

People often comment on conversations with phrases such as “What do you mean by saying that?” or “This is an interesting conversation.” This kind of communication is used for several different purposes. Bateson (1972) labeled this kind of communication as metacommunication and claimed it was essential for successful human communication. It was considered very important in order to clarify messages and regulate the communication. Until now there have been few attempts to try and develop a more coherent definition of the concept. One exception is Baltzersen (2013) who reviews the use of the concept and also presents a comprehensive typology. He suggests that *verbal metacommunication* can be divided into three basic dimensions: *what*, *how* and *when* do you metacommunicate?

The "What-dimension" suggests that you will always have to refer to some part of the communication when you metacommunicate. This can be done by metacommunicating about *the conversational content*, *the conversational relationship* or *the use of conversational time*. It's possible to metacommunicate about the conversational content in several different ways. One example is when a person explicitly suggests a change of conversational topic. Another example is if one tries to explain the intentions behind the conversational content. A third example is discussions about forthcoming conversational content, which is often considered important in professional conversations. Fourthly, summarizing can be regarded as metacommunication about the conversational content. The second aspect of the “What-dimension” is to metacommunicate about the conversational relationship. This can also be done in many different ways, but is usually related to some kind of evaluation of the relationship between the persons interacting. In this regard, it's possible to highlight one's own role or another person's role in the relationship. A third option is to metacommunicate about the use of conversational time. For example, persons talking to each other can discuss meeting frequency (Baltzersen, 2013).

The "How-dimension" suggests that metacommunication itself indicates how people relate to each other. For example, how we use our voice when we are metacommunicating will also influence the interpretation of the metacommunicative utterance. In addition, Baltzersen (2013) distinguishes between *monological metacommunication*, which refers to a situation where only one person is metacommunicating, while *dialogical metacommunication* indicates that all persons are metacommunicating.

The "When-dimension" suggests that a metacommunicative utterance will always take place at a specific point in the conversation. Firstly, it's possible to *metacommunicate about the ongoing "here-and-now" conversation*. This can be done by explaining intentions or by posing questions of clarification. By making such comments, people try to encourage openness in the conversation. *Metacommunication within an extended time frame* will be about either a past or future conversation which goes beyond the immediate communicative situation. This kind of metacommunication may be important in professional collaboration, where people establish a working alliance (Baltzersen, 2013).

2. The metadiscourse concept in knowledge building research

Frequency of use

In knowledge building (KB) research, the metadiscourse concept was originally introduced by Scardamalia and Bereiter in a 2006 paper. In recent years, the use of the concept seems to have increased. One reason appears to be the development of new "metadiscourse tools" in Knowledge Forum, the online discussion environment often used by the knowledge building community. With this background, I wish to explore whether a more comprehensive metacommunication concept can increase our understanding of the use of the metadiscourse concept in knowledge building.

In an attempt to answer this question, I have reviewed the use of the metadiscourse concept in KB research. A search in Google Scholar with the combination of the two terms "knowledge building" and "metadiscourse" resulted in 142 hits for the period from 2006-2012 (date 8th November 2012). The four research papers that were top ranked were selected for further analysis. They were the only papers that mentioned the metadiscourse concept more than one time (See table 1 below).

The following papers were selected: *Knowledge building: Theory, pedagogy, and technology* by Scardamalia and Bereiter (2006), *Sustaining knowledge building as a principle-based innovation at an elementary school* by Zhang, Hong, Scardamalia, Teo and Morley (2011), *Collaborative productivity as self-sustaining processes in a grade 4 knowledge building community* by Zhang and Messina (2010) and *Distinguishing knowledge-sharing, knowledge-construction, and knowledge-creation discourses* by van Aalst (2009). Three of these papers have been peer-reviewed in academic journals, while the paper by Zhang and Messina (2010) is a peer-reviewed conference paper. All authors are well known knowledge building researchers.

I also discovered that two similar terms are in use in KB research: both "metadiscourse" and "meta-discourse" with a hyphen. A new search was done with the term "meta-discourse" in combination with the term "knowledge building" to check if the search results were any different.

This search gave a total of 41 hits for the period from 2006-2012 (date 8th November 2012),

indicating that this term is less used. The top ranked paper is *Designs for collective cognitive responsibility in knowledge-building communities* by Zhang, Scardamalia, Reeve, & Messina (2009). This paper was also selected for further analysis. The research paper *Knowledge Society Network: Toward a Dynamic, Sustained Network for Building Knowledge* by Hong, Scardamalia and Zhang (2010) was ranked number two, but was not selected because the metadiscourse concept was only mentioned once. The paper by van Aalst (2009) was ranked number 3, but had already been included after the first search. In total, five papers were selected.

Table 1. Overview of selected research papers according to the frequency of the use of the metadiscourse concept.

Selected research paper	Number of times the metadiscourse concept is used in the paper
Distinguishing knowledge-sharing, knowledge-construction, and knowledge-creation discourses (van Aalst 2009).	13
Collaborative productivity as self-sustaining processes in a grade 4 knowledge building community (Zhang and Messina 2010).	4
Sustaining knowledge building as a principle-based innovation at an elementary school (Zhang et al. 2011).	3
Knowledge building: Theory, pedagogy, and technology (Scardamalia and Bereiter 2006).	2
Designs for collective cognitive responsibility in knowledge-building communities (Zhang et al. 2009).	2

In general we can see that the frequency of use of the metadiscourse concept is low. The exception is the paper by van Aalst (2009). The concept is used 13 times. In the other papers the content descriptions are limited because the concept is only used 2-5 times. Since Zhang is the main author of three of these research papers, I have chosen to present his uses of the concept together. Searches done with other related concepts such as "metatalk" gave very few relevant results. In this paper I will therefore use the term metadiscourse consistently, because this is the term that is most frequently used within KB research.

Research paper by Scardamalia and Bereiter

According to Scardamalia and Bereiter (2006), the founders of knowledge building, metadiscourse is an important feature that distinguishes knowledge building discourse from other types of discourse. It is part of the knowledge building discourse, but different because it is related to some kind of evaluation of this discourse. In their paper they also emphasize that specific tools developed in Knowledge Forum can encourage metadiscourse in a school classroom. With the use of epistemological markers or scaffolds (such as "My theory," "I need to understand," "New information," and so on), students can describe their own "thinking types" together with the notes. These scaffolds can be used to stimulate a discussion about what kind of contribution students have made. By linking these contributions together, they can create an emergent hypertext that is collective.

As we see, the description of the metadiscourse concept is quite short, but still seems to suggest two main perspectives. Firstly, metadiscourse is described as a specific type of discourse with its own unique qualities. In this paper I will aim to describe this with more precision and I will also give concrete examples from other research papers. Secondly, the different scaffolds developed in Knowledge Forum are seen as important facilitators of metadiscourse and collective knowledge

advancement. Still, this perspective cannot be said to be part of the concept on the same level as the first criterion, since it focuses on the technology itself.

Research papers by Zhang with others

Metadiscourse in the classroom

All three research papers by Zhang with others describe, in some detail, the role of metadiscourse in the lesson. In one of the research papers, Zhang et al. (2009) emphasize that metadiscourse is important when students are working collectively in Knowledge Forum. At some point the teacher needs to engage the students in a discussion about their own work. It is often necessary to redefine and narrow down the knowledge problems. Usually this is done by projecting the work in Knowledge Forum onto a screen which is visible for everyone in the class. In this context, the teacher encourages the class to identify significant knowledge advances. This is a kind of metadiscourse that helps students to become aware of their progress and identify learning needs that were not otherwise recognized. The class must discuss both what they have achieved and what needs to be done.

Zhang and Messina (2010) present a similar perspective on metadiscourse. The purpose is to let students review conceptual connections and try to identify important emergent questions that can lead to the formulation of deeper interconnected goals. The authors highlight one example where students identify questions such as: "Does light reflect off black opaque objects?" or "How does a mirror reflect light of all colors?" These questions again triggered further idea development. Here metadiscourse is defined as an integrated part of classroom conversations.

In another research paper, Zhang et al. (2011) explain that the goal of KB Talksⁱ is to advance students' understanding and engage them in metadiscourse to reflect on progress (e.g., Is the discourse getting anywhere?), as well as formulate emerging problems and develop action plans to address problems. Metadiscourse is described as a discourse where students are encouraged to take a more comprehensive look at what they are doing. This is done by shifting focus from content-specific discussions to asking questions such as "Are we getting anywhere?" or "Is there an important idea we're missing?" In this way, metadiscourse supports goal setting, planning, and review of current procedures and processes.

In general, the three papers by Zhang indicate a quite consistent use of the metadiscourse concept. The emphasis is on evaluating the collective knowledge advancement. The purpose is to select the ideas one should continue to work with. In Zhang et al. (2009), the metadiscourse concept is related to both prior and forthcoming collective knowledge advancement. In Zhang et al. (2011), several of the examples related to metadiscourse are formulated as specific questions. For example, the question "Is the discourse getting anywhere?" invites students to a critical discussion about the collaboration. Zhang and Messina (2010) also exemplify metadiscourse with questions, but these seem to be related to the ordinary academic discourse. For instance, the question "How does a mirror reflect light of all colors?" seems, in itself, not to be an example of metadiscourse.

Teacher role

Interestingly, two of the research papers by Zhang with others also describe the role of the teacher in relation to metadiscourse. Zhang et al. (2009) emphasize that the teacher should facilitate metadiscourse. This is necessary because the teacher needs to understand how the ideas in the groups are emerging. By asking stimulating questions, the teacher can bring important new ideas into student focus. In addition, the metadiscourse concept includes a discussion between teachers in

the school about teaching, without the students being present.

Zhang and Messina (2010) also give an example of how a knowledge building teacher attempts to engage students in metadiscourse by reviewing ideas, monitoring conflicts and reflecting on progress. The teacher often tries to stimulate deeper analysis by connecting his or her own proposals with students' ideas and questions. This is done by summarizing what students have said earlier or by identifying contrasting perspectives between the students. Metadiscourse also takes place when the teacher formulates and highlights knowledge goals. This can happen when the teacher creates new view structures in Knowledge Forum in line with such goals.

In both these papers, the teacher's ability to metacommunicate seems to be closely related to his role as a conversational regulator in the class.

Research paper by van Aalst

Van Aalst (2009) seems to be the only knowledge building researcher who describes the metadiscourse concept in more detail. He defines metadiscourse as a level of discourse that is different from maintaining social relations or building understanding. The concept is related to the existence of long-range goals in a knowledge-creation community. In this regard, he mentions four examples: 1. reviews of the state of knowledge in the community, 2. work aimed at helping new insights diffuse throughout the community, 3. making arguments for a new phase of inquiry and 4. establishing more difficult goals over time.

We see that the third and fourth examples focus on future collaboration by emphasizing a new phase of inquiry and the establishment of more difficult goals. Oppositely, example one focuses on metadiscourse as an attempt to summarize past work, while example two has a less clear time focus. According to van Aalst (2009), students may discuss how to improve previous efforts or evaluate the evolution of ideas over a substantial period, such as an entire school year. Later in the paper, this meta-discourse concept is presented as one of five key conditions in an innovation ecology that can stimulate knowledge creation (or knowledge building).¹ These five conditions are: 1. the nature of the task, 2. the sense of community, 3. idea-centered discourse, 4. the use of technology and 5. meta-discourse.

Furthermore, metadiscourse is used as an empirical indicator when van Aalst (2009) analyzes group discourse. Metadiscourse is defined as one of the seven main codes: Community, Ideas, Questions, Information, Links, Agency, and Meta-Discourse. The metadiscourse concept is further divided into three subcodes: Major review, Deepening inquiry and Lending support.

Van Aalst (2009) assumes that the first sub-code, major review, is a more important sub-code in knowledge creation than in knowledge sharing, because it's a more complex and time-consuming process. This review process is considered important in discussions about the reorganization of the collective inquiry.

The second sub-code, deepening inquiry, is defined as activity that creates deeper reflection around valuable contributions in Knowledge Forum. This requires students to interpret and evaluate

¹ Knowledge creation and knowledge building are often used in a similar way, but van Aalst (2009) prefers to use the term knowledge creation in his paper.

information, and to elaborate on this information by providing examples and counterexamples (van Aalst, 2009).

It's not clearly explained in the paper in what way the second sub-code, deepening inquiry, and the third sub-code, lending support, are related to metadiscourse. Van Aalst (2009) refers to one example where a student, in a group discussion about avian flu, attempts to advance the inquiry to a new stage by suggesting a new question:

... I guess the question now is how we can make the chickens less likely to develop serious symptoms, and to become more like the wild poultry. And maybe an effective method of keeping the chickens from getting sick and to stop the spread of the Avian flu is by doing something to the wild fowl to make them unable to carry the virus. It raises some interesting questions that can probably be analyzed further! (van Aalst, 2009: 277)

The student suggests topics the group can continue to work with, but this is not followed up by the others. The formulation, "It raises some interesting questions that can probably be analyzed further!" illustrates an open-ended initiative. According to van Aalst (2009), this is a failed attempt to establish a metadiscourse. If the group had instead started a discussion about further work they would have been doing metadiscourse, but it is still not explained how this example then would qualify as metadiscourse. Furthermore, van Aalst (2009) admits there are limitations in his study of metadiscourse, partly due to the short duration of the project. All groups in the study engaged in metadiscourse, but it occurred infrequently.

3. Comparison between the research papers

By comparing the selected research papers, it's possible to say something more general about the explicit use of the metadiscourse concept in knowledge building research. In the table below, I give an overview according to the definition developed by Baltzersen (2013):

Table 2. Overview of the explicit use of the metadiscourse concept in selected research papers.

	What do you do metacommunicate about?	How do you meta-communicate?	When do you do metacommunicate?
Scardamalia and Bereiter (2006).	Metacommunication about the conversational content	(-)	(-)
Zhang et al. (2009, 2010, 2011)	Metacommunication about the conversational content	(-)	Need for review. Students' work in KF is becoming too complex.
Van Aalst (2009)	Metacommunication about the conversational content	(-)	Need for review. Students' work in KF is becoming too complex.

In general, the research papers indicate a relatively similar use of the metadiscourse concept. Firstly, metadiscourse is described as something different from the ordinary topic-orientated discourse, but there seems to be little focus on metacommunication about the conversational relationship or the use of conversational time. There is no explicit focus on how you can metacommunicate or on metacommunication as part of the ongoing conversation.

Compared with the definition of metacommunication from Part 1, one could claim that the metadiscourse concept focuses mainly on communication about the conversational content. In this

regard, all the papers relate the metadiscourse concept to a review of the students' collective work. A lot of activity in Knowledge Forum will eventually lead to a need to "ease up" ("clear up") and narrow down the discussions in order to get a better overview. The class needs to select some ideas for further work in a new topic area or view in KF. This review process requires metadiscourse in the way that students try to synthesize notes and create new views (do a "rise-above"). Still, it can be discussed to what degree the class should discuss what they have achieved compared to what they want to do in the future. Regarding a metadiscourse about the future discourse, van Aalst (2009) seems to emphasize a discussion about long-term goals to a larger degree than Zhang with others.

An important question in knowledge building will be when and how often this review process is necessary. In his paper, van Aalst (2009) relates the metadiscourse concept to a major review process, thus emphasizing the summarization of the collective work in the class. Since the term "major" implies an important change of direction in the collective knowledge advancement, it is assumed that this can't be done all the time. Nevertheless, it seems to be difficult to estimate in advance when this should be done, but the need increases proportionally as the work in Knowledge Forum becomes more complex. Sometimes in collective knowledge advancement it is necessary to stop and discuss the further direction, because it's very difficult to build on all the notes that are contributed in the database. Students are usually invited to discuss and select the promising ideas. These research papers suggest the importance of regular metacommunication, also emphasized by Baltzersen (2013), but because each class will work in a different pace and with different ideas, the timing of the metadiscourse cannot be defined in advance.

The research papers also indicate that the researchers have difficulty using a clear-cut definition of the metadiscourse concept. For example, in the paper by van Aalst (2009), subcodes such as deepening inquiry and lending support may also be interpreted as including elements from an ordinary topic-orientated discourse. Oppositely, a subcode such as project planning may also contain elements of metadiscourse even though it is not categorized this way. Another similar example is Zhang et al (2009), who relate the metadiscourse concept to a discussion between teachers about teaching, without students being present. In this regard, the concept is actually being used more broadly than in the definition from Part 1.

In addition, there seems to be an important distinction between written and verbal metadiscourse. For example, Zhang and Messina (2010) emphasizes verbal metadiscourse, while van Aalst (2009) describes written metadiscourse, although it is not explicitly labeled in this way. Furthermore, it is possible to distinguish between both written and verbal discourse on a meta-level, but also in relation to the kind of discourse one refers to. In this way one could operate with four different kinds of metadiscourse:

Table 3. Typology that describes different kinds of written and verbal metadiscourse.

	Meta-writing	Meta-talk
Written discourse	1. Written discourse about a written discourse.	2. Verbal discourse about a written discourse.
Verbal discourse	3. Written discourse about a verbal discourse.	4. Verbal discourse about a verbal discourse.

Firstly, one can have a written discussion about a written discussion. Usually this kind of metadiscourse seems to be done in the online discussion environment Knowledge Forum. As previously mentioned, when a class is working with diverse ideas the work will eventually become

complex and messy in KF. At some point it will be necessary to do a “rise-above” to simplify the collective knowledge and bring it to a new level. Such “rise-above” notes suggest a possible new synthesis by combining existing ideas. Students may bring the discourse to a higher conceptual plane.

Nevertheless, a study by van Aalst (2009) finds limited use of advanced features such as “rise-above” notes. It seems far more common to do major reviews through verbal discussions. Furthermore, van Aalst (2009) asks if KF always provides the best medium for creating knowledge in all situations. In some situations, talking face-to-face might be more effective. While asynchronous writing can support reflective thought, it is time consuming and should only be used when it provides advantages over more social ways of interacting. Still, this kind of metadiscourse seems to be considered as very important for the knowledge building pedagogy (Scardamalia and Bereiter 2006).

Secondly, one can engage in a verbal discourse about a written discourse. One example might be a discussion of how to use Knowledge Forum. In addition, the research papers indicate that this kind of metadiscourse usually takes place when the class needs to get an overview of the written discussions in Knowledge Forum. A common strategy seems to be to let the whole class discuss the notes that they have produced in Knowledge Forum (KF) together. This is done by projecting the notes onto a visible screen. The teacher then tries to encourage knowledge advancement by posing open questions and reading aloud some of the written notes in the database.

Van Aalst (2009) claims that such verbal discussions are often the best solution when these challenges arise. If these talks are absent, work on Knowledge Forum is disconnected from the educational culture of the class and may feel like a special project. Another reason is that since Knowledge Forum is an asynchronous communication tool without chat features, students might have less opportunity to interchange ideas rapidly.

KF also provides different statistical tools that can summarize class activity and can give an overview of how the community is progressing, such as the software Analytic Toolkit (ATK), Applets for Social Network Analyses and the Idea Thread mapper (Chen, Zhang, & Lee, 2013; Zhang, Chen, Chen, & Mico, 2013; Zhang, Lee, & Wilde, 2012). These tools can support metadiscourse in different ways. One example is Chan (2011) who finds that one teacher receives information about to what degree the class is working together as a closely knit social network. These results are discussed with the students, thereby showing that this kind of formative assessment may also be used to facilitate metadiscourse.

Thirdly, one can have a written discourse about a verbal discourse. The research papers indicate that this kind of metadiscourse is not so common. For example, one could write a summary about a KB Talk in Knowledge Forum. Another example is if students ask the teacher if they can write their ideas from a class discussion in Knowledge Forum. In addition, chat tools could support an ongoing written metadiscourse about the verbal face-to-face discourse.

Fourthly, a verbal discourse about a verbal discourse is possible, but doesn't seem to be addressed as metadiscourse that often. One example is if the teacher discusses conversational rules or knowledge building norms with the students.

4. Conclusion

In this paper I have reviewed how the metadiscourse concept is used within KB research. Usually the concept describes some kind of planned metadiscourse. Metadiscourse seems to be closely connected to a major review process which requires an intentional goal-orientated effort from both students and teachers. Furthermore, since knowledge building will often include some kind of writing technology, it may be advantageous to distinguish between written and verbal metadiscourse. It is therefore suggested that the metadiscourse typology presented in Part 3 can be used as a comprehensive analytical framework when studying knowledge building discourse. In this regard, the metadiscourse concept is broader than the definition in Part 1, which only focuses on talk about talk or verbal metacommunication.

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7. Relevant conference themes

Sustained work with ideas, Intellectual engagement.

ⁱ The original design of a Knowledge Building Talk (KB Talk) is to have students sit in a circle together with the teacher. The focus is on problems of understanding and knowledge advances with the teacher being an equal member of the group (Zhang & Scardamalia, 2007).