An immigrant student’s identity formation in a Swedish bilingual mathematics classroom

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This paper challenges current understandings of multicultural and bilingual students in mathematics classrooms in Sweden. Bilingual students are often pre-defined as disadvantaged and bilingualism is constructed as an obstacle. But students’ identity formation can be effects of agency and of participation in a variety of competing discourses available in a classroom. In a discourse where bilingualism is encouraged an immigrant student’s ability to positively build upon opportunities in the mathematics classroom seems to enhance.

Introduction

One of the complex relations in multicultural mathematics classroom practices will be addressed in this paper, namely students’ identity formation. Conceptions of identity can mainly be described from three perspectives; the psychological/developmental with a focus on the individual; the socio-cultural with a focus on interactions between the individual, culture and society; and the post structural perspective where identity formation is described as a dynamic and unstable process of becoming, and neither as an individual nor a social phenomenon (Grootenboer, Smith & Lowrie, 2006). In this paper, I define identity in line with a post structural approach, as “created at the intersection of a multiplicity discourses, always crisscrossing each other” (Walshaw, 2007, p. 81).

Often multicultural and bilingual students in Swedish classrooms are constructed as disadvantaged and bilingualism is constructed as an obstacle in the classroom. Lack of Swedish cultural capital and lack of Swedish language competence are usual explanations to multicultural students’ low achievements in mathematics (OECD, 2006). Runfors (2003) calls it lack of “Swedishness” where deficiencies within the students themselves or within their families are the main explanatory factor to students’ low performances in school. Other views are that individual students’ participation and performance in the classroom may be empowered or restricted by teachers (Toohey, 2000) and peer students (Sahlström & Lindblad, 1998). Both empowering and restricting processes can be viewed as effects of institutionalized discourse (Foucault, 1971; 1984). In a Swedish context such discourses are for example discourses about bilingualism, discourses about multicultural students and teaching of mathematics discourses. For multicultural and bilinguals students discourses about bilingualism may have
an influence on their identity formation since their identities as bilinguals can be both empowered and restricted in school mathematics practices. And by the exercise of deficiency discourses teachers’ may have low expectations on multicultural students’ performances in mathematics. Stentoft (2007) formulates it: “In educational discourse students are often placed in predefined identities which are used to determine or forecast their performance in school and higher education and predict obstacles on the way” (p. 1597).

Aim for the paper and the setting of the scene
The aim for this paper is to explore how competing discourses may influence students’ identity formation in bilingual mathematics classrooms. To do this I will report on two examples from a case study (or micro ethnography) within a larger four years (2004-2008) ethnographic study (Heath & Street, 2008). A male student, Amir, is involved in the examples, which are chosen because of the explanatory possibilities rising from interviews, observations, audio- and video recordings in one particular bilingual mathematics classroom. The analysis is set in relation to the larger four year study, where themes have been categorised and related to wider societal contexts such as public, traditional and intended discourses (Gee, 1999/2005).

Amir is participating in a group of ten students, eight girls and two boys. He had the same teacher in mathematics from sixth to ninth grade; I followed him and the group from eight to ninth grade (2005-2007) in compulsory school. In sixth and seventh grade Amir was taught mathematics in only Swedish, in eighth and ninth grade he was taught in Arabic and Swedish. Both Amir and his teacher have an origin from Iraq. The teacher has an Iraqi engineer degree and a Swedish mathematics and technology teacher degree.

Theoretical considerations
Boaler & Greeno (2000) note that “Learning of mathematics has traditionally been regarded as an individual, cognitive activity” (p 171), but, Boaler & Greeno continue, “students’ learning of mathematics can be considered as a trajectory of participation in the practices of mathematical discourse and thinking /…/ participation in social practices is what learning mathematics is” (p 172). However learning mathematics can be viewed as more than participation; it also relies on students’ self-positioning in the classroom (Solomon, 2007) and on how students identify themselves as mathematics learners. Therefore I depart from a Foucaultian perspective on identity. Foucault (1982) rejected the view on identity as a person’s internal or set essence, he viewed a true self as a fiction. Instead the self is constituted by a continuing discourse in a shifting communication of oneself to others. The individual is constituted in and through a culture and as a person you are constantly changing. Identity is then a relational concept and a
result of social interactions, negotiations and power relations (Selander & Aamotsbakken, 2009).

In other words, identity – or rather identities – is something we communicate and experience in interactions with others, it is not a fixed entity or a set of qualities, and it is a temporary and shifting construction. Identity formation is influenced by discourse but also by students’ agency and their active participation in different discourses in the classroom. Students are constantly contributing to negotiations about what it means to be a mathematics learner, and to know and to do mathematics in a classroom. The discourses operating in a classroom are connected to networks of power relations and wider societal contexts which make possible different understandings of learners and of what learning mathematics can be.

According to Skovsmose (1994) students’ “intentions-in-learning” is their reason for being involved or not in classroom activities. He sees students’ foreground, not their background, as a resource for bringing intentions into learning. In this paper, I perceive students’ intention-in-learning as part of their identity formation.

**Competing discourses as analytical framework**

A variety of competing discourses is available to a learner in a mathematics classroom, and can be resisted or complied. Lerman (2001) elaborates on how different positions “can be adopted by participants, an extreme being resistance, especially in ‘coercive’ practices such as schooling” (p. 104). The first example of pairs of competing discourses in the bilingual mathematics classroom are those who give voice to taken for granted discourse about bilingualism and those who give voice to research reported discourse about bilingualism. According to Lindberg (2002) there are many myths about bilingualism. The discourse is what people take for granted and is often reflected through media. Such discourse is that researchers do not agree on the advantages of using students’ mother tongue in educational situations in a second language learning environment and that the use of mother tongue should have a negative influence on the learning of a second language. Contrary researchers agree on the significance of mother tongue for second language learning and the importance of mother tongue for bilingual students’ achievement in school (Lindberg, 2002). It is also shown that a distinction between additive and subtractive second language learning mark the importance of the sociocultural conditions that characterize bilingual children’s upbringing. Additive bilingualism represents a discourse where the languages complement and support each other; subtractive bilingualism represents a discourse where the second language is learned on the expense of the first language. The discourses give different implications for bilingual students’
identity formation and learning. Moreover researchers report on bilingualism and its positive effects for cognition (Lee, 1996).

The second pair of competing discourses is traditional school mathematics discourse and intended school mathematics discourse (Persson, 2009; Björklund Boistrup & Selander, 2009). The traditional discourse that has been dominant for many years in Swedish schools is when a teacher is tutoring at the students’ desks while the students are working individually in their textbooks. Students spend most of their time in mathematics classes working at their desks with mathematical tasks (Mellin-Olsen, 1991; Pettersson, 1993; Sahlström & Lindblad, 1998; Persson, 2009). The intended national mathematics curriculum on the other hand supports teachers to use inquiry teaching and laboratory type teaching in the school mathematics practices. The Swedish national curriculum is “reform-oriented” (Boaler, 2002) as it also encourages students’ learning via communication and participation in mathematical discussions.

A discourse of social relations and a mathematical discourse are the third pair of competing discourses in the classroom. A mathematical discourse is operating when communicating mathematics, i.e. using the mathematical register in the classroom to be able to agree on the meaning of mathematical statements, as well as mathematical concepts and ideas. The social relations discourse is manifested through social interactions in the classroom. An example is when teacher and students discuss other things than mathematics. The discourse brings attention to what usually is considered as “noise” or “impossibilities” (Biesta, 2005; Valero & Stentoft, 2009) in studies of mathematics classroom interaction. Discourses taking the identity of multicultural students for granted reflected through media and peoples everyday practices may also be such that position students as “noisy immigrant students” or “noisy male immigrant students” in school contexts.

Instead of taking the identity of a student as a learner of mathematics for granted in the ongoing process of constructing identities, intentions for engaging in learning mathematics may go hand in hand with social relations to the mathematics teacher and peer students. When the male student that I focus on in this paper, Amir, was late to mathematics class the following interaction took place. The third pair of competing discourses was used in the analysis of the interaction.

“I am an engaged mathematics learner”
Amir enters the classroom a minute after the teacher has started the group working with algebra, she is writing on the white board. The nine students are listening while writing in their books. By Amir’s entrance and agency the
situation calls up an identity and positions Amir exercising a discourse of social relations with the teacher. Amir starts by saying in Swedish:\(^1\):

**Amir:** The physical education teacher is a racist! [the other students look at Amir]

**Teacher:** And why do you think he is a racist? [in an ordinary voice]

**Amir:** He will not let me pass [...] I will not get a grade in sports! [very upset]

**Teacher:** How come? Why don’t you get a degree in sports? You like sports.

The teacher does not interpret Amir’s lateness as an obstruction to learn mathematics and she responds to the comments from Amir, though the lesson on algebra has already started. She challenges his statement about the PE teacher being a racist. From earlier experiences she knows that Amir probably wouldn’t drop the “subject” if she just ignores him. The teachers point is that she cannot let Amir call Swedish teachers for racists because he doesn’t get the grades he wants (from interview with the teacher). When they have discussed it further for a short moment, in both Arabic and Swedish, Amir comes to the conclusion that the PE teacher cannot give him a pass grade, as he has not attended the sports classes that he should. The teacher then asks Amir why he calls the PE teacher a racist when the grade or not has to do with Amir’s own decisions, not participating in the sports classes. Amir then says he hopes he can talk with the PE teacher about it and that he really not is a racist. He goes on (Arabic in italics:\(^2\)):

I was just so mad when I understood I was not going to get a grade that I called him a racist! I will talk with him and maybe we can agree on me doing additional work. [...] [saying something to himself, but inaudible,] [...] I know I will get a good grade in mathematics though [...] what are we doing today?

Amir said he did not articulate directly to the PE teacher that he was a racist. “It is what I say about him to you”, he told the mathematics teacher.

Amir’s ability to deal with a problematic situation he has put himself into was handled by himself when he was giving a suggestion to solve the situation. The last utterance gives an indication of Amir positioning himself in the mathematics classroom as an engaged mathematics learner and becoming a good mathematician, as he does at other occasions as well. He chooses to engage himself in the mathematical discourse in the classroom by showing his intentions in learning mathematics. The rest of the lesson Amir answered questions from the teacher and put questions to the teacher himself in a mathematical discourse.

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\(^1\) My translation into English

\(^2\) A bilingual teacher helped me translate from Arabic to Swedish, my translation into English
He also showed his intentions by working intensively together with two girls in the group on worksheets repeating algebra, to be prepared for a test next week.

It is not possible to tell what would have happened without the teacher’s response to Amir, but in this situation it seemed to be a response that supported Amir’s aspirations to be good in mathematics. At this occasion Amir, with interactive support from his teacher, chose to be in a social relations discourse for a short while, and then moving on to a mathematical discourse. The teacher responded to Amir both as a listening adult caring about what he was saying and about his behaviour, calling a colleague of her a racist. She also enacted a discourse of becoming a certain kind of person, and Amir becoming a responsible young citizen taking responsibility for his own actions, a discourse promoted by the Swedish curriculum as a teacher should “clarify and discuss with the pupils the basic values of Swedish society and their consequences in terms of individuals action” (Skolverket/National Agency of Education, 1994 p. 9). Also the school “should strive to ensure that all students develop a confidence in their own ability” (Skolverket, 1994 p. 9).

In the next section, the first and second pair of competing discourses was also used in the analysis of classroom interactions.

Social relations wherein bilingualism is not an obstacle
In a Swedish context bilingualism in school is categorized as an obstacle (see for example Runfors, 2003; Haglund, 2005), except when English is involved (Lim Falk, 2008). Though the official discourse promotes bilingualism, the dominant public discourse denies it. In the classrooms in my larger study where mathematics was taught bilingual, bilingualism was contrary not an obstacle. Two languages were used for teaching and learning mathematics in a discourse promoting additive bilingualism, as the students activated and learned mathematical concepts and procedures in both Arabic and Swedish. In the particular classroom addressed in this paper, the teacher and the students at the end of ninth grade were evaluating their four years together.

Amir asks the teacher if she remembers sixth grade and tell her that nowadays “you do a lot more tutoring to the whole class, then in sixth grade /…/ and we work a lot more together and talk about [mathematical] stuff. You explain when we ask about it /…/ even though you know we know”. He says he thinks it is because they all speak the same languages, Arabic and Swedish. “It is more relaxing to be able to use Arabic as well, to use both languages”. The teacher agrees with Amir and says it was not easy to teach in two languages when they started up doing it. The students have “helped” her along the way, she says, by asking more and more questions, interacting and showing their confidence in the classroom. She was also hesitating to use both languages to start with, as she was “worried about their [the students’] improvement in
Swedish”, she says. Amir says the teacher has become a better teacher over the years, “though she was good from the start as well”. To Amir the most important is that “everybody can say what he or she wants in this group and that we learn from each other”.

The teacher’s hesitation to use Arabic demonstrates the competition between the institutionalized discourse that works normalizing towards “Swedish only” and “Swedishness” (Runfors, 2003), a taken for granted discourse about bilingualism and a discourse that promotes bilingualism (Lindberg, 2002). There have also been struggles between the institutionalized traditional school mathematical discourse, when students work a lot by themselves at their desks, and the more reform-oriented school mathematical discourse, promoted by research and the curriculum. The acceptance of bilingualism as a resource for the teaching and learning of mathematics seems to have enhanced the reform-oriented school mathematical discourse in this classroom. The acceptance of bilingualism and the social relationships between the teacher and Amir as well as the reform-oriented school mathematical discourse seem to assign him a positive position in the classroom. Though he from time to time performs like a “noisy” student he positions himself as an engaged mathematics learner and positively builds upon the opportunities in the classroom.

Students’ identities
Amir’s alternation between the identities as a “noisy multicultural student” calling a Swedish teacher a racist, and an “engaged mathematics learner” are influenced by the crisscrossing of competing discourses in the mathematics classroom. As there is space for social relations and negotiations between teacher and students in this particular classroom Amir has the possibility to negotiate about his identities. In contrast to earlier research in multicultural classrooms in Sweden, where institutionalized classroom discourse often implicitly works normalizing towards “Swedish only” and “Swedishness”, Amir is not normalized towards Swedish only and Swedishness. In contrast to Parszyk’s (1999) study where multicultural students experienced school was not for them but for others [the Swedish students], Amir out of his experiences, acknowledged school was for him. Through the discourses available in this particular classroom he has the possibility to show his intentions-in-learning and to format an identity as an engaged mathematics learner and an identity as bilingual too.

However Amir is also, from time to time, a “noisy” student in the mathematics classroom. It is not a deficiency within Amir, his family or his cultural background that makes him a “noisy” student, but the discourses available to him in school. Through the discourses available he might feel “comfortable” in the mathematics classroom, but we do not know about how discourses work in other school locations, except from what Amir is saying and
doing in the mathematics classroom, in informal talks and in interviews. An assumption based on his absence in PE classes, as well as on a formal interview and informal talks between Amir and me, could be that Amir is taking a resisting position in the PE classroom, towards certain institutionalized discourse normalizing multicultural students towards “Swedishness”.

Concluding reflections
Discourses shape and organise what teachers and students can say and do in the mathematics classroom. At the same time discourses are not static; they change and are not lasting over time. There is space for teachers’ and students’ agency in this classroom, and their agency exercise different discourses. The variety of discourses available to Amir is part of social structures of the classroom. The ways in which Amir is accepting or opposing those discourses format his identity of becoming an engaged mathematics learner, a bilingual individual, or a “noisy” immigrant student. His attempts to construct his identity as an engaged mathematics learner is in opposition to discourses which determine immigrant students’ school performance as low. Amir’s ability to positively build on the opportunities in the bilingual mathematics classroom activates a foreground of Amir. His image of himself as an engaged mathematics learner and his intentions-in-learning mathematics are interwoven with his actual learning of mathematics.

The advantages of speaking the same languages and having the same cultural experience in a learning situation, is one but not a single explanatory factor for Amir’s potential to become and identify himself as an engaged mathematics learner. This is in a discourse that promotes bilingualism.

In Sweden, the dominant discourse has been to normalize bilingual students towards “Swedish only” and “Swedishness”, to “make” the students Swedish and to “take away” the disadvantage of not knowing Swedish and not having “the right” or “enough” of the “right” cultural capital. The normalizing strategy is also in line with an assumption that it is easier to teach and learn when teachers and students speak the same language. But this is usually done in a normalizing discourse that promotes monolingualism – Swedish only. What is lost in a monolingual instructed classroom is that language and identity are closely related to identity formation (Toohey, 2000). Multicultural and bilingual students speak and use more than one language, and belong to more than one culture. Those conditions are acknowledged in the bilingual mathematics classroom, but have to become acknowledged also in monolingually instructed mathematics classrooms. The dominant discourses in Sweden about bilingualism may counteract that fact.

Multicultural students in the mathematics classroom can no longer be placed in pre-defined identities (Stentoft, 2007) as “immigrant students” which are used to decide their performance in school or predict obstacles on the way.
References


