DIALOGIC AND AUTHORITATIVE DISCOURSE: A CONSTITUTIVE TENSION OF SCIENCE CLASSROOM

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In this presentation, we shall introduce and exemplify aspects of a tool for analyzing the various forms and functions of discursive interactions in secondary school science classrooms (Mortimer and Scott, 2003). This tool, or analytical framework, is based on a sociocultural view of teaching and learning, and consists of five linked aspects: *Teaching purposes*; *Content of the classroom interactions*; *Communicative approach*; *Patterns of discourse*; *Teacher interventions*. Focusing on the 'Communicative Approach', as a central aspect of the framework, we will define and exemplify different modalities of classroom talking and suggest an essential tension between authoritative and dialogic discourse in science teaching. We also exemplify how the 'Communicative Approach' is related to 'Teaching Purposes' and to 'Patterns of Discourse'. In this way we demonstrate how some aspects of the framework inter-relate, providing a coherent basis for analyzing classroom interactions. Finally we turn to the ways in which the framework has been used as a tool for reflection on teaching practice in the context of professional development programs, in both the UK and Brazil.

The dialogic-authoritative dimension

The distinction between authoritative and dialogic functions has been discussed by Wertsch (1991), and used by Mortimer (1998) in analysing discourse from a Brazilian classroom. It is based on the notions of authoritative and internally persuasive discourse, as outlined by Bakhtin (1981), and on the functional dualism of texts introduced by Lotman (1988) (quoted by Wertsch, 1991, p. 73-74).

The fundamental property of dialogic discourse is that it involves bringing together (or interanimation, Bakhtin, 1981), exploring and working on ideas. In the science classroom, this may involve comparing ideas, differentiating between ideas, developing ideas. At different points in a sequence of lessons, the dialogic talk is likely to vary in nature. Thus at the start of a lesson sequence, the science teacher might elicit students' everyday views about a particular phenomenon and compare them with the school science view. Later on in the sequence, the teacher might encourage students to talk through the application of a newly-learned scientific idea in a novel context. In the first situation the dialogic discourse involves juxtaposition of two points of view (everyday and scientific), whilst in the second situation the dialogic discourse sees the students working together (and contributing different ideas) to construct a single, satisfactory scientific explanation. Thus dialogic discourse can be achieved either in bringing together different points of view or in working on a single view.

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Dialogic discourse is open to different perspectives, allowing the participants to become aware of any differences in points of view.   In dialogic discourse, there is always the attempt to acknowledge and understand the perspective of others. Through dialogic discourse, the teacher attends to the students' points of view as well as to the school science view.

By way of contrast, authoritative discourse allows for no bringing together and exploration of ideas. Here the teacher focuses attention on the school science point of view. If ideas or questions which do not contribute to the development of the school science story are raised by students, they are likely to be reshaped or ignored by the teacher. Alternatively, if a student idea is perceived by the teacher as being helpful to the development of the scientific story it is likely to be seized upon and used. In these ways authoritative discourse is closed in nature with its direction having been set in advance. More than one voice may be heard (through the contributions of different students) but there is no exploration of different perspectives and no inter-animation of ideas (the student contributions are not taken into account by the teacher). In the context of everyday conversation, authoritative discourse might occur as two people talk about their ideas, without listening to what the other is saying. We might say that they 'talk passed each other'.

In teaching and learning science there must always be a tension between dialogic and authoritative discourse. On the one hand, dialogic discourse is crucial to enabling the juxtaposition, or interanimation (Bakhtin, 1981), of everyday and scientific views which underpins meaningful learning. On the other hand, the teacher has the responsibility for introducing the authoritative discourse of science to the students. Thus, even when the teacher is asking students for their points of view about a particular phenomenon, they will inevitably be thinking about how this relates to the science view and possibly highlighting some points of view at the expense of others. We shall see how this tension works out in practice in the classroom in the exemplary episodes which will be presented and discussed.

Analysis of teaching episodes

We shall present five teaching and learning episodes along with an analysis of each in terms of communicative approach, patterns of discourse and teaching purposes. What we are trying to do here is to explore and clarify what we mean by authoritative and dialogic approaches by analyzing a number of different classroom scenarios. First we shall present two episodes that exemplify interactive/authoritative communicative approaches. They illustrate different levels of interaction when authoritative discourse takes place in the classroom. In the first episode the students just provide words to fill a gap in the teacher's discourse whereas in the second one the students offer complete utterance firmly located in the authoritative school science point of view that they have already appropriated. Following, we shall present three episodes to illustrate different ways in with dialogic communicative approach can appear in classrooms. The first one illustrates how exploration of ideas can take place in a final phase of a sequence of lesson. Although the students' utterances are clearly located in the scientific point of view, the episode shows the teacher exploring alternative

explanations for an unexpected experimental result. In the two last episodes we illustrate how different points of view can be made explicit in classroom, first appearing in an interactive discourse between teacher and students and than as a non-interactive discourse uttered solely by the teacher that is still dialogic in nature.

Methodological Issues

In making our analyses we first of all try to get a sense of the overall flow of discourse of a sequence of lessons. This approach of taking an overview follows from the Bakhtinian principle that 'any utterance is a link in the chain of speech communication' (Bakhtin, 1986, p. 84). In this sense an utterance responds to previous utterances and anticipates the responses of others. 'Utterances are not indifferent to one another, and are not self-sufficient; they are aware of and mutually reflect one another' (p. 91). In other words, if we want to develop an understanding of the way in which the discourse developed through a specific teaching sequence then it is essential to have an overview of how the constituent events fit together moving forwards and backwards in time.

For example, to understand the purpose of a specific teaching activity in a sequence of lessons it is necessary to determine how this particular activity fits with the whole sequence. The same is true for the communicative approach. In presenting two episodes from the same teaching sequence we shall illustrate that the significance of the discussions in a specific episode becomes clear only we analyze the flow of ideas in the following lessons (where the teacher explicitly addresses the key everyday ideas raised in this episode). In this way, our analysis of the discourse of science lessons involves an iterative process of moving backwards and forwards through time, trying to make sense of the episodes as linked chain of interactions. In the same way, to determine whether an arbitrarily defined part of a sequence of lessons (an episode) is dialogic or authoritative, we should also search, in the whole sequence, for the fate of the ideas brought to consideration in this episode. Even when teacher listens to students' point of view and collects their ideas in a specific episode, to decide whether it can be considered dialogic or not we should ask if the listed ideas were explored, if the teacher worked with them in other points of lesson. The simple act of listing ideas does not necessarily means that they are going to be explored in the meaning making process. If these ideas never appear again, we cannot consider the episode to be dialogic. This has a important methodological consequence: we can apply our approach for analyzing a teaching sequence but not a single lesson, as the exploration of the ideas raised in this lesson can be located in another part of the teaching sequence.

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