

Learning mathematics: hope and despair

PETRA SVENSSON KÄLLBERG

To escape imposed deficit discourses around immigrant students when discussing their achievement in mathematics; this study examines immigrant students' own perspectives on their opportunities to learn mathematics. This was done by interviewing immigrant students from a multicultural and socially deprived area in Sweden, in two focus groups. In the interviews rowdy mathematics classrooms, the multicultural school and segregation emerged as hindrances that limit their opportunities to learn mathematics, creating a feeling of despair. However, the students demonstrated hope when talking about the future, which indicates a need for students to walk a balance between these two opposites when interpreting their opportunities to learn mathematics.

Until recently the Swedish school system has been characterized by the phrase, *a school for all*. However, during the last couple of decades differences in achievement between different groups of students within the Swedish school system have dramatically increased, indicating that "a school for all" may not be the case (Tallberg Broman, 2014), particularly for immigrant students in socially deprived areas. According to Bunar (2009) multicultural schools in Sweden are often portrayed as bad schools with rowdy classrooms, a negative social climate and students with poor grades. This discourse is problematic since it leads young immigrant students' to believe not only that the opportunities to learn mathematics are limited, but also that attending a multicultural school is worse than going to a "Swedish school" (Svensson, 2014). Deficit discourses of this nature are not uncommon in discussions of immigrant students' school achievement, not least because immigrant students are often construed, by those who are not immigrants, as "problem students" who do poorly in school because they lack "Swedishness" and have insufficient Swedish language skills (Dovemark, 2013; Norén, 2010; Runfors, 2003). Moreover, such deficit discourses are present in the Swedish media (Svensson et al., 2014) and, it is conjectured, likely to influence immigrant students negatively (Lange, 2008; Norén, 2010).

Petra Svensson Källberg, Stockholm University

To transfer from compulsory school to upper secondary school students must have a passing grade in Mathematics. However, despite a national picture showing the majority of students achieving this goal, there are schools in multicultural and socially deprived areas where only half of all the students do so (Skolverket, 2015). Consequently, there remain in Sweden many students who do not get access to the same social and academic opportunities in life as students from other areas in Sweden (Wigerfeldt, 2009).

Such matters of social justice and students' restricted life opportunities form one argument for this study. A second is to escape imposed deficit discourses by examining students' own perspectives on their situation. Therefore, the aim of this study is to discuss immigrant students' opportunities to learn mathematics by exploring how they describe their foreground, which here

refers to a person's interpretation of his or her learning possibilities and "life" opportunities, in relation to what the socio-political context seems to make acceptable for and available to the person.

(Alrø, Skovsmose & Valero, 2009, p. 7)

The guiding research question has been: How are the students' foregrounds expressed, and how do they contribute to the students' interpretations of their opportunities to learn mathematics? This article is derived from a licentiate study, investigating immigrant students' opportunities to learn mathematics (Svensson, 2014).

Theoretical background – foregrounds

One consequence of the deficit discourse is that individual students and their families are blamed for their failures in school and possibilities for change are limited since it is impossible to change a person's background. According to Skovsmose (1994) it is problematic to explain students' achievement with reference to their backgrounds. He states that it is also important to consider the students' present situation and their foregrounds when explaining school achievement. Skovsmose (1994) states that intentions (here to learn mathematics) are grounded in a landscape of dispositions (pre-intentions) formed by, on the one hand, a person's background and, on the other, his or her foreground.

A person's background, drawing on the individual's history, comprises a socially constructed network of relationships and meanings. A person's foreground, on the other hand, reflects a "person's interpretation of his or her learning possibilities and 'life' opportunities, in relation to what the socio-political context seems to make acceptable for and available to the person" (Alrø, Skovsmose & Valero, 2009, p. 7) and can be expected to provide information about students' interpretations of their opportunities to learn mathematics (Alrø et al., 2009). In this way, foreground can be construed as a theoretical tool for analyzing, for example, student interviews. Both background and foreground

are strongly connected to the individual, are interpreted by the person herself or himself, and cannot therefore be objectively viewed. A student cannot have one true foreground, since a student might have different foregrounds in different situations and foregrounds might also change over time (Alrø et al., 2009). According to Skovsmose (2014) a foreground includes both possibilities and obstructions and can be considered part of a student's life situation or, in Skovsmose's words, *a life-world*. A life-world is structured by economic, political, cultural and discursive factors wherein life-conditions or lived-through realities are a part (Skovsmose, 2014). He also points out that a foreground stretches beyond a life-world since it contains, for example, hopes, aspirations, wonderings, frustrations and despairs. It is also of importance to point out that through exploitation and stereotyping foregrounds can be imposed on a group of people (Skovsmose, 2012). In the particular context of this article, I have structured students' utterances into two foregrounded narratives, *hope* and *despair*. In so doing I highlight the relationship of two important foregrounds, as part of these students' life-worlds, to their future plans, the multicultural school and school mathematics and teaching.

Exploring foregrounds

To be able to learn more about how immigrant students, living in a multicultural and socially deprived area, perceive their opportunities to learn mathematics the study was undertaken at a compulsory school located in an area with a high immigrant population. The school had around 450 students from grade F to 9 and more or less all the students had foreign backgrounds.

In order to try to get a hold of the students' perspectives semi-structured life world interviews inspired by Kvale (1997) were conducted in two focus groups; two girls and one boy in the first and four boys in the second (see Svensson, 2014), shortly before the students were about to leave compulsory school, which means that they were either 15 or 16 years old. The interviews, approximately 55 minutes, were audio recorded and transcribed. The timing of the interviews meant that the students had already considered their future educational desires when choosing which National program to apply for in upper secondary school. The interviews were done in Swedish, but were translated and reported by the author.

One of the students, Khaled, was relatively newly arrived and had been in Sweden for 4 years. The remainder had been born in Sweden or immigrated to Sweden before starting compulsory school. These students' parents had immigrated from Afghanistan, China, Iran, Iraq, Kosovo, Kurdistan and Somalia.

When reading the transcripts concerning students' perspectives on their school and school mathematics, two narratives contrasting opportunities and obstructions could be discerned. Thus two result sections could be constructed by placing excerpts in the corresponding section, being the first step in the

analysis process. The first section contains expressions around the students' futures, thus demonstrating *hope*. The second section contains expressions around school mathematics and the multicultural school, which contains possible obstructions for learning mathematics and demonstrates a feeling of *despair*. Hope and despair are part of the students' foregrounds (Skovsmose, 2012) and thus the second part of the analysis process was to explicitly explore what represents the students' foregrounds in the two narratives and how the foregrounds might contribute to their perceptions of their opportunities to learn mathematics. The data of analysis is the language in use.

Results

A narrative of hope – the future

The students, in talking about their plans for their futures, presented foregrounds that can be interpreted as positive and hopeful. One student, Chang, was certain he would achieve, without hindrance, his future plans of becoming a medical doctor. He had applied for the natural science program and said, "ehh, the grades are good, I will get access, I got preliminary decision and I got in". Chang was explicit about his future and expressed no worries or hindrances, demonstrating hope. This is slightly different from the other students who expressed plans for their futures at the same time as discussing possible hindrances, of which mathematics was one. For example, Ana, whose plan was to become a psychologist, said that she could have chosen the natural science program if it wasn't for mathematics – "Look, I could have chosen natural science because of the chemistry, since the natural science subjects are quite simple" – but today she can't stand the mathematics:

Ana: I mean it is only maths that destroys everything. I don't want to have math G or math F [the lowest grade]

Jasmin: Become a kindergarten teacher.

Ana: Never in my life. I can't even stand the maths we have now.

Jasmin and Ana had applied for the social science program at a school in the city and Chang had applied to a natural science program at another school in the city. Chang and Jasmin had received preliminary decisions, but not Ana since she had not achieved a passing grade in mathematics when she applied and was therefore not qualified for upper secondary school.

Jasmin commented that she in ten years will, "ehm, work and have one child". Jasmin has no dreams or plans on what she would like to work with in the future, but says that she would like to work as an au pair. But she knows she will not be studying, "No, then I won't study, I am sure".

Khaled was in a similar situation to Ana and was hoping, at the end of his final semester in compulsory school, to receive a passing grade in mathematics and gain access to the applied program in upper secondary school. He had actually applied for the nursing care program since he wanted to become a policeman. When Khaled is asked if his dreams were realistic he answered, yes, but when this was followed up with a question about hindrances his response was short, "maths".

Hassan's desire was to attend the social science program but school mathematics seemed to cause him problems. His mathematics teacher had recommended him to apply for summer school in mathematics to get a chance to study more mathematics and in that way be able to get a passing grade. When it came to his dreams about the future Hassan said, "finish studying, get a good job, living the life and then think about children" and when he was asked to explain what he meant by a good job he said:

Hassan: That is, I think that is, if I now get into that school it is the uniform professions and such, policeman or something.

Petra: Policeman is your dream?

Hassan: Yes.

When Hassan was asked about hindrances to his dream he said, "maths". Also Tarek had applied for the social science program but unlike Ana and Hassan Tarek seemed to be sure that he would get in. In ten years Tarek thought that he would be done with university and that he would work with computers and IT, maybe as a computer programmer. When asked if his future was realistic and if his goals achievable, he answered, yes of course, although possible hindrances for Tarek could be laziness. Just like Chang, Mohammed had applied for a natural science program at an upper secondary school:

Moham.: Natural science at P-school. I know I have difficulties in particular with math, but then I focus more, that is I will rather take the science-subjects, physics, chemistry and biology, but just in math my two brothers have studied it, or three, so they can help me.

Petra: Mm, will you get access with that?

Moham.: Yes, I believe so.

Petra: Yes.

Moham.: So maybe 95 percent I am in.

After finishing upper secondary school Mohammed dreamt about becoming a veterinarian. He also had a plan B for achieving his goals if he failed to get into Swedish veterinary education. He thought of his dreams as realistic and said, "if you really want I think it is realistic". When talking about possible hindrances for reaching his goals Mohammed says "the largest hindrance then is maths".

With the exception of Jasmin, attending upper secondary school and thereafter college or university was a part of all students' foregrounds. Becoming a medical doctor, psychologist, computer programmer, veterinarian or policeman were clearly expressed elements of their foregrounds. Through the discussion of their various ambitions, students clearly foregrounded hope. They also thought of their future plans as realistic and achievable, further foregrounding hope. However, when discussing possible hindrances to the achievement of those dreams, with the exception of Chang and Tarek, school mathematics seemed a barrier, a gatekeeper to further studies and future dreams (Skovsmose, 1994; Stinson 2004). Despite this, the students still thought of their future plans as realistic.

A narrative of despair

School mathematics

A part of the students' life-worlds was that they, to a varying extent, had to study mathematics in upper secondary school. This could be seen as positive or negative; positive for Chang, but less positive for the others. In Khaled's life-world mathematics was thought to have the capacity for destroying his future:

Khaled: But math destroys what it is called, a part of our future that is when you don't get a passing grade and can continue to upper secondary school you have to study in it and such, it is kind of hard.

He also commented that mathematics gave him a disgusting feeling, which he clarified by saying, "that is, you know you are going to fail, that is a big chance that you won't make it, less of a chance that you make it". Jasmin and Ana viewed mathematics as "hard work", with Ana adding that it was "boring". In their life-worlds mathematics gave them headaches:

Ana: So, I don't get anything.

Jasmin: Headache.

Ana: Yes, headache.

Petra: Headache, what does?

Ana: I think it is boring and you I sometimes have got really big headaches from math.

However, Jasmin said, "but it is fun when you can do it. When you can't do it, you can go mad", which Ana agreed with; "I know, when you know something you go, oh, it is really fun, when you don't know, only math who wants to? Who even needs it?" For Mohammed mathematics was "tough" and for Hassan it was "hard work"; while Tarek said "you have to struggle". In contrast to the rest of the students Chang spoke positively about his mathematics experiences, as part of his life-world:

Chang: That is, I don't know. I get the feeling kind of so, yes math gets me forward, something like that or mine is to try to show that you are the best. I don't know, I get something like that when you say math. That is, I think it is like that, but anyhow it is something good for me.

In both interviews a wish for more mathematics teachers during mathematics class was expressed. According to Ana, Jasmin, Khaled and Tarek, they get insufficient help from their teacher and an extra teacher is needed. Khaled and Tarek commented that:

Khaled: So often we have one teacher so you don't receive a lot of help and I have only had one teacher during the whole semester.

Tarek: Yes, it is too few.

Khaled: I haven't received much help, just a little help so we need an extra teacher.

Tarek: One teacher is not enough, everyone don't get help.

In the other interview Jasmin said, "I think there should be, more math teachers, yes, like three". Ana agreed that this would give them help:

Ana: So that you really get the help you need so that you don't just sit there for the whole lesson and get stuck at such an assignment and you understand nothing, so you don't get help.

Petra: Has it been like that now then?

Jasmin: Yes.

The students' conditions in school and their relationship to school mathematics show somewhat shared life-worlds, Chang being an exception. For the rest of the students, school mathematics seemed to have a negative role in the creation of mostly negative feelings. The students believed that more teachers and more help were needed in the classroom, indicating a belief that they did not get enough help and leading to a discernible feeling of despair. These experiences, as part of the students' foregrounds, cannot be ignored and are likely to have a negative impact on their perceptions of their opportunities to learn mathematics.

The multicultural school

The students also talked about rowdy mathematics classrooms, which they believed affected their opportunities to learn mathematics, thus also forming part of their foregrounds:

Moham.: Several times when you are in the classroom, the teacher talks so it is like everyone talks, the teacher doesn't say anything, yourself you become so unconcentrated and distracted by other things.

Petra: You started to say something there about the environment? Tarek.

Tarek: It really affects a lot, kind of if everyone talk, yes.

According to the students in both interviews it was their classmates that caused the rowdiness. Mohammed expressed it as, "yes, think so because many right now in our school they don't struggle, they just show up in class". The reason for this, according to the students, is that they have given up on learning. In particular, Mohammed said, "yes because, there are some that think I will still fail why should I try? There are some that are lazy and a lot more". Ana believed that it was "because maybe they think they can't do it and they think it is no point to try so they don't try and just mess around".

At the end of interview when the students were asked if they had anything to add, before the recorder was switched off, Khaled commented:

Khaled: But also, they put immigrants in one school and most Swedes in another. It should be mixed, Swedes and immigrants; it shouldn't be as much chaos like it is in X-school, kind of in another school, a Swedish school not as much as it is here. It should be mixed, Swedes and immigrants.

Segregation was part of the students' foregrounds. Mohammed continued the conversation by saying "yes, but it is just that. It feels more like all immigrants that have arrived, it feels more like they have isolated them here". This is reinforced not only a sense of injustice but reinforced the belief that the multicultural school was a poor choice and a "Swedish school" a better one. Mohammed and Khaled continued:

Moham. : Of course, the Swedish mathematics, everyone is not the same but if there were Swedes mixed then you should adjust to the Swedish language, it feels more like the municipality or state have done it on purpose. It is sometimes just that feeling you get.

Khaled: We are completely on one side and they are completely on another side, the immigrants on one side and then the Swedes completely on another side, we have less teachers in math class, they have more, two three of them in one class and get more help.

He continued.

Khaled: And they say money to the school, if we shall learn something so and education, then you have to have money, the municipality has to give money, kind of we don't have as much money as other schools have, we throw out teachers and such, so we get less education and everything.

The way the students described their school matches the public discourse around multicultural schools (see Bunar, 2009) and was a part of their life-worlds and thus their foregrounds. In their utterances the multicultural school emerged as a worse choice than a "Swedish school". That is, students thought that "Swedish schools" provided better alternatives with respect to learning opportunities as found in an earlier study where students acknowledged a discourse about "the need to be Swedish" and accepted, as desirable qualities, those of being Swedish (Svensson et al., 2014). This is similar to how the students in Dovemark's (2013)

study adopted a discourse about "weak immigrant groups" which made it possible for immigrant students to be aware of being perceived by others as negatively different. Also immigrant status, segregation and injustice emerged as hindrances for the students in their learning of mathematics, contributing to a feeling of despair among the students. These discourses seem to be a part of the students' foregrounds, which most likely influence their interpretations of their opportunities to learn mathematics and in this case most likely create obstacles to learning mathematics.

Concluding reflections

In this study two different narratives have been discerned, demonstrating students' foregrounds in relation to hope and despair, indicating a need for students to walk a balance between these two opposites when interpreting their foregrounds and thus their opportunities to learn mathematics. The latter, despair, contains foregrounds imposed (see Skovsmose, 2012) by others with the potential of undermining students' foregrounds since they are unable to influence those conditions (rowdy mathematics classrooms, immigrant status, segregation and injustice). A consequence of this might be serious learning obstacles that students themselves cannot easily overcome. However, the students' foregrounds in relation to their future plans contain hope and it is noteworthy that those students without a passing grade in mathematics still show confidence regarding their future. In contrast to the imposed foregrounds, the foregrounds related to the students' future are more easily redirected by the students themselves. This might give teachers and schools the opportunity to provide students with new opportunities by introducing other elements to their foregrounds, creating alternative foregrounds within which students might act. Therefore it is important to know more about students' foregrounds in order to redirect them in ways that would create more meaningful opportunities for learning mathematics.

In this paper I have tried to show how immigrant students are positioned in complex ways, with imposed foregrounds that need to be taken seriously by all those responsible for their education. It is unacceptable that immigrant students find themselves trapped in imposed foregrounds that influence their understanding of their opportunities to learn mathematics. I also argue that the use of foreground as a theoretical tool opens up for the examination of other factors impacting on immigrant students' opportunities to learn mathematics than those connected to the students themselves and their backgrounds. Such matters call for further research in order that we might not only gain a better understanding of immigrant students' foregrounds but also facilitate their seeing and acting upon alternative and more productive foregrounds with respect to their mathematical learning.

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