This is the published version of a paper presented at Mathematics Education and Society, 7th International conference, Cape Town, South Africa, 2-7 April 2013.

Citation for the original published paper:


N.B. When citing this work, cite the original published paper.

Permanent link to this version:
http://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-96732
WHAT IS A GROUP? THEORETICAL CONSIDERATIONS WHEN RESEARCHING AFFORDANCES FOR MULTILINGUAL STUDENTS’ MATHEMATICAL LEARNING

Eva Norén  
Stockholm University

Lisa Björklund Boistrup  
Linköping University

In this paper we outline theoretical and political considerations when researching affordances for multilingual students’ mathematics learning during classroom communication. On one hand we address the difficulties when categorising students into groups in research and how this can be counteractive since it can reinforce stereotypes. On the other hand we address the significance of doing research also concerning groups of students since this can provide understandings that go beyond deficient models regarding students’ language backgrounds. We discuss a basis for an analytical framework for a newly started project focusing on a specific aspect of communication between teacher and student, namely assessment (here taken in a broad sense) in mathematics.

In everyday life, as well as in research, people are categorized in different groups for different reasons. Common and vernacular group categories are for example boys and girls, men and women, young and old people. In educational terms groups can be monolingual students, bilingual students, first and second language speakers, immigrant students, students with special needs, gifted students, high achievers, low achievers, etc. To categorize people into groups is a way to describe them and by the categorisation, “stories” are told about the people in a group category.

Categorization in educational terms also is involved with how a nation’s educational system distributes opportunities to learn mathematics, as well as other subjects in school, among various groups of students. In official school/educational documents, policies, and reports, students are categorized into groups (for example by the Swedish Agency of Education, in TIMSS and in PISA data). Reports on various groups of students’ achievements in mathematics tell stories about students with different language backgrounds (immigrant students) and socioeconomic disadvantaged students that characterise them as low achievers (National Agency of Education/Skolverket, 2012).

In this paper we will outline some theoretical and political considerations to enable us to focus on different groups of students, in this paper, multilingual students, in relation to communications during mathematical classroom work. We are concerned about focusing on particular groups of students, since this can be counterproductive and reinforce stereotypes. On the other hand it can also provide understandings that go beyond deficit models regarding students’ language backgrounds (Khisty, 1995; Norén, 2010).
SUPPORTING EQUITY IN MATHEMATICS CLASSROOMS?

When researching and discussing how to support equity in mathematics classrooms there are several aspects that need to be addressed. In this section, as background, we describe some of these.

The Swedish school system and the mathematics classroom

The Swedish school system today does not achieve the objective that the school should compensate for differences between students’ backgrounds. The differences between different groups of students’ academic performances are increasing. A recently published report from the National Agency of Education (2012) is partly based on analyses of national tests and international comparisons, such as the PISA study. The report shows that the range in student performance in reading has increased between 2000 and 2009, and the same development can be seen in mathematics and English. While the proportion of pupils who reach the highest possible rating increases, so does the proportion of students who do not qualified for access to secondary education.

In our new research project, “Supporting equity in mathematics classrooms: The role of assessment in day-to-day communication”, we focus on various groups of students, and their day-to-day classroom communication. The project consists of quantitative as well as qualitative studies. We address some features of the situation in various Swedish mathematics classrooms where equity aspects, such as students’ ethnic and language backgrounds as well as socio-economic circumstances and parents’ educational levels, is becoming more problematic than earlier (see also Björklund Boistrup & Norén, 2012, Björklund Boistrup & Norén, 2013). It is a general problem area in Sweden and elsewhere, that teachers’ expectations and demands, as well as local circumstances, segregation, poverty and social problems limit opportunities for students’ achievement (Arora, 2005).

What does it mean to be viewed as “normal”

Atweh and Bland (2002) and Atweh and Keitel (2007) problematized equity as a concept for social justice. The literature in mathematics education refers to issues related to gender, race, multicultural and multilingual aspects, as well as socioeconomic factors. We think it is vital to also problematize grouping and categorisation, as these phenomena are the implicit basis for discussions on social justice and equity. We will come back to define the concept of groups. At ICME 12 (2012) the Survey Team 5’s proceedings on socioeconomic influences on mathematics education was reported. In general, countries in different parts of the world produce similar results about “normal” school achievement and different groups of students are compared to those “normal” expectations on students (Valero, Graven, Jurdak, Martin, Meaney, & Penteado, 2012).

In so-called prototype mathematics classroom we can find “normal” groups of students. In this paper we look beyond a prototype mathematics classroom, where
mainstream studies in mathematics education usually have been conducted. In that kind of research, conceptions of learning do not take complexities and conflicts into account. In research conducted in a prototype mathematics classroom students are well equipped and willing to learn (Skovsmose, 2012). On the other hand:

Mathematics education can operate in very many different ways, depending on the site. One can consider how a particular mathematics classroom may function for immigrants in Denmark, for Indian students in Brazil, from students in a favela environment. There is no context-independent interpretation of how mathematics education might function (Skovsmose, 2012 p. 344).

**Classroom communication**

When considering how teachers interact with different groups of students, there is a need for considering types of classroom practices, such as communication and assessment acts (in a broad sense), that will support all groups of students in the mathematics classroom. A support for this is the discussion by Gorgorió and Planas (2005) of teachers’ construction of each students’ possibilities on the basis of certain social representations established by micro-contexts (p. 1180). They discussed the role of social representations in teachers’ expectations towards different students. They found teachers often refer to social constructions and not to students as individuals. A public discourse around immigrant students, contextualized in Barcelona, was a source of problems rather than a resource for learning. The finding is the same in Civil’s (2012) overview on mathematics teaching and learning of immigrant students in southern European countries. César and Favilli (2005) report that mathematics teachers in Italy, Portugal and Spain, seem to have perceptions of immigrant students based on the students’ countries of origin.

The view on assessment in this project is that in every situation in mathematics classrooms, there are acts taking place that can be analysed in terms of classroom assessment. Assessment acts consist of not only traditional tests and project work but also, and most importantly, aspects in day-to-day teacher student interactions, for example where teachers aim to find out students’ mathematics knowing towards providing scaffolding to their learning (Morgan, 2000; Watson, 2000). Classroom assessment is regarded as the lens through which we view institutionally situated teacher-student communication in the mathematics classroom. This lens is essential in order to capture acts that provide more or less affordances for students’ active agency and learning in mathematics classrooms.

These aspects are not commonly addressed in mathematics education research and our project will provide insights with essential implications for various groups of students and their engagement (agency) and learning in mathematics classrooms.

**Multilingual students in the Swedish context**

Although immigrant students [1] in Swedish schools do not belong to a homogenous group, they are defined as a group, who often have gaps in their knowledge, due to
poor skills in the Swedish language. Having poor language skills (in Swedish) is a common explanatory factor for immigrant students’ often low achievements in mathematics, and other school subjects. Deficit discourses call for remediation in the students themselves to become more “Swedish”. Deficit discourses regularly cause teachers to view immigrant students as disadvantaged, and to have low expectations on their performance in the mathematics classroom. The mathematics classroom is constructed not only as a place to learn mathematics, but also as a place to become more “Swedish”. The interplay between the formulation of the attributes and the strategies of remediation result in the formation of strong deficit discourses on multilingual learners with immigrant background in Sweden (Norén, 2010).

There has been research that explains how social processes influence immigrant students’ experiences at school, and students’ and teachers’ positioning in classroom discourse (Martin-Jones & Saxena, 1996; Heller, 1999). Haglund (2002) implies that multilingual students have to cope with neutralization of difference and reproduction of Swedish as the legitimate language at the Swedish school. The multilingual students’ experiences may be demonstrated in negative attitudes towards multilingualism and cultural diversity. Alrø, Skovsmose & Valero (2007) found similar results in Denmark, where the students in their study represented the “sameness” approach about integration as the public discourse. The students didn’t pay much attention to diversity and it was not a resource for teaching and learning.

Teachers categorize multilingual students in terms of their every-day school practices (Gruber, 2007). One of Gruber’s interesting observations is that immigrant students who do well in their schoolwork, are categorized as immigrants by teachers to a lesser extent than those who do not prosper. These students are categorized as “almost Swedish”. The main focus of Gruber’s study was on construction of difference, with an emphasis on how ethnicity is turned into a basic category for the social organisation of the school. Her interest was also on how construction of ethnicity is bound up with social complexity and how they interact with other categorisations, especially gender and class. Ethnicity is understood as socially constructed, and as generating processes whereby people are divided into groups on the basis of language, religion, culture or geographical origin. According to Gruber ethnicity also embraces ideas about gender that “generates a number of pupil categories that are assigned different positions in everyday school life” (p. 223). We are interested in these complex intersections, and assume that they are present in the day-to-day communication, affected by discourse; in the mathematics classrooms we will study.

**BASIS FOR AN ANALYTICAL FRAMEWORK**

We view the mathematics classroom from an analysis of communication in the mathematics classroom, and will primarily build on two notions, discourse (Foucault, 1993), and agency as defined in Björklund Boistrup (2010), Norén (2010) and Andersson & Norén (2011), but we also need to consider and engage with other
concepts such as “groups”. In this section we describe possible analytical tools for the new project. On the one hand these tools will serve the purpose of accepting the difficulties when categorising students into groups in research. On the other hand they will serve the purpose of doing research concerning groups of students since this can provide understandings that go beyond deficit models regarding students’ language backgrounds in mathematics education.

What is a group?

People are differentiated according to social groups such as men and women, age groups, religious groups, racial and ethnic groups, etc. Groups are fundamentally entwined with the identities of the people described as belonging to them, with particular consequences for how people understand one another and themselves. “A social group is a collective of persons differentiated from at least one other group by cultural forms, practices, or way of life” (Young, 1990, p. 53), and it exists only in relation to at least one other group. A group can be seen as an expression of social relations. Group differentiation is probably both an inevitable and a desirable aspect of social life.

In accordance with Young we, in this paper, view social groups as produced by social processes (p. 58), and group differentiation as “multiple cross-cutting, fluid, and shifting” (p. 59). We see a group as not having substantive essence and there is “no common nature that members of a group share” (p. 58-59). When conceptualising social groups in a relational and fluid approach, it is possible to view groups as not permanent.

Continuing to build on Young we argue that problems of stereotyping groups exist because people, from an individualistic point of view, wrongly believe that “group identification makes a difference to the capacities, temperament, or virtues of group members” (p. 57). One could say that in all kinds of categorizing and sorting some focuses are categorized as valuable and others marginalized (Bowker & Star, 1999).

For groups that are categorized as disadvantaged, distributive models of social justice are often suggested in educational compensatory programs (Atweh, 2009). One example of such a group classified as disadvantaged in Sweden is multilingual students/immigrant students. Distributive models seldom question the curriculum itself or its assessment practices. The reasons for inequality between groups are seldom taken into account and so these models might even create inequality. Models of social justice that do not take the role of social structures and relations into account when determining individual or group achievement, will fail.

A third model of recognition and redistribution may incorporate the two models mentioned (Atweh & Keitel, 2007). Atweh and Keitel emphasise that research on marginalised groups may give “voice to the voiceless”. We argue that research questions and methodologies that respect the students we research (as individuals but
also as groups), are of great importance for the benefit of new knowledge about students’ engagement in mathematics learning.

**Categorisation, groups and discourse**

Skovsmose and Borba (2004) describe the complexity of, for example, quantitatively categorizing students into groups in critical research. Simultaneously they argue that there may be essential findings that can be lost if this complexity would exclude research on quantitative research concerning different groups. What needs to be taken into account is that research based on specific categories, such as gender or race comes with limitations (Stentoft & Valero, 2009). Focuses on groups may overlook identities that are made relevant in classroom discourse and determine inclusion or exclusion of various groups (or individuals) in the mathematics classroom. Categorisation of groups as “normal”, high achievers, low achievers, immigrants, Swedish, etc. can lead to the stereotyping of certain (groups of) students as engaged in learning, and some (groups of) students as not engaging in learning.

With a combination of a critical approach (Skovsmose, 1994, 2005; Skovsmose & Borba, 2004) and Foucault’s (1993) concept of discourse we view the mathematics classroom and the social practices going on there as part of and affected by broad institutional and societal contexts. These theoretical approaches also help us to bring in the understanding that within groups there are always individuals. Discourses are then recognised as social practices structured through power relations that enact different identities and activities (Foucault, 1993). Consequently also categorization of groups is an effect of discourse. With this dynamic view of discourse, individual students are not to be seen as imprisoned in a group (affected by discourse). By taking active agency, individuals, as well as groups, can be part of long-term changes in discourse, or “leave” a discourse and instead engage in other discourses enacted in a mathematics classroom (Norén, 2010). Agency is not just individual, it is exercised within social practices (Andersson & Norén, 2011), and thus we understand agency as an effect of discourse.

Discourse, according to Foucault, is often understood as encompassing entire disciplines, but can also be conceptualised as smaller discourses related to specific interests in a discipline. The latter view on discourse is adopted in our research (see Walkerdine, 1988; Björklund Boistrup, 2010; Norén, 2010).

**Classroom discourse, agency and affordances**

Foucault (2003) writes about the role of assessment in education. He argues that, in assessment, surveillance is combined with normalisation. Through the assessment, there is both qualification and classification taking place, as well as the exercise of power and education of a specific knowing. From research in mathematics classrooms Björklund Boistrup (2010) construed four assessment discourses in mathematics. The focus was mainly on feedback. In one of the discourses, “Reasoning takes time”, the emphasis was more on mathematics processes such as
reasoning/arguing, inquiring/problem solving and defining/describing, than in the other three discourses. At times teachers promoted or restricted the use of communicative resources dependent upon the meaning-making demonstrated by the student(s), and different semiotic resources were acknowledged. In discourses where students and teacher are on more equal terms relative to power relations, affordances for students’ active agency were high. This was in discourses where teachers gave descriptive feedback, and where students were invited to give feedback on the teaching.

In our on-going research we will address the intersections of assessment discourses, discourses normalizing “Swedish-ness”, or promoting bilingual mathematics learning, as well as opportunities for students’ active agency and affordances for learning mathematics.

CONCLUDING REMARKS

The basis for the analytical framework described in this paper will be developed further during the project. We argue for a critical exploration of day-to-day classroom communication, and intersections of dominant assessment and normalising discourses in multilingual mathematics classrooms. We argue for the need for research to focus on different groups of students, in this paper, multilingual students. In our research the need is not to speak for or “give them voice”, but to get new knowledge on school mathematics practices in non-prototype classrooms, for the benefit of learning mathematics for different (groups of) students. We will use categories already existing in public and official documents, and will not create any categories of our own.

However we find that it is necessary to see each group of students as a floating group of individuals or agents, socially constructed, and as an effect of discourses. The theoretical framework described here enables us to study non-prototype mathematics classrooms, in a manner that takes complexities and conflicts into account.

NOTES

1. In day-to-day discourse, based on the Swedish National Agency on Education categorizations of students born abroad and students who have one parent born abroad, used in statistical reports on students’ achievement.

REFERENCES


