

THE PRODUCTION OF LEGITIMATE TEXT AND THE STRATIFICATION OF ACHIEVEMENT IN MATHEMATICS CLASSROOMS

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AIMS OF THE SYMPOSIUM

In school, the stratification of achievement is based on the students' differential production of what counts as a legitimate text in mathematics classrooms. The symposium will be concerned with a language of description that accounts for the construction, maintenance or mitigation of unequal attainment on the micro-level of classroom practice. The discussion is intended to focus on the interface between the theoretical and the empirical, that is, on an external language of description (an "observation language"), which may help to organise accounts of classroom practice.

RATIONALE

Teachers and students in mathematics classrooms quickly come to know which students perform well in mathematics and which do not. This occurs even in classrooms where selection processes are intended to produce homogeneous classes and in contexts where the students are together for the first time. We regard the disparity in students' achievement as a social construction in the context of the social practices of the mathematics classroom and as unrelated to the students' cognitive dispositions.

From this perspective, our interest is in the discursive and interactional mechanisms that provoke a stratification of achievement within classrooms. Methodologically, we aim at a *constructive description* (Dowling 1998; Dowling in press), construed as an organising of social practices observed within the mathematics classroom. As far as our theoretical position is concerned, we are influenced by the work of Bernstein (1990, 1996) and its *heretical misreading* by Dowling (in press).

It is the former who claims that classroom discourse is structured by implicit rules to which not all students have direct – and equal – access and which constitute disparity in achievement. On the part of the learner, these rules translate into recognition and realisation rules. Command of the recognition rule is important for being able to *locate* classroom discourse, that is, to distinguish the speciality of the context with respect to its domain of practice, its degree of discursive saturation etc. Command of the realisation rule is important for the

production of legitimate text, that is, how meanings are to be put together (cf. Bernstein, 1996, p. 32).

We take *legitimate text* as comprising two facets: the instructional and the regulative, although this distinction is theoretically not as clear, as it appears *prima facie*. However, we can take the instructional facet of legitimate text as referring to the (school) mathematical part of the discourse, e.g. what is valued as a mathematical argument; and the regulative facet as referring to the order of the social interaction, e.g. which ways of turn-taking or solving tasks (with or without discussing) are accepted. In this view, for a student to produce legitimate text in the mathematics classroom requires an acceptable exteriorisation of mathematical thought in the form of spoken or written language *and* the demonstration of a comportment that is conformable with the social classroom norms. What is acceptable and conformable is acquired within the mathematics classroom. Teachers differ in the ways in which they provide access for the students to the organising principles of the regulative and the instructional discourse so that some practices are of advantage/ disadvantage for distinct groups of students.

When confronting the theoretical constructs that we partially outlined above with accounts of classroom practice (see Knipping et al., MES5 paper), we encountered the following four questions, which seemed of particular interest to us:

(1) Bernstein (1990, 1996) distinguishes *classification* and *framing* as the principles that translate *power relations* between different categories of groups, class, race etc and *control relations* within forms of interaction into the space of classroom practice. Dowling (in press) contends that three of these four concepts were redundant. In our analyses of classroom interaction, we find strong classification connected to strong framing, and weak classification to weak framing. Is there still a potential – in terms of an external language of description – of distinguishing between classification and framing? Are the distinctions between power and control and between classification and framing of use for empirical analyses of classroom practice?

(2) Bernstein claims pedagogic discourse to be the principle, which leads to the embedding of instructional discourse in regulative discourse, “to create one text, to create *one* discourse.” (1996, p. 46) Can we find an unambiguous empirical interpretation of the concepts of instructional and regulative discourse or turns this distinction out to be a mystifying artefact? Can we find an empirical interpretation for the *embedding* of discourses?

(3) How do teachers actually introduce students to the production of legitimate text? Are there distinct groups of students who benefit from these introductions? Who *could* benefit if this practice were different?

(4) At which moment in the course of a teaching unit or of a school year, on which occasion, do teachers provide an insight into the criteria along which the stratification of attainment within the mathematics classroom is achieved – if they do at all?

HOW THE SYMPOSIUM WILL BE CONDUCTED

The symposium is planned to occur over two sessions. In the first session, we will present some videotaped scenes from Canadian and German mathematics classrooms. These extracts are chosen from a data corpus, which comprises videotapes from all mathematics lessons of students' first six weeks in secondary/middle/junior high school. During that six weeks, a group of students that is together for the first time develops into a class that is hierarchically differentiated with respect to 'mathematical ability'. We will present our first developments of an external language of description by analysing the selected classroom scenes. Participants of the symposium will be invited to react on and to discuss our exposition.

In the second session, the discussion will be expanded, first, in order to fathom the potential and the limitation of the external language of description. Second, another classroom scene will be presented. The participants of the symposium are invited to conduct analyses of the scene.

REFERENCES

- Bernstein, B. (1990). *The Structuring of Pedagogic Discourse*. Class, Codes and Control, Vol. 4. London: Routledge.
- Bernstein, B. (1996). *Pedagogy, Symbolic Control and Identity: Theory, Research, Critique*. Class, Codes and Control, Vol. 5. London: Taylor & Francis.
- Dowling, P. (1998). *The Sociology of Mathematics Education: Mathematical Myths/Pedagogical Texts*. London: Routledge Falmer.
- Dowling, P. (in press). *Sociology as Method: Departures from the Forensics of Culture, Text and Knowledge*. Rotterdam: Sense.
- Jablonka, E., Gellert, U., Knipping, C., Reid, D.A. (MES5 paper). The Emergence of Disparity in Performance in Mathematics Classrooms. Paper to be presented at the Fifth International Mathematics and Society Conference, Albufeira, February 16-21, 2008.