TRANSITIONS: FROM BACKGROUND TO FOREGROUND[1]

Núria Gorgorió and Núria Planas

Universitat Autònoma de Barcelona, Spain

Abstract: *We interpret immigrant students' learning experience as a transition process between contexts of mathematical practice. Transition processes can be studied through the analysis of the different meanings that the individuals participating in the classroom attach to the various moments in the classroom dynamics. Despite all the differences, there is a common trait to be achieved among all the students: their willingness to actively participate in their own process of learning mathematics. We discuss how concepts such as transition process, norms, negotiation and communication relate to the idea of participation that guides our search for commonalities. In our discussion, we analyse how a change of perspective, from the idea of background to that of foreground, leads us to understand in a new way the complexity of the mathematics classroom.*

Resum: *Interpretem l'experiència escolar dels alumnes immigrants com un procés de transició entre pràctiques matemàtiques. Els processos de transició poden estudiar-se analitzant els diferents significats que els individus que participen a l'activitat matemàtica associen als diversos moments de la dinàmica de l'aula. Malgrat totes les diferències, hi ha un tret comú que cal aconseguir entre tots els alumnes: la seva voluntat de participar activament en els seu propi procés d'aprendre matemàtiques. Presentem de quina manera conceptes com transició, normes, negociació i comunicació estan relacionats amb la idea de participació que orienta la nostra cerca d'aspectes comuns. En la nostra argumentació, analitzem com un canvi de perspectiva, des de la idea de 'background' a la idea de 'foreground' ens porta a entendre d'una manera nova la complexitat de l'aula de matemàtiques.*

The schooling of immigrant students in Catalonia

Since 1997 we have been working in a Catalonian research project concerning mathematics teaching in schools with large numbers of immigrant students. The project[2] aims to find more appropriate ways to teach mathematics to immigrant students, and focusses on the understanding of the complexity of the (multicultural) mathematics classroom. In this paper we want to share with the reader some of our reflections on how the perspective taken for the analysis of a multicultural situation may influence the understanding of the phenomena studied.

[1] Elsewhere (Gorgorió & Planas, in press) we have discussed immigrant students' transition processes in the search for commonalities. In this paper, we revisit the ideas presented there under a new perspective, that of the student's foreground.

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Using parts of the transcripts from the case study of Malik (one of the students in one of the many classrooms observed), we will discuss how the construct of 'foreground', together with that of background, has helped us understand his breakdowns in participation in a new light. Malik's example must be taken as an excuse to develop our arguments, we are certainly not theorising from his case. (For a detailed description of the research project and its theorisation see the references at the end of this paper)

In recent years, there has been increasing immigration into Catalonia, which has lead to significant changes in the school population. Now the mathematics teacher has to deal with students coming from other parts of the world, that have 'different' cultures, and speak different languages. When talking about differences in a social situation, 'different' usually means different from what is 'common' or 'normal', where common and normal are defined according to the assumptions and expectations of the persons concerned. Thus, for instance, mathematics teachers find immigrant students to be 'different' from what they expect their pupils to be.

Often, the knowledge, norms, and attitudes that are 'normal' are different from those of students having different cultural backgrounds. However, within the classroom, the ways of knowing and behaving that are considered as 'normal' by the teacher tend to be part of the hidden curriculum. Therefore, they are rarely made explicit or negotiated. Is it sensible to expect to reach commonality while ignoring the fact that differences exist?

Within the mathematics classroom, immigrant students need to show competence in many different ways—linguistically, culturally, and in terms of content knowledge—as well as to have interactional skills. In our context, to reach that level of competence, whilst attending mainstream schools, they are assigned to particular groups and required to follow particular lessons. Allocating them to special classes is regarded as a way to help them to adjust to the prevailing norms and to correct the 'inappropriateness' of their behaviour.

However, such educational programs are often designed on the basis of some dangereous and, again, hidden *a-priori* assumptions. Fortunately, nowadays there are fewer and fewer educators who would still accept cognitive deficit theories as explanation for the lack of success of immigrant children. However, there are still too many of them that believe that the obstacles in their learning are due to their familial, cultural or social background. We would join Skovmose (2002) when he points out the risks of such perspectives because they easily lead to a comfortable interpretation of the children's failure, such as the problems immigrant students face in school are established beforehand and are not to be located in the school structure; or if they are, then the students bring their own learning obstacles to school and the best that school can do is to 'compensate' for such cultural deficiencies.

Most often, educational programs provided for immigrant students are based on these compensatory assumptions: that immigrant students need to be compensated for the

'negative' effects of their own sociocultural backgrounds, and that they are lacking any kind of social or academic skills. It is rarely thought that they simply have their own ways of behaving and knowing, as well as their own values, beliefs and expectations. Is it sensible to expect to reach commonality while misunderstanding the differences, and devaluing those that are 'different'?

Immigrant students learning mathematics as a transition process

Elsewhere (see Gorgorió et al., 2002), we have studied the difficulties immigrant students experience when learning mathematics in mainstream schools as a transition between contexts of mathematical practice (see Abreu et al, 2002, for a broad approach to the transitions construct). When referring to the schooling of immigrant children, transition processes may be viewed as the gradual adaptation to societal expectations. The idea of transition as a continuum is crucial when attempting to achieve commonalities from differences. There are many differences between what is understood as normal or common according to the immigrant students' home culture and in the culture that hosts them. We acknowledge that school can change neither their cultural backgrounds (if they were to be changed), nor their previous life histories. However, we believe that school should contribute to help them create a continuity between their home and the host culture's meanings. We claim that school, and school mathematics, can have an important role in making possible a positive foreground for them.

Several studies in the field of mathematics education (see, for instance, Yackel & Cobb, 1996; or Voigt, 1996) focus on the processes of establishing the basis of communication between teachers and students within the classroom. They analyse the negotiation to achieve shared meanings and the conflicts that appear as a result of the failure of that negotiation. In particular, they point out the relevance of sharing the meanings attached to normative issues for making communication possible.

Conflicts and disruptions between the various meanings that different persons attach to the same situation or episode are the most visible manifestations of the transition processes lived by the participants in a multicultural classroom. Often, the apparent lack of conflict only means it is invisible to the observers (see Gorgorio et al., 2000), and when cultural conflict remains invisible it may turn into different types of blockage that can slow or hinder immigrant students' learning process and their participation in the classroom community. However, we consider that individuals can adapt mutually to the actions of the other members of the classroom community, and interact by reaching an agreement about the normative aspects and about the norms regulating the context.

The transition processes experienced by immigrant students can be studied through analysing of the different meanings that the individuals participating in the classroom attach to the different moments in the classroom's dynamics. What are the commonalities and the differences, the continuities and discontinuities, their

coherence and non-coherence between the meanings attached to the mathematics learning process, and to what is being learnt, by the different participants?

Immigrant students have to reinterpret and to adapt to new social and cultural aspects of the classroom context: the different roles of teachers and textbooks (social norms), the different ways of understanding the learning of mathematics (socio-mathematical norms) or the different uses of heuristics and algorithms (norms of the classroom mathematical practice). All these constructs refer to certain regularities of the social interaction that are established by the individual and group interpretation of what is perceived as acceptable or correct. These constructs are useful to analyse classroom situations and interactions (see Planas & Gorgorió, 2001, and Planas, 2001), since they provoke the possibility of different mathematical thinking processes, different social acts of participating and specific and unattended mathematical practices and, what is more important, the possibility of reconciliation of those differences in search for commonalities.

From 'background' to 'foreground'

Until now we have been using the expression 'in search for commonalities' repeteadly. To which commonalities are we referring? What can be an expected (wanted) common trait among students in such multicultural classrooms?

Let us take an example from a completely different setting. Let us think of a meeting of soccer players, professional and non-professional, from all over the world. Is there any common trait among the participants at that meeting? It will be easily agreed that we can take for granted that the essential common trait among the soccer players is their interest in playing soccer.

Similarly, we could say that the common trait among the students in any mathematics classroom is that they are mathematics learners. However, the soccer players present at their meeting, most probably, wanted to become soccer players. Not all the students are in the mathematics classroom willingly. Therefore, when thinking about the participants in a mathematics lesson, we will not refer to a 'taken-for-granted', but to a 'to-be-reached' common trait: their interest on learning. Learning is a volitional process, and therefore, requires active participation. Therefore, the commonality we want to achieve is the willingness of all the students to actively participate in their own process of learning mathematics. This participation in the process of learning must be facilitated by the teacher to be best developed.

We will now use an example (from Planas 2001) to illustrate how the ideas that we have been using until now in our research project –transition process, norms, negotiation and communication– relate to the idea of participation that guides our search for commonalities. We will revisit Malik's case, that has been discussed elsewhere (see Gorgorió & Planas, in press), from a new perspective: that of 'foreground'.

We understand the construct 'foreground' as having a double meaning. On the one hand, from the perspective of the individual, as the way the student sees him/herself: what s/he is to become and wants and expects to become. On the other hand, from a social perspective, our understanding is suggested by the reading of one of Skovmose's latest papers:

> By the ''foreground'' of a person I understand the opportunities, which the social, political and cultural situation provides for the person. However, not the opportunities as they might exist in any ''objective'' form, but the opportunities as a person actually perceives them.
>
> (Skovmose, 2002, p.1)

We regard, as he does, the foreground as an important element in understanding students' learning-actions, but we will not refer here to the students' foreground as being within the whole society, but being within the mathematics classroom considered as a social scenario. Nevertheless, again we agree with him that *'when a society has stolen the future of some group of students, then it has also stolen the incitements of learning'* (Skovmose, op. cit. p.7)

Revisiting Malik's case

Our example, Malik's vignette, comes from a mathematics lesson where students aged 15-16 had been asked to solve the problem:

The following table gives you the population and the area of two neighbourhoods in Barcelona, Sarrià and La Barceloneta. Discuss in which of the two neighbourhoods people have more living space.

Sarrià	*La Barceloneta*
135,570 inhabitants	297,930 inhabitants
14 km^2	3 km^2

After working in small groups on the problem, it was time for joint discussion and presentation of the solution process to the whole class. Below is part of a dialogue that went on between Malik, a boy from Morocco and his teacher, Mrs Learned:

Malik: *I have not solved it with numbers, Miss.*
Mrs Learned: *How have you solved it?*
M: *I know about these neighbourhoods. I have been there.*
ML: *And what do you mean by that?*
M: *In Sarrià they live much more spaciously, I know.*

ML: *Which mathematical operations have you used?*
M: *Numbers are not necessary here, Miss.*
ML: *OK, I don't want to waste our time with such a discussion. We are supposed to do mathematics here and we only have ten minutes left.*
M: *I don't know how to explain it, but I'm sure they have more room in Sarrià, my grandmother lives in La Barceloneta.*

There seems to be a lack of agreement between what Malik and Mrs. Learned understand as 'what a problem is', 'how to solve a problem', or 'which is the role of the setting of a problem'; all of them norms of the classroom mathematical practice. Mrs. Learned understands that solving a problem as a way of learning mathematics and, therefore, that it necessarily requires using algorithms. Malik is convinced that a problem is a situation for which one initially does not have a solution, that there is some 'unknown' that requires using some mathematical knowledge, not only algorithms, to be 'known'.

When studying that case, we realized that neither the teacher, nor the student were used to discuss any of those norms as part of a mathematics lesson. Using her status as a teacher, Mrs. Learned determined that 'what a problem should look like and what it means to solve it' was not a matter for negotiation.

When there is such a disagreement, there are several steps to follow if obstacles to participation have to be overcome, especially those obstacles that may arise as a result of the lack of communication. The first step is to acknowledge that there is a disagreement, and then to try to explain the reasons or the causes.

Despite the fact that after the lesson Mrs. Learned was conscious of the existence of a disagreement, neither that day nor the following day did she anything to make explicit why she expected that her students should discriminate between their 'private lives' and 'mathematics lessons'. After the argument, Malik remained silent for the rest of the lesson, and he refused to participate further.

The reasons for Malik's non-participation in the mathematical discussion cannot be reduced to a single simple cause, and none of them can be considered in an isolated way. These reasons include a growing cultural distance due to the different interpretation of the norms, the existence of negative social valorisations towards him that reinforce this distance, and Malik's own emotions when perceiving this distancing (see Planas, 2001 for a full interpretation).

Below we can see how Mrs. Learned understood Malik's argument:

There are some students who are always trying to introduce issues from their private lives to support their arguments. They do not seem to make a clear distinction between what it means to participate in a mathematics classroom and what it means to spend time with their friends. They have to learn how to separate both things.

The quote above is just an excerpt of the interview that was made with her after the lesson. However, it summarizes her reasoning during the interview concerning Malik's behaviour: Malik was introducing his background and his personal experiences to escape from the mathematical discussion, and he should learn what an 'appropiate' contribution to a mathematical discussion is.

Let us revisit the episode from the perspective of Malik's foreground instead of, or together with, that of his background.

It is commonly accepted that to foster students' participation in the mathematical discussion, meaning is a powerful and crucial essential. Skovmose (op. cit.) suggests, that students' backgrounds are not the only places to go and search for meaning, but that meaning should also be sought in the students' foreground. If we want Malik to be a 'learner' and not merely a 'student', if we want him to actively participate in his own learning, we have to offer him meaningful activities. However, it is only he who can give meaning to the activities he is performing. Malik is not only what he has behind him, but also what he wants to learn, what he expects to learn and what he expects learning will bring to him for his future. Therefore, it is also through his expected 'foreground' that we can interpret his learning attitudes, and through that he can give meaning to his own learning.

To facilitate students' transition would require taking into account the meanings that they bring to, or create from, a given situation. Therefore, what has to be taken into account is that those meanings exist, or are constructed, in relation not only to the sociocultural contexts of the learners and their learning, but also in relation to their emotions and expectations.

From that point of view, why should Malik engage in solving a problem, when there is no 'unknown' to him in the so-called 'problem'? How could he find meaning in doing that? Had he not been repeatedly told that if he learned mathematics he would be able to do things other (and better) than those that unschooled children do? He felt that he knew the answer without needing to use any mathematical knowledge; then, what was he supposed to learn? How could he feel that he was engaged in a meaningful activity?

Sharing some reflections

We saw how Malik did not find meaning in solving that day's problem. Our example is about a single, particular task. However, there is the risk that his learning of mathematics, his participation in the mathematics discussion, as a whole, eventually becomes meaningless to him. He is conscious that academic success is linked to his possibilities for a better foreground and, at the same time, he feels he is not offered 'real mathematics' in his school. Are we not stealing some students' foregrounds when, on the weak assumption that we can compensate for their deficits, we provide them with programs 'especially adapted to their backgrounds' which in fact do not promote or include powerful mathematical ideas?

Ironically, if Malik had had the occasion to discuss the matter with his teacher, he would probably have agreed with her that 'real mathematics' is about numbers and algorithms! But, allowing room for discussion would also have given him the opportunity to explain to her why he felt frustrated about his expectations regarding that particular lesson and his learning of mathematics in general.

The role that different teachers play in the students' schooling and the power that they can exert, vary dramatically across social classes and ethnic groups. The students who seem most negatively affected by not negotiating the interpretations of the norms are usually those belonging to ethnic/language minorities and/or economically underprivileged groups. They tend to have low self-esteem which, on many occasions, leads them to behave as though they are exposed, and, on some other circumstances, to show an extreme shyness. Malik was very clear as to what message his teacher had given him, by remaining silent for the rest of the lesson and in the following days, retreating from further participation.

What would it have meant to promote full mathematical participation for all the students in the classroom of our episode? First, overcoming the obstacles to negotiate the different meanings for the classroom norms. As a first step, this negotiation essentially required, on the part of the teacher, a readiness to hear, and acknowledge that there exist alternative norms. Teachers should be concerned to seek ways of developing approaches to mathematics education that are sensitive to the contexts and lived experiences of the learners. By focussing on the experiences that each student brings to the classroom, the various interpretations of the norms could be made explicit and negotiation would be possible.

When norms are neither made explicit nor negotiated, many minority students who expect to participate in the mathematics discussion are excluded, as well as many other students who do not obviouly belong to minority groups. Ignoring the fact that 'differences' may exist leads to the denial of their rigth of achieving the most essential 'common' trait: their right to become 'learners' and not merely 'students'; their right to actively participate in the mathematics classroom. Not knowing the norms that have been legitimated within a context is clearly a disadvantage, but should not become a basis for exclusion.

Our point is that if we want the transition processes that immigrant students live to be successful both from the perspective of the society and of the individuals, then both students' backgrounds and their 'foregrounds' have to be taken into account. Those two perspectives are not contradictory, but complementary. Acknowledging and valuing the different backgrounds would help us to understand the differences, while considering the possible foregrounds would help us to find common traits. Allowing space for discussion on how they both influence the students' perspectives would smooth the communication process, would help create meaningful activities, and would give meaning to the learning process. That way, the school would accept its commitment towards its students' futures.

Transitions are related to social progress and are about living experiences that are linked with chances of success, both within and outside the classroom. From the point of view of the school system, a 'successful transition process' would be one that enables the student to get 'good results' within the system. However, our obligation as educators is to ensure that the transition process must also be a positive one for the person, one that is lived as enrichment. Therefore, it should be a process through which the students could adapt to their present situation without having to deny their cultural backgrounds, but reinterpreting them in the light of their present needs and expectations in order to shape their futures.

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