Language identities in students’ writings about group work in their mathematics classroom

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In this article, I explore language identities and processes of negotiation concerning parts of these identities as seen by a group of students from a bilingual mathematics classroom. A collection of 10 students’ individual writings on the questions ‘What language do you use during group work in your mathematics class and why?’ is examined from a sociopolitical perspective. My data emphasize the importance of addressing the complexity of the identity work that goes on in the students’ texts. Through their writings and despite the perception of limits, students negotiate complementary language identities that are contrary to the established monolingual ideologies in the research context. Students show distinct degrees of agency in their responses as they attempt to produce language identities that are much more complex than those politically ascribed to them.

Keywords: language identity; bilingualism; students’ writings; group work interaction; mathematics classroom

Introduction

The fact that languages are not neutral is especially visible in multilingual classrooms in which some languages are ‘more equal than others’ due to situational differences in power, rights, and privileges. Negotiation is a necessary outcome of this inequality: it may take place between individuals, between dominant and nondominant groups and/or between institutions and agents that are expected to behave in accordance with certain rules. In this article, I explore language identities and processes of negotiation concerning parts of these identities as seen by a group of students from a bilingual mathematics class where the experience of exclusionary language ideologies is reinforced through the Language of Learning and Teaching (LoLT) and the Language in Education Policy (LiEP). I assume that the analysis of these students’ perceptions gives clarity to how the phenomena of negotiation of language identities work.

In the context of Catalonia, Spain, I examine a collection of 10 students’ individual writings on the main questions: ‘What language do you use during group work in your mathematics classroom and why?’ All the students are working-class teenagers, aged 13 years old, with a good knowledge of Catalan and Spanish, the two official languages in Catalonia. Six of them were born in Latin America and/or come from Latin American families. The other four students have Catalan as their home language and have always attended Catalan schools. While 14 more writings were collected, for further analysis, I

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only choose the texts with more elaboration and clear references to language diversity and
negotiation processes in the interpretation of group work.

In what follows, I first introduce my socio-political approach to some of the key terms
in the research and then move on to a description of the political role and use of language.
As regards the method, I provide some details of the analysis applied to the students’
 writings. My findings attempt to explain, on the one hand, the students’ narrative productions
of language identities and, on the other, the processes of negotiation of these identities
throughout these productions. I argue that written discourses constructed by Spanish-
dominant speakers on language identities do not qualitatively differ much from those
constructed by Catalan-dominant speakers. I interpret this finding as a result of the students’
efforts toward the construction of hybrid language identities in the Catalonian school
context, as well as a representation of the potential of their participation in the bilingual
classroom.

A sociopolitical approach to language identity

In my work, I understand identity as an interactional and dynamic outcome of a variety of
discourses (Planas and Civil 2010a) and language as a set of resources called into play by
social actors under social and historical conditions (Heller 2007). From this perspective,
I see language identity as a negotiated activity, defined and shaped not just by speakers
individually and collectively, but also by institutions. Language identities are then largely
problematic. They are produced through discourses in which strong ideologies are indicative
of what individuals and groups are (not) expected to say and do in specific circumstances
and contexts. This general view points to the relevance of the social and political conditions
for the adscription – or imposition – of identities.

Both at the macro-level of structures and at the micro-level of classroom interaction,
language can be used to exclude and/or include people in conversations and decision-
making processes. More generally it can become a tool to define the adjustment to certain
group values. In particular, decisions about which language to use in multilingual class-
rooms, how and for what purposes, are therefore both pedagogic and political (Setati 2005).
Nevertheless, while educational research with ‘diverse’ students has been strongly rooted
in sociopolitical theories (Cummins 2000), most research on language diversity and math-
ematics education is still framed by a limited understanding of language and language
identities as tools for thinking and communication.

The works collected by Barwell (2009), together with research by Clarkson (2007) and
Setati, Molefe, and Langa (2008), have documented the historical exclusion of language
minorities in classroom practices for the case of mainstream school mathematics. In the
Australian context, Clarkson (2007) has reported some work in which he interviewed
students about which languages they used to solve mathematics problems and why. Similarly
to the work I present here, this author comments on data with bilingual students taking
advantage of their two languages in their learning of mathematics. Clarkson’s analysis
of responses to a task-based interview refers to the mathematical characteristics and the
perceived difficulty of the tasks and not so much to students’ interaction in class. In the South
African context, we also find work with interviews with multilingual students concerning
the use of their languages in their learning of mathematics. Setati, Molefe, and Langa (2008)
report interviews in which students are asked in English, ‘Which language or languages
do you prefer to be taught mathematics in? Why?’ While there are conflicting discourses
in the students’ views, what is clear is that the majority of them express their preference
to be taught mathematics in English. The analysis is primarily centered on the political dimension of having English as the LoLT and again not so much on peer interaction.

The work by Setati and her colleagues (Setati, Chitera, and Essien 2009; Setati, Molefe, and Langa 2008) is the more direct reference point in the field of mathematics education for my current research. Despite the relevance of the South African literature, still little research has been carried out in the field of mathematics education in terms of how negotiation of language identities is orchestrated among and within different language groups. The general work by Myers-Scotton (1998) may inspire our field in the search for situated characterizations of such negotiation processes. For this linguist, any talk/writing is considered a negotiation of rights and obligations among speakers/writers who have a tacit knowledge of how certain language behaviors are to be expressed in particular interactions. According to this conceptualization, I understand negotiation as a manifestation of agency in discourse through the reinterpretation of competing rights and obligations.

Planas and Gorgorió (2004) argue that there is always room for negotiation and redistribution of identities: any social and political discourse may be contested and become the basis for the construction of alternative identities. Even when the institutions behave as monolingual, monolingualism is supported by law and issues of language identity may be presented as nonnegotiable; individuals and groups may struggle for voice by reconstructing what others expect from them — and what they themselves have come to develop as self-representations. This can occur in public interaction, as well as personal communication. Individuals can produce alternatives through imagined realities that also account for differentiation but tend to be interpreted as more ‘common sense’ and ‘equal’ than others. When writing about practices in multilingual classes, for example, the students’ productions may be seen as the result of internally represented negotiations of rights and obligations. Here, writings are an expression of how students negotiate competing language positions among conflicting discourses. Leahy (2005) indicates that at the level of writing students adopt a more reflexive awareness of identity.

The attempts to gain awareness of identity raise the notion of hybridity. Hybridity is a theoretical term related to transgressive processes that displace conceptual boundaries between discourses that are generally seen as distinctly different (Anthias 2001). In my work, I use this term to signal that (language) identities and memberships are not static realities; nor are they representations of ideal and ‘pure’ models. Conventional language identities do not exist, except for internalized models that have been institutionally and historically established. On the one hand, individuals have a degree of agency as to how they choose to construct their language identities and practices, and on the other, their choices are mediated by historical structures and power relationships that suggest a horizon of ‘pure’ models of language identities and practices.

Chronaki (2009) has pointed to the negotiation of linguistically hybrid identities and the reconstruction of multiple subjectivities in multilingual classes. These subjectivities have an unequal status, deriving from differential positioning, but any student can gain empowerment by negotiating the various competing identities and subject positions. Processes of empowerment may contribute in turn to disempowering the position of other students by marking them in specific ways — foreigner, immigrant, nonnative speaker, different, etc. Individuals and groups can resist markers by creating new ‘hybrid spaces’. For example, the use of the expression ‘nonnative speaker’ can be recreated as a marker of diversity and polyvalence, rather than first signaling language differences and constructing impositions. Along with hybrid spaces, the idea of vulnerability (Gándara 2005) is useful in extending the discussion of the problematic aspects of rethinking the ‘nonnative’ and the ‘native’ as equal. Nondominant speakers may feel responsible for not marking language differences
and at the same time may need to express parts of their language identities. Similarly, dominant speakers may feel responsible for being consistent with discourses on difference and equity.

The political role and use of language

This work is a contribution to the field of the applied linguistics of education that investigates language issues when learning mathematics in a bilingual classroom with frequent peer interaction and looks for data that may help understand students’ behaviors in such type of classrooms. Although some of the students’ responses do not mention the subject of mathematics at all, the fact that they are asked about this subject is interesting for at least two reasons. First, because groups of marginalized students tend to associate access to school mathematics with access to social goods such as higher education and employment, while this is not so clear with other subjects (the power of school mathematics has been largely discussed by Setati [2008] and Zevenbergen [2001], among others). Second, because some of my previous research in the Catalan context (Planas and Civil 2010b) shows that students cannot ‘imagine’ being taught mathematics by a teacher in a language different from Catalan due to, in their own words, the importance of this subject. In this section, I elaborate on the situated power of language in the Catalan society, which needs to be interpreted in addition to the power of school mathematics.

Catalonia, an autonomous region in North-Eastern Spain with more than seven million people, has two official languages, Catalan and Spanish. The choice of only Catalan as the LoLT came about after 1983 as a controversial way of integrating a large portion of the population which had arrived from other parts of Spain in successive immigration waves (Yates 1998). In the school system, the tensions between the two official languages in the country have mostly been represented by the symbolic distance between the Catalan ‘native’ people and those Catalan people whose parents are Spanish and were born outside Catalonia. The arrival of people from Latin America in the 1990s has introduced new power relationships (Strubell 2006). Their accents are socially considered as being of a lower status in comparison to those of the Spanish speakers regarded as nearer to the so-called standard Catalan language and culture.

Catalan was a forbidden language during Franco’s dictatorship (1939–1975). In the 1970s, the only official language in all parts of Spain was Spanish, although during later stages of the Franco regime, certain uses of Catalan were ‘tolerated’. This same language is now being politically affirmed as a consequence of processes of Catalan nation-building that focus on differences between Catalonia and Spain (Mar-Molinero 2000). My own home language is Catalan. I grew up being told at school that my language was a ‘variety’ of Spanish and French, mostly spoken by working-class groups and peasants of villages from North-Eastern Spain. In the 1990s when I became a teacher, the long tradition of monolingual policies in Spain had already changed by making the use of Catalan obligatory in many public domains and by institutionally recognizing the importance of Catalan grammar and literature. The reconsideration of the status for the Catalan language was helped by the fact that Catalan became the national and only official language of Andorra, a small prosperous country in South-Western Europe. Since then, the issue of whether Catalan is a language or a dialect, highly related to the discussion of Catalonia being a nation or a region, has been the subject of political agitation several times. On July 10, 2010, for instance, more than one million people marched in Barcelona in support of the Catalan language and protesting against a verdict by the Spanish Supreme Court imposing the co-official nature of Catalan and Spanish in the school system.
Lapresta, Huget, and Janés (2010) have recently shown that monolingual language ideologies in Catalonia mark the use of languages in the school context. Terms such as ‘Catalan students’ in opposition to ‘non-Catalan students’ are common expressions that tend to be accepted as neutral. However, the term ‘non-Catalan’ is applied to students who do not have Catalan as their home language, although they may have been born in Catalonia and they may not be children of immigrant families. Moreover, different official documents refer to students who are not predominantly Catalan speakers as ‘students with low language proficiency’, which suggests deficiency on the part of students without clarifying that here proficiency is only considered in relation to Catalan. This fact indicates exclusion based on language issues: it is orchestrated through a use of language that points to what some groups do not ‘have’. These and other common daily situations make language minorities live as a ‘perpetual underclass’ based on language, which predominantly Catalan-speaking students and teachers have not experienced. Since ‘Catalan native speakers’ are unlikely to be disadvantaged for reasons of language, one should ask what is hidden behind classroom practices and why the words themselves (‘Catalan students’, ‘native speakers’) become the issue.

Participants and methods

Initial data collection comes from 24 bilingual students of a mathematics classroom writing about their language behaviors during group work interaction. Figure 1 shows the exact assignment given to the students for the writing. By asking the assignment in Figure 1, I expect the students to address issues on language identities and processes of negotiation concerning parts of these language identities.

I try to combine a register that fosters both personal motivations for writing – there is a direct invitation for students to tell me about their background – and those for academic writing. Furthermore, it is intentional that ‘language’ is singular in the statement of the assignment. I want the students to make statements through supporting or challenging established ideas about only using one language, although by choosing the singular form I take the risk of helping to reproduce the monolingual bias in their narratives. Conversely, the use of ‘languages’ in the plural would also be influential. Here the plural intrinsically evokes multilingual situations that contrast with dominant discourses on monolingualism.

The students in the class can decide in which language to write their texts. I want to make students comfortable, to allow them to focus on what they want to say, rather than how they say/write it. This is again a problematic choice because the task is given in the

Please tell me a little about what language you use during group work in your mathematics class and why. I am very interested in who you are and any explanation that you may give me.

Write as formally or informally as you like, either in Catalan or Spanish, up to one page.

You have around twenty minutes, but you can ask for more.

Figure 1. Writing assignment for the students (inspired by Kill 2006).
context of a classroom, where Catalan is the LoLT and the person who asks them to carry out the assignment – the author – speaks Catalan and is unfamiliar to them. Moreover, the students may interpret the task within the genre of academic writing (Ivanič 1998) and, consequently, feel forced to only use Catalan. In any case, my aim is not so much to look at the language of the writing but to gain information about students striving for voice in ‘academic writing’ in relation to the identities they bring with them.

The task needs to be interpreted in the pedagogic context of the mathematics classroom. All the students come from the same class with the same teacher and are familiar with a reform approach to teaching and learning. Despite the fact that the expression ‘reform approach’ is open to many interpretations, I loosely define it as efforts towards teaching mathematics that are rooted in constructivism, emphasize problem-solving tasks, and use pedagogical approaches such as group work and students’ discussion. In the mathematics class of these students, most lessons are based on work in small groups, which tend to be mixed in terms of gender and language, and therefore ‘group work’ is a real experience for all of them. As explained by the teacher, small group behavior has come to mean cooperation among students to achieve mutual goals such as solving problems. On the other hand, regular changing in the composition of small groups is highly encouraged so that all students have the experience of cooperating with many of their peers.

The methodology chosen to analyze the students’ individual writings is informed by a sociopolitical approach to the study of personal narratives: writings are not viewed as linguistic artifacts but as socially produced and politically situated (Casanave 2003). This means that there is a preference for looking more at texts in relation to who the writers are and how they are represented by others. Writings contain ethnographic data that admit a content analysis but also a more historical and political analysis on the written products and the writers’ identities (Canagarajah 2004). I bring up what I know about the social and political location of the students to interpret their writings. My approach follows Pavlenko (2007) and sees personal narratives as a sociological form of expressing particular self-representations of the writer together with representations of the imagined readers, as well as other subjects that are referred to in the text.

Another approach that influences my analysis comes from constant comparative methods (Glaser and Strauss 1967). My focus is on how students adopt a position between the established institutional conventions (e.g. what can be said in a text that has been posed by an ‘academic’ in a classroom) and the personal and collective discourses that they bring with them (e.g. what can be said to keep consistency with home, language groups, friendship, nationality, etc.). Thus I examine the contents of the students’ writings in terms of data concerning: (1) personal identity (i.e. ‘who you are’) and (2) academic identity (i.e. ‘group work in your mathematics class’). I reexamine each of these topics to identify particular individual positions that can be inferred from parts of the narratives. For each student, I put together all sentences informing about personal and academic positions. The next step consists of putting together the ‘selected’ data for the different students to search for differences and similarities among the various positions. As is shown in the Findings section, I have located two important similarities that illustrate hybrid language identities and processes of negotiation in the students’ writings.

This qualitative and interpretive focus requires strong triangulation with colleagues from similar theoretical traditions. This is why I ask colleagues in the project for complementary perspectives that help overcome intrinsic biases coming from only having one researcher. It was useful to discuss with them students’ positions within the same narrative that first appeared as inconsistent. To provide sources of insight that cannot be supplied by other sources of data, the teacher is also involved in parts of the study. Taking inspiration from the
collaborative design by Jones (2000) in a Welsh bilingual mathematics class, a first interview with the teacher is addressed to comment on an initial draft of the writing assignment. A second interview is conducted to clarify interpretations of some of the students’ texts that appear to be particularly confusing.

Findings

As expected, all 24 writings were produced in Catalan. I expected this language choice to happen because the stimulus question was presented to all students in the LoLT, I mostly used Catalan and the data were collected in a classroom setting. All these variables probably influenced the students in such a way that they were more challenged to write Catalan and to do it well. It is not possible to compare to what extent the same student would have produced a different personal narrative depending on which of the two languages had been used. The same consideration can be made in relation to changing the audience, the physical setting and the time, among many other variables. Consequently, my discussion in this article is limited to the collection of narratives written and produced under particular circumstances that have political meaning, including their different representations of me and of my expectations.

Various students did not engage in the writing. A few of them gave very short and cryptic answers (e.g. ‘I speak Catalan because I do it’). Some others did not address the topics posed by the question (e.g. ‘I really like working in small group and solving problems’). These comments provide insights into different issues. As explained by the teacher in the classroom, much depends on the students’ motivation in writing and not so much on their language resources to produce written texts, or the appropriateness of the assignment. I do not interpret students not carrying out the assignment in terms of them not paying attention, but rather as an expression of feeling more comfortable with playing roles that do not fit into that assignment. This is clear with the student who completes a page with comments on her ‘passion’ about solving mathematical problems. The teacher reflected on this response and explained that the girl is a high achiever in mathematics, overtly competing with another girl in most lessons.

I finally decided to choose for further analysis the students’ narratives that consisted of more than one sentence and had directly addressed the topic of language issues during group work interaction. This decision considerably reduced the analysis to 10 writings. Sentences like ‘I speak Catalan because I do it’ are interesting and possibly indicative of monolingual behaviors and expectations, but if presented in isolation, with no references to the impact of such behaviors/expectations in the context of the class group work, it is difficult to discuss processes of negotiation in relation to the writer’s self-positioning. We can turn to the student’s language group – in this case, it is a Catalan-dominant speaker – and establish some relationships with the fact of ‘affirming’ Catalan. Nevertheless, the tautological expression used by the student implies significant confusion.

Despite the fact of only considering 10 writings and the presentation of short extracts from these writings in this article, the data are extensive enough. First, from a quantitative point of view, most of the 10 responses are of four or more paragraphs (see Figure 2 for the English translation of one writing in its totality). Second, from a qualitative point of view, these responses can be interpreted as complete essays due to the development of different focuses of discussion regarding personal and academic identities. The two main themes that are introduced below – ‘hybrid language identities’ and ‘processes of negotiation’ – have been constructed through the analysis of these 10 responses. This does not mean that all 10
With my friends in the class I speak Catalan. Our mathematics teacher tells us that small
groups have many advantages because we can think together the problems that are more
difficult. But I’m not convinced that groups need to change so often. If groups were
always the same, I would answer that I use Catalan during group work, or Spanish. But
groups change and I cannot answer the question in an easy way.

When I first came to this school I saw that many students are from other places and often
speak Spanish. This is why I use Spanish with them. My father’s language is also
Spanish, although he speaks Catalan with my mother and me at home. With my
grandparents, he always speaks Spanish and he speaks Spanish with me in front of them.
This does not happen very often. He knows that Catalan is the language of the school.

For other students in the class, things are the other way round. What happens very often
with them is that they speak Spanish. But even so, they go back and forth between
Spanish and Catalan during group work like me when I am not in the group with my
friends, or like my friends when they are not with me.

Our mathematics textbook is entirely written in Catalan. At the beginning of the lesson,
we use the textbook and read Catalan, but I would not say that the book is important in
group work. After having read the problem, we do not go back to the book again. To give
an answer on questions from the book, all of us speak Catalan.

Figure 2. Example of one of the students’ writing – Albert.

students express equal personal and academic positions, but that we find similar conflicts
and negotiations taking place in their writings.

To provide a more complete understanding of the examples that follow, I briefly com-
ment on some of the cultural and personal conditions of the 10 students. Although I am
aware that single categorizations cannot be attached to an individual based on country of
origin and/or language, I summarize biographical information by separating the 10 stu-
dents into one group of Latin American immigrants or children of immigrants and another
group of nonimmigrant students whose home language is Catalan. Table 1 indicates the
pseudonyms that are used for the students in the discussion of the data.

The monolingual bias in the Catalan society – with individuals being recognized as either
Spanish- or Catalan-dominant speakers – is the main argument for the organization of Table
1. The fact that students are grouped under this criterion, however, does not mean to ignore
Table 1. General data from the 10 students in the study.

<table>
<thead>
<tr>
<th>Name</th>
<th>Place of Birth and Family Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paola</td>
<td>Born in Colombia, families from Colombia</td>
</tr>
<tr>
<td>Miguel</td>
<td>Born in Barcelona, families from Ecuador and Peru</td>
</tr>
<tr>
<td>Diana</td>
<td>Born in Barcelona, families from Catalonia</td>
</tr>
<tr>
<td>Norma</td>
<td>Spanish-dominant speakers</td>
</tr>
<tr>
<td>Amelia</td>
<td>Catalan-dominant speakers</td>
</tr>
<tr>
<td>Victor</td>
<td>Catalan-dominant speakers</td>
</tr>
<tr>
<td>Ricard</td>
<td>Catalan-dominant speakers</td>
</tr>
<tr>
<td>Carla</td>
<td>Catalan-dominant speakers</td>
</tr>
<tr>
<td>Albert</td>
<td>Catalan-dominant speakers</td>
</tr>
<tr>
<td>Josep</td>
<td>Catalan-dominant speakers</td>
</tr>
</tbody>
</table>

Note: *Victor is from Peru.

significant in-group differences. In my research, I attempt to avoid homogeneous partial views of dominant and nondominant (language and ethnic) groups. In Planas (2007), for example, I showed differences in the perceptions that different nonimmigrant students had compared with their immigrant peers in relation to forms of participation in the classroom and mathematical abilities. When saying that Paola, Miguel and Diana were all born in Colombia, I point to a key feature in the identification of these students’ home language. But it may happen that these students do not use Spanish with the same frequency in interactions with their parents and families, and they may not have the same opportunities to practice social Catalan while maintaining more knowledge of Spanish and family culture. On the other hand, the distribution of the 10 students in two main groups does not endeavor to claim that some of them do not have a good knowledge of Catalan. All six Spanish-dominant speakers exhibit intermediate or high levels of Catalan. Beyond the discussion of Catalan being a marker of ‘Catalan identity’, this is certainly the language in which all of them perform their schoolwork.

What I find in many texts is that students are engaged in the construction of hybrid language identities during group work interaction. Drawing on the idea of hybrid language identities, it can be argued that the narrative discourses constructed by the Spanish-dominant speakers do not qualitatively differ much from those constructed by the Catalan-dominant speakers. Next I indicate part of the analysis of the 10 students’ writings with respect to hybridity and processes of negotiation.

Hybrid language identities

In this section, I focus on the construction of hybrid language identities as a way of being in the classroom. Although I take the assumption that there is a hybrid language identity linked to the hybrid cultural identity of bilingual Catalonia, a priori it is not clear that the students will make public reference to such experience of hybridity, and if so, it is still unclear how that experience will be differently represented by different students. As a matter of fact, official discourses concerning Catalan as the LoLT and the current LiEP in the country indicate that experiences of hybrid language identities are not fostered, nor have they ‘invaded’ the teachers’ language behaviors in the class (Planas 2007).

In addressing the theme of language choice in group work, most of the 10 students write about the complexity of their language repertoires and suggest flexibility in the use of their two languages. Despite the monolingual language policy in the Catalanian school context, students point to the effective existence of two languages in their classroom and in their behaviors. The affirmation of changing language emerges from writings of Spanish-dominant speakers, as well as Catalan-dominant speakers. The major position for my argument that the students’ narratives project hybrid language identities is that most data point to personal initiative in the shared use of Catalan and Spanish. It is not that the students do not know a word or sentence in one of the languages and are then forced to switch; nor is it that the switching is attributed to external impositions – at least according
to views expressed in the writings. Changing language is rather shown as a consequence of the interest in including all speakers. Albert, Paola and Victor make clear statements on that. I have translated all fragments of students’ narratives from Catalan to English. In the process of translation, grammar came first to make the quotes more intelligible for someone who is reading them in English (the original texts in Catalan are available in the Appendix):

Albert: When I first came to this school I saw that many students are from other places and often speak Spanish. This is why I use Spanish with them. My father’s language is also Spanish, although he speaks Catalan with my mother and me at home.

Paola: I can speak Catalan and Spanish. I use Catalan when writing and reading, and Spanish when discussing with my peers.

Victor: I use Catalan but groups are not always the same. Sometimes in my group I have peers who prefer to speak Spanish and so do I.

The use of Spanish by Albert, Paola and Victor represents a form of marking some of their peers with a Spanish-dominant language identity, but when changing language, they also signal their own position as students who are allowed and willing to speak more than one language. I do not know to what extent the affirmation of hybrid language identities implies commitment and ideology from the perspectives of these students, or whether it has more to do with adaptation and pragmatic reasons. Communication during group work interaction in the bilingual mathematics classroom requires the availability of different languages, but it does not necessarily require commitment to bilingual language ideologies. Carla, for instance, refers to the facilitation of talk in small bilingual groups as a pragmatic reason for changing language:

Carla: I choose the language depending on the group each time. If it is a group with all Catalan speakers, I always speak Catalan. If the group has other students, the conversation is easier if we use Spanish.

Carla and Paola give another pragmatic reason for language change in relation to language choice in group work and whole class discussion. They first express experiences of hybridity and then reflect on differences in these experiences depending on two social contexts of the classroom, small group and whole class discussion:

Carla: I like speaking Catalan and Spanish but I prefer Catalan for final discussions. This is not a problem because we all know Catalan (...). Every month at the assemblies with other classes I prefer Catalan too.

Paola: I like sharing group with my friends from Colombia, and I also like speaking Catalan. When we work in small groups, I use Catalan. Sometimes it is difficult because I have been speaking Spanish when working with my peers, but I like making the effort.

The students’ flexibility in the use of their two languages points to an important degree of agency. Catalan- and Spanish-dominant speakers are willing to linguistically accommodate each other. They believe that it is important to do so because issues of communication are at stake (e.g. ‘I like making the effort’, or ‘I have peers who prefer to speak Spanish and so do I’). From the perspectives of these students’ narratives, bilingualism appears as an accepted fact of life in the classroom. Students keep on engaging in the use of their two languages despite institutional hostility coming from the LiEP and at the same time perceive that different languages need to be used in relation to different social settings of the classroom and different tasks. The pragmatic reasons indicated by the students point to an interpretation of their languages as tools for social interaction and communication. This is consistent with Gorgorió and Planas (2001). In that work, there is an elaboration of the
language-as-a-tool metaphor to explore ways in which languages are employed by students in the facilitation of mathematical learning and communication.

My present study is part of a broader empirical work that pretends to give continuity to Gorgorió and Planas (2001), concerning the analysis of oral and written discourses produced by learners of mathematics in bilingual classrooms. In particular, I have video data from the classroom of the students in Table 1 that were collected three and four weeks after conducting the task in Figure 1. To a certain extent, the videos reinforce some of the written reflections on the students’ flexibility in changing from one of their two languages to the other. It can be seen, for instance, how Victor switches language depending on who the peers in his group are and to talk to the teacher in the class. At the beginning of the article, I argued that language identities in written discourse express ‘imagined realities’ that may not illustrate the writer’s actual language behaviors. By briefly examining the written voices of the students and their language behaviors in class, both representations and behaviors appear. Victor is flexible in the use of his two languages, but what is not said in his writing is that he advises some of his peers not to change to Catalan when they are willing to do so (‘Don’t worry, you speak in Spanish’). It is not the goal of this article to discuss language use in practice or possible inconsistencies between oral and written discourses. However, we need to be aware of differences in the self-construction of a writer and that of a speaker.

So far, I have provided examples of the students’ identification with two languages and their reported uses of them in class. Here hybridity has been represented more in relation to some of the cultural conditions of the students in the study and less in relation to power relationships. I have emphasized references to the cultural dimension of the students’ biographies (e.g. ‘I like sharing group with my friends from Colombia’) and that of the different classroom dynamics (e.g. ‘I like speaking Catalan and Spanish but I prefer Catalan for final discussions’) and school settings (e.g. ‘Every month at the assemblies with other classes I prefer Catalan too’). I have not put an emphasis on the fact that Catalan-dominant students refer to Spanish-dominant students with the label of ‘others’ (e.g. ‘If the group has other students, the conversation is easier if we use Spanish’). This apparent lack of political analysis responds to my choice in the presentation of findings. I start by showing the cultural basis for the construction of hybrid language identities and then move on to the understanding of the social forces that appear to have a role in determining them.

**Processes of negotiation**

Qualities of flexibility in language behaviors are extremely political: what can be advantageous in terms of facilitating communication can become a marker in processes of negotiation. In this section, I focus on the students’ production of negotiation processes around hybrid language identities. Self-(re)presentation is always a product of negotiation, but I now look at negotiation considering some ‘external’ constraints that are mentioned by students when referring to the situated use of their languages. My final analysis points to the coordination of flexible uses of languages and resistance positions toward these uses. This is similar to what Creese et al. (2006) found in students using their languages in creative ways to negotiate subject positions that attempted not to contest institutions ‘too much’.

Various sentences point to the students’ expectations of certain language behaviors being resisted by others in the classroom. Expectations are ways of imagining ‘worlds’ that have chances of realization according to the writers’ perceptions of reality. When students write about resistance against language behaviors, their expectations are informative of what limits are perceived in the situated use of Catalan and Spanish. On the basis of their
expectations of what other participants in the class may think, Miguel, Ricard and Amelia refer to some language behaviors as not being negotiable. Moreover, in their writings these students suggest that different participants have different language resources when using Catalan – they do not make the distinction for the case of Spanish. This perception shows awareness of existing boundaries for particular identity options:

Miguel: I speak Spanish and Catalan because I know the two languages (...). In group work, I would not mind speaking aloud, but my peers would find it strange. I am not the best at speaking or writing.

Ricard: I use Catalan and Spanish (...). We all use Catalan and Spanish, but it is usually Josep [another Catalan dominant speaker] or I who become the ones who speak aloud (...). You cannot speak to the whole class in Spanish. Things are like that because we all know Catalan.

Amelia: I use more Spanish than Catalan, but I often work with peers who use more Catalan than Spanish. Then I use more Catalan than Spanish. I’m okay with this; I don’t mind not using Spanish too much.

Despite the intrinsic power of teachers’ discourses and practices – Catalan is clearly the language with higher status on the part of teachers – the writings do not mention the teacher in the class in relation to the experience of limits to language behaviors. Rather, what students write points to the negotiation of hybrid language identities in opposition to what their peers may prefer/think and to more global norms in the school context. Students refer to language ideologies in subtle ways. For instance, Albert indicates his experience of monolingualism in relation to his father’s recommendations:

Albert: My father’s language is also Spanish, although he speaks Catalan with my mother and me at home (...). He knows that Catalan is the language of the school.

The ‘monolingual bias’ is brought about through adjustment to the father’s discourse. This student’s home is represented as a site for negotiation of language identities, in which limits to hybrid language identities are directly produced and ‘imposed’. Albert’s perception of monolingualism in the school context is attributed to his daily home experience and not, for example, to the discourse of the teacher in the class. This is an interesting result on how language ideologies become ‘naturalized’ through the actions of those who have a direct and strong emotional impact on students. Civil and Menéndez (2010) have largely discussed the role of families in the construction of language experiences at school and introduce immigrant parents’ voices as an expression of mainstream monolingual ideologies.

Together with the emphasis on the students’ personal identities (e.g. ‘I am not the best at speaking or writing’), I find direct references to the students’ academic identities. There are students who differentiate between the academic demands of the classroom and social demands coming from the family or friends. This distinction only appears in writings of students from Latin American or from immigrant families. Diana, Miguel and Norma write about the particularity of being learners of mathematics – i.e. the academic identity linked to belonging to a mathematics class – as a relevant condition for language behavior. For them, some limits to the use of their two languages come from the higher value of learning mathematics in Catalan. This language constitutes a more privileged resource to learn specific technical vocabulary and grammar:

Diana: I prefer to speak Spanish at home, but in the mathematics class I cannot get distracted with the language because there are some words that need to be learned and they are in Catalan.

Miguel: I speak Catalan and Spanish (...). When there are so many mathematical words, it is better to speak Catalan.
Norma: Books are written in Catalan and sometimes we need to read a few pages before starting the task. We concentrate on the mathematics more if we all speak the same language when talking about the book.

For these students, personal and cultural identities do not play a contested role in how they construct their academic identities. Successful resistance to the Catalan ‘monolingual bias’ in the school context coexists with adapting to what is seen as mainstream academic learning. It is particularly interesting to notice how students produce their cultural identities and, at the same time, consider the social and political negotiations needed to gain legitimacy as learners of mathematics. For example, to ‘make understandable’ who she is, Diana emphasizes the fact that she speaks Spanish at home and then she mentions the need to learn technical words in Catalan. Because (language) identities are negotiated in relation to others, Diana’s responses may be informative of personal and social limits posed to her experiences of hybridity and power. Another fragment that is about Amelia’s family also talks about difficulties in the social access to the status of Catalan and to that of mathematics. At the end of her narrative, Amelia writes the following:

I use Spanish at home with my parents. I cannot imagine them speaking Catalan. I cannot imagine my brother speaking Catalan either. It would be funny. In their work they do not really notice that Catalan and math are important.

In short, in their writings students address two forms of resistance that simultaneously work to maintain the use of their two languages. These forms of resistance are linked to the ideas of: (1) not challenging ‘too much’ some of the imagined expectations and (2) not damaging their opportunities of mathematical learning. The students consider both individual interests – i.e. their mathematical learning – and collective interests – i.e. the expectations attributed to others. On the one hand, the mathematics class offers a space to construct an alternative identity that challenges the Catalan monolingualism represented by school and society. While, on the other hand, the academic and cultural conditions of the classroom – i.e. mathematical learning and cooperation among students – interfere and contribute to establishing limits to opposition.

Final discussion
Through the discussion of a writing assignment and responses to it, I have emphasized the importance of addressing the complexity of the identity work that goes on in the students’ texts. The simultaneous experiences of ‘unconventional’ agency and power that come from the different texts are very relevant. Through their writings and despite the perception of limits, students negotiate complementary identities that are partially contrary to the established monolingual ideologies. The reported practices in the narratives affirm hybrid language identities in a context in which this is not the norm. Both Catalan- and Spanish-dominant speakers show distinct degrees of agency in their responses as they attempt to produce language identities which are much more complex than those politically ascribed to them, by means of pragmatically negotiating questions of language behavior in class. They use their knowledge of two languages as a resource that opens up various options, some of which are exposed in terms of responsibility (e.g. ‘the conversation is easier if we use Spanish’) for being well ‘rooted’ in class context.

Different forms of resistance in the negotiation of language identities are expressed in relation to a variety of discourses on cooperation with other students in the class and opportunities in the mathematical learning. The political experience of the ‘monolingual bias’ – with ‘Catalan only’ in the teaching, the books, etc. – is therefore mediated by the
construction of ‘positive’ discourses produced by either Catalan- or Spanish-dominant speakers. Although a preliminary analysis of video data points to the existence of less ‘positive’ oral discourses in the class (with some Catalan-dominant students marking subtle language boundaries during their group work with Spanish-dominant peers), it is still relevant to pay attention to how the 10 students in our study raise their voices for flexible bilingual practices in their group work. Through their writings and despite possible inconsistencies with language use in practice, these students imagine group work in their mathematics class with the focus on cooperation and mathematics rather than language differentiation. These messages of flexible bilingualism in the students’ writings can be interpreted in terms of a progression in the construction of hybrid language identities and spaces that help reduce vulnerability coming from monolingual educational discourses and monolingual classroom practices.

This is quite different from what I found in Planas (2007), from the analysis of both written and oral data. On that occasion individual interviews with nonimmigrant students of a highly multiethnic class in Barcelona pointed to the experience of ‘negative’ discourses based on language diversity. Findings indicated that certain whole class and small group interactions among local and immigrant students were seen as not constitutive of mathematical learning. One relevant difference is that 14 of the 28 students in that class were immigrants (seven Moroccans, three Dominican Republicans, two Pakistanis and two Bangladeshis), 9 of them having arrived late. Various Catalan-dominant speakers referred to their immigrant peers in the following terms (Planas 2007, 7–8):

Marc: Most times we work in small groups, and this is quite a problem for us, at least for me, though I try. We are mixed groups. But you know, what immigrants say they do and what they actually do is not always the same. It is very difficult to talk about maths with them; it is difficult to complete the tasks, though I try (...). I look directly at their notebooks. Sometimes they have interesting comments there, but they are so slow with the language...

Mireia: They are experiencing troubling times, and they can hardly concentrate on maths. So, I don’t really think we learn mathematics with them but help them. They go to those schools in the evening and they are a bit confused about how things work in this school (...). Sometimes by helping them we can also get a bit confused! (...). I would ask your question a little bit differently, if you ask me what I think about being with immigrant students, I would tell you that I usually don’t mind.

In my current work, all students in the class speak ‘good’ Catalan and ‘good’ Spanish so that flexibility in the use of the two languages is possible. Moreover, Spanish is an official language in the country and any teacher and any Catalan-dominant student can speak it. On the contrary, with students from Morocco and Pakistan, processes of cultural accommodation to mainstream positions are not expected as much due to differences in religion and ethnicity, as well as non-Romanic language backgrounds. This is perhaps an argument to understand differences between discourses regarding Spanish and Catalan bilingual classes and those that are more multilingual. Together with the students in the two classrooms, there are many other variables that make the empirical context in Planas (2007) and the present context different: the teacher, the school, the classroom dynamics, the assignment, etc. It still makes sense to affirm, however, that contents of negotiation with more ‘extreme’ ethnic and language differences are different.

All findings from the texts reported here, and from the interviews in Planas (2007), indicate that interest in the students’ language identities needs open acknowledgement in research, so that more can be known about how they can be helped to develop agency in their writing and learning. In these politically conservative times, for the specific case...
of mathematics education research based on detailed apolitical ‘story telling’, it is very relevant to adopt more ideologically sensitive ways of work that advocate change.

References


Appendix. Supplementary information with original transcripts in Catalan

Whole writing by Albert (Figure 2)

Amb els meus amics a classe parlo català. El profe de matemàtiques ens diu que els grups petits tenen molts avantatges perquè podem pensar junt problemes que són més difícils. Però no estic massa convencut que els grups hagin de canviar tan sovint. Si els grups sempre fossin els mateixos, contestaria que uso català en el treball de grup, o castellà. Però els grups canvien i no puc contestar la qüestió d’una manera fàcil.

Quan vaig arribar a aquesta escola, vaig veure que molts estudiants vene n d’altres bandes i que sovint parlen castellà. Per això parlo castellà amb ells. La llengua del meu pare també és el castellà, tot i que ell parla català amb la meva mare i amb mi a casa. Amb els meus avis, parla sempre castellà i amb mi parla castellà davant d’ells. No passa massa sovint. Sap que el català és la llengua de l’escola.

Per d’altres estudiants de la classe, és just al revés. El que passa amb ells és que sovint parlen castellà. Però fins i tot així, van i tornen del castellà al català durant el treball en grup com jo quan no estic amb els seus grups en el grup, o com els meus amics quan no estan amb mi.

El nostre llibre de matemàtiques està tot escrit en català. Al començament de les classes, fem servir el llibre i llegim en català, però no diria que el llibre és important en el treball de grup. Després d’haver llegit el problema, ja no tornem al llibre. Per respondre pregunes del llibre, tots parlem en català.

Short extract from Paola

Puc parlar català i castellà. Uso català quan escric i ilegeixo, i castellà quan discuteixo amb els meus companys.
Short extract from Victor
Faig servir català però els grups no sempre són els mateixos. De vegades en el meu hi ha companys que prefereixen parlar castellà i aleshores jo també ho faig.

Short extracts from Carla
Trio llengua cada cop segons el grup. Si és un grup on tots parlen en català, llavors sempre parlo en català. Si el grup té d’altra gent, és més fàcil la conversa si fem servir el castellà.

M’agrada parlar en català i en castellà però prefereixo el català per les discussions finals. Això no és cap problema perquè tot sabem el català (...). Cada mes a lesassemblees amb les altres classes, també prefereixo el català.

Short extract from Paola
M’agrada compartir el grup amb els meus amics de Colòmbia, i també m’agrada parlar el català. Quan treballem en grup petit, faig servir el català. A vegades és difícil perquè he estat parlant el castellà durant la feina amb els meus companys, però m’agrada fer l’esforç.

Short extracts from Miguel
Parlo el castellà i el català perquè sé les dues llengües (...). En el treball de grup, no m’importaria parlar en veu alta, però els meus companys ho trobarien estrany. No sóc el millor ni parllant ni escrivint.

Parlo català i castellà (...). Quan hi ha tantes paraules de matemàtiques, millor parlar català.

Short extract from Ricard
Faig servir català i castellà (...). Tots nosaltres fem servir català i castellà, però el Josep gairebé sempre o jo mateix som els que acabem parllant en veu alta (...). No pots parlar tota la classe en castellà. Això és així perquè tots sabem català.

Short extracts from Amelia
Faig servir més castellà que català, però moltes vegades treballo amb companys que fan servir més català que castellà. Llavors faig servir més català que castellà. Estic d’acord amb això; no m’importa fer servir castellà més del compte.

Faig servir castellà a casa amb els meus pares. No me’ls imagino parllant català. Tampoc m’imagino al meu germà parllant català. Seria divertit. A les seves feines no els cal donar-se compte de què el català i les mates són importants.

Short extracts from Diana
Prefereixo parlar l’espanyol a casa, però a les classes de matemàtiques no em puc distreure amb la llengua perquè hi ha algunes paraules que s’han d’aprendre i que estan en català.
Els llibres estan escrits en català i algunes vegades en llegim unes quantes pàgines abans de començar la feina. Ens concentrem més en les matemàtiques si tots parlem la mateixa llengua quan estem amb el llibre.

Marc: La majoria de vegades treballem en grups petits, i això és bastant problema per nosaltres, com a mínim per mi, tot i que ho intento. Som grups mixtes. Però ja se sap, el que els immigrants diuen que fan i el que de debò fan no sempre és igual. És molt difícil parlar de matemàtiques amb ells; és difícil tancar les feines, tot i que ho intento (...). Miro directament als quaderns. De vegades hi tenen comentaris interessants, però són molt lent amb la llengua...

Mireia: Viuen moments complicats i quasi no es poden concentrar en les mates. Per això, en realitat no penso que aprenem matemàtiques amb ells sinó més aviat que els ajudem. Van a aquelles escoles pel vespre i estan una mica embolicats sobre com funcionen les coses a l’escola d’aquí (...). De vegades si els ajudem nosaltres també anem una mica embolicats! (...). Ho preguntaria una mica diferent, si em preguntes què en penso d’estar amb immigrants, et diria que no m’importa.