

Visual images from the lives of immigrant pupils in maths classrooms

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Background of the study

This study¹ reports on a visual ethnography of the life of immigrant students in mathematics classrooms. The study took place in Denmark in a rather disadvantaged area in south Copenhagen. The basic aim has been to understand how these pupils are positioned (by teachers and by themselves) in maths education practices by opening up the field of interpretations to include the broader culture of schooling.

By ‘visual ethnography’ we mean the overall methodology which is heavily based on images constructed through ‘pictures’ including participants’ ‘views on pictures’, captured in video or photographs but also in symbols, non-verbal communication and rituals. As a method, it is not new for ethnographers and, despite its weaker focus on social structure and organisation, has been reported as a valuable tool for early anthropologists in their attempts to go beyond the challenge of language and unravelling the characteristics of a culture or community of people. Visual sociology and ‘image-based’ research as current trends emphasise the merging between theories of social organisation and ‘visual’ data analysis (Prosser, 1998, Harper, 1998, Becker, 1998). In the field of maths education, these trends are not explored. However, one can mention recent ethnographic studies that capture in text vivid images of life in maths classrooms (e.g. Bauchspies, in press).

In our study, a number of maths lessons in different grades (early and late primary, and early secondary – the Danish Folkeskolen) were observed² and videotaped. The teachers’ and pupils’ (where this was possible) views were sought through conversations or semi-structured interviews. The study highlights a number of issues, most of which are not alien in the broader field of cultural diversity and multicultural education, but nevertheless, present new insights for problems within the area of maths education (e.g. entry to the practice of learning school mathematics, and curriculum choices such as the use of project work). Mathematics is a compulsory subject in the school curriculum and the experience of students in learning mathematics is especially in Denmark

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² Observation and videotaping was carried out primarily by the first author, but both were involved in gaining entry to the fieldwork and discussing the meaning of interpretations of specific episodes in the particular context of the study.

coloured from their success or failure in daily classroom practices which become an essential factor for constructing certain identities. Below, we will make a brief reference to some of the categories that a first phase analysis has revealed.

Appearance and difference: Entry and resistance

The construction of difference (and the ways in which difference is realised) is primarily based on visual appearance and this seemed to determine the entry of those pupils in the school culture especially the pupils' own community. Immigrant pupils, especially girls from a strict Muslim background, use their own special dressing codes as directed by their home culture and religion. Boys seem to have more flexibility in dressing, but colour seems to be another signifier of difference for both genders. However, colour is not always a valid factor because, on the one hand, there are currently many immigrant pupils from the East European block who have Nordic complexity. On the other hand, some pupils with dark complexity proved to be adopted by Danish families and are thus Danish citizens³.

However, although teachers themselves stressed 'appearance' as an issue for pupils' life in the Danish school (e.g. thin colourful dresses are not comfortable for the long cold winters and do not suit cycling- a basic activity for all in this country), we noticed a number of counter-examples, especially from girls of a Turkish or North African background, who preferred to use a western style in their dressing. Talking with an experienced advisor on multicultural issues, she highlighted that a support group was established for Muslim girls and amongst the guidelines proposed were; focus and discipline in their work and study, openness to the new culture including adopting the western dressing code, respect for the history and culture of their home culture.

But, sometimes, even the adopted western style of immigrant girls was not appreciated as used in a 'proper' way (i.e. according to the expectations of teachers). Ignorance for being focused in mathematics lessons and rejection to follow classroom rituals were explained either due to the emphasis some girls were placing to their femininity or boys to their masculine nature. One teacher, talking over the case of a very beautiful Turkish girl, said that she was mainly interested for exposing her physical characteristics instead of concentrating on studying mathematics. However, looking into the classroom one could notice more girls being interested more on make up than in studying. It was interesting to wonder why beauty was used as the explanation (and the reason) for the failure of that specific immigrant girl. Girls, in particular, can be very vulnerable in those settings because on the one hand they are obliged to respect and/or

³ It is important to mention that even these pupils are Danish citizens, are part of the culture and understand its rituals, one must have in mind that they still might either experience some sort of racism or have difficulties to integrate in the culture of their own society, mainly due to difference in colour and complexity.

reject certain rules in their home culture (e.g. codes of dressing) and on the other hand, in their attempt to become part of the dominant culture, fall into unsuccessful imitations that can create quite serious misunderstandings about their intentions and being.

Boys, on the other hand, have a tendency to expose deviant behaviour. We witnessed that with a group of boys of 14-15 year olds who had to follow a mock oral examination of a maths test. Although they had some support on language, from an extra teacher who came to help them, they were very indifferent during the whole lesson about the mathematical activity. They could not lose any chance to chat (often loud) amongst themselves or to engage in other things (e.g. looking out of the window).

This type of behaviours that contradict the expected norms of a community (and mainly the school curriculum) can be characterised as resistance positions. Mellin-Olsen (1987) based on Willis and Giroux explains that the *'...phenomenon of resistance can be observed in various forms and at various levels sustains human dignity and rejects the oppression which dissolves personality and buries the potential for Activity'* (p.198). In our case, oppression is experienced by these students mainly due to a curriculum and set of activities that they do not fully comprehend and thus cannot follow. It is obvious that such positions are not productive, in the sense that instead of facilitating their entry in the practice, work against any potential for full participation. Mellin Olsen argues that instead of rejecting resistance, it should be accepted and used as a basis *'..to convert passiveness, indifference and destructiveness into constructiveness..'* (p.200).

Maths curriculum and socialisation: Teachers and families

An open and flexible curriculum (including material and human resources) cannot, on its own, safeguard progress in learning for immigrant pupils. The teachers involved in this study reported a number of classroom incidents which show that use mainly of a curriculum that involves project work, extra curriculum activities, and open problems cannot be the sole parameter for pupils' success in mathematics learning.

Teachers also emphasised that lack of competence in language did not permit students to grasp the underlying meanings of words and to understand fully the meaning of an open problem. Extra help in language in maths lessons was given, but there is still a question as to how far could students feel empowered and confident through their participation in maths lessons. For example, how many of them could really expand on a given problem, as well as being able to write and speak over a variety of aspects involved in the process of problem solving? And how many could cope successfully with these skills in exam settings? These observations agree with findings from a UK study by Cooper and Dunne (2000) who identified that pupils of an immigrant and of lower socio-economic backgrounds are more likely to fail in exam items that involve open problems and investigations.

In Kim's (one of the teachers) classes in middle primary we met a shy girl from Pakistan. She wore her traditional dressing and was sitting in a group of boys very silent. It was obvious that she was not involved much socially with her classmates. Kim mentioned that the girl was also weak in her mathematics and explained that her family has a strong role to play here. The mother was frequently ill and the father did not really spend time to help the little girl gain some broader knowledge of the new country. For example, she had problems even counting money. Further, we learned that the family did not encourage her to participate in out-of-school activities such as clubs, sports etc. As a result, the chances for her to create any sustained relations with other children and get some deeper taste of Danish culture were limited. It was obvious that the teacher wished to be able to change this situation and create a new girl, more dynamic and closer to Danish standards. However, one wonders whether this might be another fallacy concerning the girls' own life and in particular her success in mathematical learning. Is it that always the process of mathematical learning involves social and dynamic behaviour of a western style? It seems that certain democratic curriculum practices (e.g. project work, open problems, dialogue and other forms of social interactions) either challenge the habitual norms of these students or demand certain competencies in language and/or cultural capital that immediately place them in inferior positions and cannot cope.

Teachers' views on the situations observed pointed out certain stereotypes. In particular, they related progress in mathematics with pupils' enculturation in the Danish culture (including the enculturation of their families and communities). For example they stressed a number of issues that prohibit their smooth integration such as; girls' dressing code and negative habits for cycling and participation in sports, family support and in particular lack of access to toys, games and practical activities, and generally resistance (or incompetence) to participate successfully in the rituals of the western culture. This position made obvious that although they liked the 'other' culture, and the particular teachers we worked with had a lot of sensitivity for embracing the pupils' cultures seriously, they also appreciated their own as superior (e.g. more democratic).

What do the above *can* say and what they *cannot* say?

The situations we observed in the contexts of maths classrooms point out certain complexities which can lead to dilemmas. Certainly, the teachers are not alone when working in the school curriculum. There are certain boundaries within which they act and work and, more importantly, one cannot claim that they have full control over their work (e.g. curriculum, exams, school organisation). For example, eventhough, they might recognise that certain alternative pedagogic practices (such as learning mathematics through the pupils' own methods, using history from other cultural groups, using the pupils' own language in exams or problem solving, employing teachers from other cultures) might be beneficial for those groups of pupils, teachers are not always in the position for making

such decisions themselves. However, an optimistic message might be that they *can* play a mediating role in influencing change in certain contexts and under certain circumstances.

In this short report we wanted to present some incidents observed, trying to understand how these pupils are being positioned as weak mathematics learners in their school communities. Any methodology that tries to tackle such complex issues is likely to fail in making conclusive claims and the present one is not an exception. Instead, our aim was much more modest and focused mainly on exploring the possible interpretations made by key actors in these practices (e.g. teachers, maths advisors, and us as researchers) when having the chance to observe their movements and participation in lessons. The incidents we have described here consist representative patterns of what was going on in the maths classrooms. For the purposes of this report we wanted to rely primarily on the effect that these visual images have on us and on teachers without, at this stage, seeking deeper the views of pupils' themselves. However, this can be a worthwhile extension of the study

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