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Migrants in Education – what factors are important?

A study of European Countries participating in
PIRLS2006

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Executive summary

The present report is a study on migrant students' overall reading ability and on what factors are important for their achievement. The study is motivated on the one hand by an increasing level of migration, a trend in many countries worldwide with implications for students, teachers, schools and educational systems. On the other hand it is motivated by the general pattern of lower educational achievement for migrant students. In many countries the gap is considerable and there is a need to know which factors are important for migrant students' educational achievement. Achievement differences might be argued to be important predictors of the long-term mobility prospects of immigrants and their integration into the host society¹.

The data in PIRLS2006², one of the large-scale international comparative studies in education, is used as an empirical base for the study. PIRLS is conducted by the IEA organization³ and focuses on students in schools grade four. As an increasing number of researchers make use of these large-scale studies in education, this reflects their general high quality in assessing student ability as well the richness in terms of background information to shed light on what matters for student achievement⁴. Researchers have used the comparative studies in education also for studying migrant students' achievement⁵.

This report focuses on 13 European countries that participated in PIRLS2006 and that met the criterion set for inclusion of a minimum of 3 percent migrant students in the sample. The analyses performed demonstrated that although a larger impact is found for various factors at the individual student level, factors at the level of classroom and school have an impact as well on migrant students overall reading ability. On the individual students level the cultural capital, defined as books at home, students own books and parents' educational level, are relatively more important. Even more pronounced is the effect of language spoken at home, where the situation never speaking the language of assessment at home for migrant students is associated with a strong negative effect on their overall reading ability when students in 4th grade. With the introduction of factors at the level of classroom and teaching the effect of individual student factors gets somewhat reduced, but their overall impact remain. When considering factors at the classroom and school level it is generally the context which is more important. The analysis included the study of composition effects of both classroom and school. For the classroom migrant proportion and the average parental educational level were included, for the school an estimated proportion of students with migrant background and students from economically disadvantaged family backgrounds and the aggregated averaged educational level were included.

¹ Buchmann, C and Parrado, E (2006)

² PIRLS: Progress in International Reading Literacy Study; <http://www.iea.nl/?id=288>

³ IEA: International Association for the Evaluation of Educational Achievement www.iea.nl

⁴ Rutkowski, L, Gonzalez, E, Joncas, M and von Davier, M (2010)

⁵ See for instance Schnepf, S (2008), OECD (2006), Schneeweis, N (2011)

At the level of classroom there is a general positive effect of a higher educational level and a general negative effect of a higher proportion of migrant students. Other factors significant in the classroom context are the presence of a reading corner, classroom library and the availability of pc. For migrant students in particular a pc is important. Including the school factors the effect of being in different classes were studied for migrant and native students respectively, stratifying the student group. For migrant students it makes a significant difference in which classroom they are situated and if their teachers has a background in second language learning, none of which is particularly important for native students. At school it is mainly an effect of a high percentage of students from economically disadvantaged backgrounds that is negative for students overall reading ability. However, the negative effect is enforced by a higher percentage of migrant students. As such, the negative effect is most pronounced in a school combining a majority of students from poorer family backgrounds with a majority of migrant students. This effect is in common for the countries included. As part of the school context there is a significant positive effect on students overall reading ability to have a library and to have pc in the classrooms – again the latter is more important for migrant students.

It is noteworthy that also school practices are important for students overall reading ability. It makes a positive difference for students overall reading ability if schools organize teacher – parent conferences and if they send progress reports on students' achievement to students' parents/home.

Introduction

Entering as an immigrant to live and study in another country puts special demands on families and students. The increasing level of migration is a trend experienced in many countries worldwide⁶ which has general implications for educational systems. An immediate consequence of migration is an increasing ethnic and linguistic diversity represented in schools. Although immigration might be described as a local phenomenon with large variations between countries, teaching migrant students is becoming an important part of the reality facing teachers every day⁷. A majority of schools have or will have a more mixed student population than only native students and many teachers teach or will teach in classrooms characterized by diversity. As the proportion of migrant students varies between countries it might also vary between regions and schools within a country. In particular schools in capitals or big cities might have a majority of students from other origins and backgrounds. All in all, these changes represent a major challenge for societies' educational systems, which both teachers and schools need to be prepared for⁸.

It is fair to say that education plays an essential role in individual lives. Not only in terms of preparing individuals for society and labor market but in general, for developing, and perhaps part wise determining individuals' life-courses. For students in families who migrated to a new country education is of special significance. School represents for them what might be a main contact point with the surrounding society, including contacts with native peers and the possibility to learn a second language. The educational system for countries represents perhaps a main possibility to reach the goal of an integrated society, and there are research studies that suggest the design of educational systems to be important for migrant students⁹. To ensure that migrant students can fully develop their potential in education is vital, not only then for societies' level of social cohesion and the general economy, but also for individuals' further opportunities and life-chances¹⁰. Education might be argued the central resource for allowing participation in political, cultural, economic and social life and determines at large both achieved status and possibility for social mobility¹¹.

Considering student achievement however, general statistical patterns display a depressing image in this regard. Pronounced differences are visible for a majority of countries when comparing native and migrant students' educational outcomes. Comparing migrant and native students' achievement in this report's analyses focusing on reading literacy (PIRLS2006) an average difference of about 39 scale score points is demonstrated to the advantage of native students. Patterns of negative difference for migrant students are persistent and stable over time and are in common for most countries¹². This is a pattern with far reaching consequences. It reaches over and beyond education and schooling and touches on potential questions of equity, democracy and citizenship. Altogether it motivates a need for solid knowledge on factors important for migrant students' achievement.

As the gap between native and migrant students presents a rationale and a first priority for this study, it should be noted that the pattern of difference is a pattern on average. More frequently the single category of migrant students is composed by substantial differences. As the migrant population might differ between countries, in many countries the migrant group is in itself heterogeneous. This study aims at taking into account this heterogeneity. Within the single category 'migrant students' are often included students from various geographical, cultural, ethnic and/or linguistic backgrounds¹³, but also students with different immigration histories, reflecting 1st and 2nd generation migrants. Variation important to consider for the study on migrant students achievement is presented below.

⁶ See for instance, Lindsay Lowell, B (2007), Boswell, C (2005), Salt, J (2005)

⁷ OECD (2010a)

⁸ OECD (2010b)

⁹ Schneeweis, N (2011)

¹⁰ European Commission (2008)

¹¹ Fossati, F (2010)

¹² See European Commission (2010) progress report for a comparison between countries and over time - Progress towards the Common European Objectives in Education and Training. Indicators and Benchmarks 2010/2011. http://ec.europa.eu/education/lifelong-learning-policy/doc/report10/report_en.pdf

¹³ Nusche (2009)

Migrant students – a heterogeneous group

A first difference of importance for considering migrant students education is their status as 1st and 2nd generation migrants, as referred to their country of birth. Being born in or migrating to the country of assessment makes a difference in terms of educational achievement. For 1st generation migrant students who immigrated to the country the variation might be large in terms of when they immigrated. The group might include both students who entered in their early childhood and students who arrived after school started – a difference likely to matter for their achievement in education. For 2nd generation migrant students the difference to native students' performance should be less, if any, since these students are born in the country of assessment.

The question of the language spoken in the country of habitat is generally regarded important for integrating immigrants in society. It is often emphasized in discussion on migrant students (poorer) educational achievement. A proficient level of understanding of the language used in school is needed for students to be able to cope with their studies. As the level of language proficiency varies generally for migrants part of this variation connects to their status being 1st and 2nd generation and it also depends on what language is spoken in their home¹⁴. An analysis of PISA 2003¹⁵ demonstrated that whereas language used at home could not fully explain migrant students' mathematical literacy, in some countries the relationship is quite strong. For migrant students, age 15, who did not speak the language of instruction at home it could mean an on average difference of about a year behind in schooling. The question of language proficiency for students is viewed in relation to what is demanded from school and 'academia'. The level of proficiency varies not only in relation to other mother tongues but in relation to social background, another important factor.

The family socio-economic status importance for students' achievement has been empirically established in a number of studies¹⁶. It is likely to interact with different surroundings in terms of how it affects student achievement, such as ethnical backgrounds, grade levels, and school/neighborhood localities¹⁷. For this study it is assumed to have an effect on both native and migrant students, but it is an open question if it varies between student groups and between countries.

Most attempts to define SES have settled on including occupational status, educational level and some quantification of family income. Research has also showed that whereas the correlations among the components are moderate, each is unique and measures a different aspect of SES, and thus should be considered as separate measures. The benefit of measuring SES by multiple indicators and at multiple levels is argued¹⁸. In consequence this study will use two separate measures, one reflecting family educational level, where the other reflects the family ties to the labor market.

To include information on family socio-economic status when studying migrant students' achievement is argued especially important, as this might explain some of the differences between native and migrant students' achievement. In many countries migrant students are overrepresented in the categories of families with lower socioeconomic backgrounds. Not including socio-economic status this might be confounded with the effect of language for migrant students, and vice versa¹⁹. A Swedish study demonstrated an almost disappearing 'negative effect' of being migrant student taking into account socioeconomic backgrounds²⁰. However, an analysis of PISA results demonstrated for a number of countries that differences remained also after having accounted for students' socio-economic status²¹.

¹⁴ It is as well related to how close or distant their first language is to their second language. The situation for an English speaking country which largely receives English speaking immigrants is much different compared to a country which receives a majority of immigrants coming from different cultures, and different linguistic backgrounds.

¹⁵ OECD (2006)

¹⁶ See for instance Sirin (2005) and Coleman et al (1966)

¹⁷ Sirin (2005)

¹⁸ Sirin (2005), Paterson, L (1991)

¹⁹ Hansson & Gustafsson, (2010)

²⁰ Skolverket (2005)

²¹ OECD (2006)

The level of education is a component in cultural capital, a concept generally referring to the individual or family relationship to the field of academics, education and schooling²². The cultural capital might be understood as the capital in more privileged families which is in congruence at large with symbolic and social expectations of existing educational systems²³. Number of books at home is as well used as an indicator of cultural capital in the family, and might be regarded a powerful proxy for students' educational, social and economic backgrounds. In many countries it is the single most important predictor of student performance²⁴. However, it is a proxy that might be problematic to reflect migrant students' social backgrounds²⁵, as it is affected both by the time in the country and the history of migration. In PIRLS students are recommended to participate if having at least a year in the country. Migration might be motivated by acute reasons, where books are not a priority to bring along²⁶. Altogether this indicates that few books at home in migrant students families might not work well as a general proxy for migrant students level of cultural capital at home.

In considering students home environment also economic and social capital is potentially important for their achievement. Using the three forms of capital to reflect the various home resources represents a way to conceptualize or complement the concept of SES²⁷. Social capital might be defined as the individuals/families useful contacts in society or within a specific sector as the educational field. It matters for instance to have parents who are well-informed about the general function of the educational system, on what it demands and how it relates to the surrounding society. If parents in addition have personal contacts in the educational field this improves their chances to make more informed educational choices for their children. As this might vary between families it might be lacking to a higher degree in migrant students' families²⁸. It will depend on the time spent in the country, and in addition on language proficiency. Language proficiency is a prerequisite for being better informed about society and provides a possibility to establish useful contacts. For schools and teachers it is important to be aware of the possibly more difficult situation for migrant students. It presents an argument for schools to be more active as concerns general, or specific, information strategies and keeping in contact with students families.

Summing up, in studying student achievement it is essential to consider students family context given the role of continuous socialization, transmission of educational aspirations and resources at home. All in all, different capitals at home defines at large the perspective on education and for students at large their possibilities of getting help and support in their studies²⁹.

The rational for using PIRLS2006 database

In general it is well motivated to make use of the international comparative studies in education, since for any researcher interested in the context and correlates of learning these databases provide an excellent resource³⁰. The choice to use in particular the IEA PIRLS study as empirical base for this report has to do with its focus on younger students' achievement, on the one hand. The first years in school can be argued to largely set the frame for students' further education, where reading literacy provides a tool for students continued effective studying. In this sense literacy in reading is a competence required for studying and learning in a whole range of subjects in school and for further education. Whereas the ability to read is generally significant for students' educational achievement, it has a special significance for migrant students. For many migrant students the national language required for studying represents their second language. PIRLS2006 includes information on different levels. Except for the individual students there is information from classroom and teaching and as well from the level of school³¹. It is the inclusion of the level of teaching

²² The terminology of different forms of capital refers to the sociological framework of Pierre Bourdieu. See for instance his work on *Distinction*, 1984) and for a special analysis of his concept of cultural capital, which is most widely used, see Robbins, D (2005)

²³ Hansson & Gustafsson (2010)

²⁴ Hanushek, E.A, Woessmann, L (2010),

²⁵ Hansson & Gustafsson (2010)

²⁶ Such as for refugees, and asylum seekers

²⁷ As borrowed from Pierre Bourdieu See for instance Bourdieu, P (1984), Robbins, D (2005)

²⁸ NESSE (2008)

²⁹ Szulkin, R, Jonsson, J.O (2007), Lareau, A (1987)

³⁰ Rutkowski, L, Gonzalez, E, Joncas, M and von Davier, M (2010)

³¹ The same levels are included in the IEA study TIMSS2007, which as well focus 4th grade students but for math and science. A parallel report to this one uses TIMSS2007 data, for the study on migrant students' mathematical achievements, *Migrants in Education – what factors are important? A study of European countries participating in TIMSS2007*

and classroom that gives another rationale to use PIRLS in this study³². Teacher, teaching and the classroom is the closest level to students in school, and might be expected to influence their achievement more directly, although it might be hard to capture such effects³³. It can be argued that many of the important contextual factors are in fact rooted in the classroom, not the school. For studies that have considered the variation in students' performance within the classroom, among classrooms within a school, and among schools respectively, results indicate that for both elementary and secondary schools there is a greater variation between classrooms than between schools³⁴.

Reading literacy in PIRLS2006 – scales and plausible values

Reading literacy in PIRLS is assessed in several dimensions. There are two reading purposes; reading for literacy experience and reading for the retrieving of information. In addition there are two comprehension processes; the ability to retrieve information and the ability to do straight forward inference versus to interpret, integrate and evaluate. Each of these four dimensions forms a scale in PIRLS. A fifth scale which measures students' overall reading ability is based on items from the other four scales. All students are assessed for each of the in total five dimensions of reading literacy. For each dimension students' ability is estimated in a set of five 'plausible values'³⁵ since students answer only to a subset of information requested in order to minimize their response burden³⁶. The use of multiple values is one way of taking the uncertainty associated with the estimates into account³⁷ where the variability among estimated plausible values for each student reflects some of the inherent uncertainty in estimating the actual, 'true' value of individual performance. This report uses the scale for students overall reading ability. The statistical modeling uses estimates based on the total set of five plausible values.

Rational and purpose of the study

The interest in the study is what might account for migrant students' generally poorer educational achievement. The persistent gap in performance in native and migrant students' achievement gives a first priority to sort out factors that might be explanatory. The ambition is to reduce the gap. As such it might be noted right away that the interest in this study is not focused on the question of explained variance, but on the gap between native and migrant students' performance³⁸. The increasing level of migration puts pressure on schools and teachers, and as well students are faced with an increasingly diverse student setting in classroom and at school. A special interest refers to the levels of teaching, classroom and school in the search for factors important. Such factors might be targeted for change on the policy level. It is more difficult to change existing circumstances at the individual student level, although providing important knowledge³⁹. However, the importance of first getting to grips with the individual student level factors is argued. Different relationships in students' backgrounds are what schools and teachers are in fact challenged with in their task to educate students. From a more methodological point of view it is highly motivated to control for the individual background factors, where otherwise it is difficult to investigate and disentangle possible effects that come with the classroom – teaching and school level.

As the category migrant students might hide a considerable variation in terms of student backgrounds, an overall argument in this study is the importance to acknowledge the heterogeneity of the migrant student group. The ambition is to contrast the on average statistical difference displayed for native and migrant students' performance with a more nuanced analysis and description. This includes an analysis for possible differences between 1st and 2nd generation migrant students and looks out for gender and socio-economic differences as well.

³² Whereas the OECD PISA study, focusing 15 year old students, does not include the teaching and classroom level

³³ Goldhaber, D, Brewer, D (1996)

³⁴ Willms, D (2010)

³⁵ Using item response theory (IRT) statistical technique

³⁶ The use of plausible values, or multiple imputation, is necessary in that the procedure for administration involved matrix sampling, an approach in which only a subset of assessment materials were answered by each students, in order to minimize students' response burden. The method as such results in some uncertainty, reported in PIRLS as estimated standard errors. The standard errors express two variance components, one based on the sampling, and one on the method used for imputation of students' results.

³⁷ von Davier, M., Gonzalez, E., & Mislevy, R.J. (2009)

³⁸ Realizing that in a more traditional use of HLM the level of explained variance is in focus. Here is argued that although the variance might not change the relative gap between native and migrant students might well be changed given different factors considered.

³⁹ Hanushek (2002)

The structure of the report

Following this introduction results will be presented in an order of analytical structure. A first section of analysis focuses the factors relevant on the individual student level. This is followed by a section focusing on factors at the level of teaching and classroom and at the level of school respectively. As an introduction to the sections of analyses and results a general strategy for analysis, including a defined criterion for country inclusion and a definition of native and migrant status is outlined. The different factors/variables investigated in the respective sections are as well analyzed more descriptively. Not only the eventual effect on students overall reading ability is of interest but also the actual pattern of distribution, as for instance in terms of the typical classroom and school for migrant and native students, or the typical pattern of teacher competencies and backgrounds. The results are concluded for each section of analysis and overall conclusions are presented in the report's final chapter.

A note on the reporting of factors at the level of classroom and teaching is warranted. Although the results pertain to teachers, they will be analyzed and written from a perspective of students, as teachers in PIRLS2006 are not selected to be representative for the population of teachers but are selected by the choice of class/students⁴⁰. Writing from the perspective of students is reflected in such statements as 'x percentage of students are taught reading every second day'.

Migrant students overall reading ability – analyzing PIRLS2006

A strategy of analysis

PIRLS2006 presents the possibility to study factors important at different levels for students' achievement. The general design involve a randomized sampling of schools in a first step, with a choice of class, typically one or sometimes two classes, within the selected schools as a second step. In addition to the instruments of assessment, PIRLS include different background questionnaires administered to students, to their parents, teachers, and to the principals at the schools. For this study's purpose information from all these sources will be used. All results from PIRLS2006 data which are described and/or presented in tables in this report refers to analyses performed for the 13 countries in question.

To accommodate the different levels of information the analytical method used is the so called Hierarchical Linear Modeling, HLM⁴¹. Generally, the large scale studies, such as PIRLS, are well fitted for such analysis. The technique might be described as multilevel multiple regression in that it allows for an analysis of the relative importance, effect, of the various factors represented at the different levels⁴².

The modeling is applied in a stepwise manner, and presented in combination with descriptive statistics. The different models estimated have included both fixed and random components. The random slope models have been applied for every model in order to investigate if factors in the model vary significantly at the country level. As the fixed components might be regarded a weighted average across groups, which is countries for this report, the random component captures the group-to-group variability, where for this study it represents the between countries variability⁴³.

Students' overall reading ability is defined as the dependent variable using PIRLS scale scores. The average achievement is in PIRLS2006 set to 500 scale score points with a standard deviation of 100 scale score points. The reported coefficients for the different factors included in the models reflect the respective factor's relative importance for students overall reading ability, or the estimated change in performance given the specific condition (and controlling for other included factors). Coefficients are expressed in PIRLS scale scores.

⁴⁰ Jonas, M (2007) describes in PIRLS Technical Report the basic sample design used as a two-stage stratified cluster design. Countries used the two-stage probability proportional to size (PPS) sampling strategy to sample schools, and classes were sampled using a systematic random method, with equal probability for students within classes to be sampled

⁴¹Snijders and Bosker (2004) for instance points out that the assumption of covariance, as for example of students nested in classes is the underlying rationale to employ the Hierarchical Linear Modeling.

⁴² Hox, J (2002)

⁴³ Bickel (2007)

Point of departure for the analyses is the estimated gap, representing the on average difference in achievement for native and migrant students. This is expressed by the variable Migrant, included in the main models. Reducing the gap, by including and controlling for different factors at the respective levels of students, teaching and classroom and school, represents this study's main interest. A hypothesis is that circumstances reflecting all the different levels will help explain the difference between migrant and native students' achievement. As such, the interest in this report is the relative position comparing native and migrant students' performance, not the actual performance for migrant or native students.

As the migrant group is small, the main models established for the different levels of data are based on the total group of students. However, supplementary analyses are performed. On the one hand the model is tested for the sample of migrant students only. On the other hand it is an analysis that considers the eventual differences between 1st and 2nd generation migrants students. The small group size also means that no specific country analysis is performed. However, the study aims to analyze the possible variation between countries, in terms of which factors are varying and which factors are in common. Such knowledge provides information for policy making, pointing to the need either for country specific or general policies.

On a conceptual level the factors which are used in the following analyses are broadly considered as either context or practice related⁴⁴. For a description of the factors see Appendix A. Student composition in classroom and school is an example of an important context variable in the study, whereas teaching strategies are example of practice related variables. On the student level language spoken at home is an example of practice whereas the level of education and different available assets at home are example of context. Sorting the variables included in the datasets in these two basic categories is useful in providing an analytical structure, not only for the information included but as well for performing the analysis. It could well be for instance that different context provide different practices, as in the relation teaching strategies and different student composition in classroom. It could also be the case that for instance schools with similar contexts vary in practice⁴⁵.

Both the possibility to categorize variables differently and to construct new variables/ categories has been used for this study's purposes. It was needed for instance to construct a variable which reflects students' migrant/native status, but also other variables have been modified to better fit the analyses performed. The analysis has not made much use of indices in the database. As some of the indices have been tried out in preliminary analysis, there are important differences motivating the choice to instead use individual items/variables. It relates mainly to the fact that indices are constructed by a summing up of a set of questions. As such it does not allow for an analysis of which items included are more important. The use of indices does not as well serve the purpose to explain equally well the difference in achievement between native and migrant students. As indices based on several items are generally more powerful than single items, they are less sensitive studying what is more or less important for migrant students.

A criteria for country inclusion and a definition of migrants

The criterion for inclusion of countries in this study was set to a minimum of 3 percent migrant students represented in the sample. The percentage of migrant students represented per country in PIRLS2006 varies between the countries included, and it should be noted that samples do not necessarily reflect national proportions. Among other factors countries were recommended by the IEA not to include in the sample students who had less than a year of instruction in the language of assessment. For a list of countries included in this report with their share of migrant students in PIRLS2006, see Appendix 1.

In categorizing students respectively into native and 1st and 2nd generation migrant students the information on parents' and students' birth countries is used (Table 1).

⁴⁴ A strategy of analysis suggested by Willms, D (2010)

⁴⁵ Raudenbush and Willms (1995)

Table 1 Definition of native student and of 1st and 2nd generation migrant students

- 1st generation migrant students are born abroad with both parents born abroad
- 2nd generation migrant students are born in the country of assessment with both parents born abroad
- Native students are born in the country of assessment with at least one parent born in the country of assessment.

Proportion of migrant students in 13 European countries

A total of 13 of the 20 European countries that participated in PIRLS2006 are included in this report. The criterion of including at least 3 percent migrant students in the sample was met by 15 of the participating countries, but another two countries were excluded for lacking essential information⁴⁶.

On average these 13 countries have about 12.5 percent of migrant students, with twice as many 2nd as 1st generation migrant students (see table 2). However, there is considerable variation between countries. Latvia represents a country with a higher share of migrants included in the sample whereas Italy and Scotland represent countries with a lower share of migrant students. Some countries, such as Italy, England and Scotland, have a more equal distribution in terms of 1st and 2nd generation students. Other countries have a higher percentage of 1st generation students, such as Latvia and as well Spain. (See Appendix 1)

Table 2 Distribution of native and migrant students in 13 European countries participating in PIRLS2006

| | |
|---|------|
| Native students | 87,5 |
| 1 st generation migrant students | 4.4 |
| 2 nd generation migrant students | 8.1 |

Students at home - family background

On the individual level students' socio-economic backgrounds is one of the more important conditions for study achievement. Here it is represented by the two indicators of parents' educational levels and their connections to labor market respectively.

Whereas only a few percent of native students have parents with no schooling this represents a background for about a tenth of migrant students. There is a difference between 1st and 2nd generation migrant students, where 2nd generation migrant students' parents have a lower level of education. However as 1st generation migrant students have an equal to native students share of parents with a postsecondary education, almost a fifth of are unemployed. (Table 3 and 4) Compared to native students it is three times as many and higher also compared to 2nd generation migrant students' parents. (Table 4)

Generally a pattern of higher unemployment for migrants could depend on a more difficult situation finding a job in a new country. When compared to 2nd generation migrant students' parents in this study, time is a factor, since parents to 1st generation migrant students would have immigrated at a later time point.

⁴⁶ Luxembourg is excluded since they lack data on the school level, and Slovenia is also excluded since they lack essential information on the student level - including what language is spoken at home.

Table 3 Parents highest educational level by migrant – native status

| Parents highest educational level | Native students % | 1 st generation migrant students % | 2 nd generation migrant students % | Total % |
|---|-------------------|---|---|---------|
| University or higher | 25.5 | 26.2 | 16.9 | 25.0 |
| Postsecondary education, but not university | 13.5 | 17.0 | 9.4 | 13.3 |
| Upper secondary schooling | 39.2 | 31.6 | 34.4 | 38.6 |
| Lower secondary schooling | 19.3 | 17.3 | 29.0 | 19.9 |
| Not finished lower/primary or no schooling | 2.5 | 7.9 | 10.3 | 3.2 |

Table 4 Parents employment status by migrant – native status

| Parents employments status | Native students % | 1 st generation migrant students % | 2 nd generation migrant students % | Total % |
|-----------------------------------|-------------------|---|---|---------|
| Both working | 65.1 | 46.9 | 52.6 | 63.7 |
| One parent work | 28.2 | 34.7 | 34.6 | 28.8 |
| Both unemployed | 6.7 | 18.4 | 12.8 | 7.5 |

A closer look however reveals that the higher share of unemployed parents' to 1st generation migrant students is representative only for the group of higher educated parents. Thus it is not a general but specific pattern. (Not in table). A possible explanation is that a higher level of education would generally indicate a higher level of specialization, which corresponds to a smaller range of job positions, more demanding to both find and match. As 1st generation migrant students' parents typically would have immigrated at a comparatively later time-point, the question of validation might add to the time factor. Validating or adapting specific educations to national standards would typically be the case for higher range occupations, such as occupations within the fields of medicine or law for instance.

Different assets at home

PIRLS dataset includes information on assets in the home, such as number of books, students' own books, daily newspapers, an own room and a study desk. Other questions related to the presence of a pc at home and the student's own mobile phone. Fewer migrant students come from a home which includes many books. Close to half the group of migrant students states no more than 25 books at home, which compares to some more than a quarter of native students. (Table 5) A higher percent of migrant students compared to native students have no books of their own at home (15% - 9%). (Not in table). Twice as many migrant students as native students report not having their own room. (Table 6)

Table 5 Number of books at home by migrant – native status

| Number of books at home | Native students % | 1 st generation migrant students % | 2 nd generation migrant students % | Total % |
|--------------------------------|-------------------|---|---|---------|
| 0-25 | 27.7 | 51.4 | 47.8 | 30.3 |
| 26-100 | 33.0 | 29.7 | 29.1 | 32.6 |
| >100 | 39.3 | 18.9 | 23.1 | 37.1 |

Table 6 An own room by migrant – native status

| An own room at home | Native students % | 1 st generation migrant students % | 2 nd generation migrant students % | Total % |
|----------------------------|-------------------|---|---|---------|
| Yes | 77.8 | 59.6 | 57.0 | 75.3 |
| No | 22.2 | 40.4 | 43.0 | 24.7 |

In general almost nine out of ten students report having a pc at home and their own study desk (not in tables). As patterns are fairly similar for 2nd generation migrant students and native students, about a fifth of 1st generation migrant students do not have a pc at home or an own study desk. A little less than half the group of students reports having their own mobile phone, an asset somewhat more common for migrant students.

The total set of questions on assets at home reported above was analyzed, of which in total four items, many or few books, students' own books, a daily newspaper and pc at home, proved significant. These are the items included in the HLM model displayed in Table 8.

Language(s) at home

The anchoring in the language of assessment is of direct consequence for students' overall reading ability. It is likely to matter if the language of assessment is entertained at home or not, and in this regard patterns for migrant and native students are different as might be expected. To never speak the language of assessment at home is more common for 1st generation migrant students, although actually also a few of native students' states to never speak it at home. About a fifth of native students in addition states to only sometimes speak the language of assessment at home. (Table 7) A part of this pattern for native students might be explained by the categorization which includes students with one parent born abroad. This might indicate more than one language spoken at home.

Table 7 Speaking always, sometimes or never the language of assessment at home by migrant – native status

| Speaking language of assessment at home | Native students % | 1 st generation migrant students % | 2 nd generation migrant students % | Total % |
|--|-------------------|---|---|---------|
| Always | 79.9 | 22.6 | 27.7 | 70.6 |
| Sometimes | 21.8 | 67.7 | 68.8 | 27.5 |
| Never | 1.3 | 9.7 | 3.5 | 1.9 |

Considering the language spoken before school start, about 40-45 percent of 1st generation migrants and about 15 percent of 2nd generation migrant students spoke another than the official language (not in table). About 8 out of 10 migrant students who did not speak the language of assessment before school started report speaking mixed languages (sometimes using the language of assessment) as students in 4th grade, whereas a tenth still spoke another than the official language. There are no marked differences between 1st and 2nd generation migrant students.

Modeling the individual student level

The average performance in PIRLS is set to a scale score of 500 with a standard deviation of 100 scale score points. Students in these 13 European countries are estimated to an average of 535 scale score points⁴⁷, for migrants an estimated 503 and for native students an estimated 543, a difference of about 40 scale score points nothing else considered. The factors on the individual student level were introduced subsequently in the model. The status of being migrant student was introduced in a first step, a second step included the socioeconomic status in the family, a third added assets within the home, and a final fourth step added two student characteristics, gender and speaking or not speaking the language of assessment at home to the model. In all steps of the model the gap between native and migrant students has been estimated. Additional analyses have been performed estimating the effect for the 1st and 2nd generation migrant students respectively.

All in all, controlling for the different background circumstances the model served to explain about 30 percent of the variation in students overall reading⁴⁸. The status being migrant or native student alone serves to explain about 9 percent of the total variation in reading. The gap between migrant and native students was substantially reduced, as reflected in the variable Migrant table 8. The initial difference of -39.18 when nothing else is considered was reduced to a difference of -13.72, having included and controlled for the total set of factors introduced at the individual student level.

As regards the socioeconomic status of the family, parents' level of education is more important. Adding various home possessions the strong negative effect of low educated parents is however weakened from a minus 40 to a minus 30 scale score points. As having a larger number of books at home is positive for students' reading ability, having few books at home has a stronger negative effect, representing a minus 26 scale score points. For students to have their own books means a difference of about 30 scale score points in estimated overall reading ability. An analysis of items used to measure family background found number of books at home and students own books to be powerful single indicators explaining student achievement⁴⁹.

Both language spoken at home and students' gender were included in the last step of the model. As there is a more moderate but significant difference between boys and girls in the overall reading the effect of what language is spoken at home is much more pronounced. The situation to never speak the language of assessment at home represents an estimated minus 35 scale score points.

However, as this situation is representative only for a smaller group of about 6% of migrant students the highly unequal groups of comparison and the comparably large standard error for the estimated effect⁵⁰ motivated some additional data inspection. As such the analyses revealed that there are significant differences in overall reading achievement for the three groups of migrant students (speaking always, sometimes or never the language of assessment at home). This pattern is represented for all countries included in the analysis, although student proportions vary. Spain and Flemish Belgium are example of countries with a higher percentage of students never speaking the language of assessment at home, about 12 percent. France and Latvia are example of countries where only some two or three percent of migrant students share the same situation.

⁴⁷ The same as for the total 20 European countries that participated in PIRLS2006, an estimated 535

⁴⁸ In comparing the reduced sigma squared between baseline and model 4, displayed in the table

⁴⁹ Brese, F, Mirazchiyski, P (2010) observed a median correlation for students own books to achievement of 0.21. In 'Measuring Students' Family Background in Large-scale Education Studies', A paper presented at the 4th IEA International Research Conference July 1-3, Gothenburg, Sweden

⁵⁰ Standard errors are displayed within the parenthesis in the table for each estimated coefficient

Summing up on the model, as all indicators included contribute significantly to explain students overall reading ability some are more important. These are language(s) spoken at home, students own books and the family level of education. Parents' education and students' books reflect the level of cultural capital at home, relationships of general significance for student achievement. As the language situation in terms of the language normally spoken at home might be significant for some native students it is of general importance for migrant students.

Table 8 Variables at the individual student level (HLM)

| Variables | Baseline model (MODEL 0) | Migrant – native status (MODEL 1) | +Socio /economic status (MODEL 2) | +Home possessions (MODEL3) | +Individual student characteristics (MODEL4) |
|--|--|---|-----------------------------------|----------------------------|--|
| Overall reading ability | 535, 18 (5.35 ⁵¹) Sigma squared (5028.90) | Migrant – 503,39 (5.27) Sigma squared (4600.07) Native – 542,79 (5.46) Sigma squared (4598.31) | Sigma squared (3951.23) | Sigma squared (3564.85) | Sigma squared (3488.97) |
| Migrant | | -39,18 (3.45) | -28,91 (4.39) | -19,46 (3.96) | -13,72 (3.96) |
| Unemployed parents | | | -13,68 (3.22) | -9,94 (2.68) | -9,68 (2.35) |
| Lower educated parents | | | -39,46 (3.39) | -29,29 (2.89) | -28,63 (3.26) |
| >200 Books | | | | 10,22 (3.09) | 10,61 (2.98) |
| <25 Books | | | | -25,48 (2.98) | -25,61 (2.64) |
| Students Own Books | | | | 32,28 (3.86) | 30,16 (4.17) |
| PC at home | | | | 15,19 (2.80) | 14,36 (3.18) |
| Daily News at home | | | | 7,13 (2.99) | 7,17 (2.97) |
| Boy | | | | | -5,97 (1.95) |
| <i>Always</i> speak language of assessment at home | | | | | 6,93 (1.43) |
| <i>Never</i> speak language of assessment at home | | | | | -35,22 (13.18) |

Significant country differences

The modeling of the student level included an analysis of possible variation between countries⁵², to investigate if effects of individual background circumstances differ between countries/educational systems. All effects did prove significantly different between countries, indicating that what each of these specific circumstances more precisely mean for students overall reading ability depends on the country in question. However, except for one factor the relationships in the model are, although significant, more moderately different between countries. This indicates that although their relative “weight” differ between countries, countries share their significance for students overall reading ability. That students individual background factors are influential for their achievement represent as such a common concern for countries. The by far larger country difference is related to the indicator never speaking the language of test at home. Both language structures and immigration patterns might vary between the countries in the analysis. It might well

⁵¹ Numbers within parenthesis, if not flagged as sigma square, represent the standard error of the estimated coefficient

⁵² A random slope model

be a case that whereas language spoken at home has a large impact in some countries it has less effect in other countries. The mother tongue(s) typically spoken for migrant students might be more or less distant to the official language in different countries⁵³.

Migrant students in special consideration

The main model presented in Table 8 above was supplemented with an estimation of the effects for the respective group of 1st and 2nd generation migrant students in comparison with native students. The estimates are presented in Table 9 below, and estimated coefficients for the respective analyses performed are reported in Appendix 2. As such the comments made of these results refer back to both the appendix and to Table 8 above, in reference to the gap between migrant students in total and native students.

Table 9 The student level model applied for 1st and 2nd generation migrant students respectively

| Variables | Baseline model (MODEL 0) Overall reading ability | Migrant – native status (MODEL 1) | +Socio /economic status (MODEL 2) | +Home possessions (MODEL3) | +Individual student characteristics (MODEL4) |
|---------------------|---|-----------------------------------|-----------------------------------|----------------------------|--|
| 1 st gen | 496, 09 (8.20) | -46, 65 (7.00) | -36,46 (4,78) | -27,39 (5,01) | -19,57 (3.44) |
| 2 nd gen | 508,06 (5.26) | -34,77 (2.90) | -24,33 (5.07) | -14,50 (4,63) | -10,52 (4.99) |

The observed difference between 2nd and 1st generation students in terms of their overall reading, an estimated 508 compared to 496 scale score points might be expected given the difference of birth country. However, the difference between 2nd generation migrants and native students is worth considering, given their equal status to native students being born in the country of assessment. Country differences are more pronounced for 1st generation migrant students. These differences relate both to the average achievement and to the “effect” of the factors included, i.e., what it means for the overall reading literacy⁵⁴. Differences between countries might depend on migrant composition, i.e., type and origin of immigration, but could reflect as well different country policies, both general migration policies and more specific educational policies⁵⁵.

Having included all the individual factors in the last step, model 4, the difference for 1st generation migrant students is larger to native students, about 20 scale score points, than for 2nd generation, with an estimated difference of about 11 scale score points. Some of the included relationships have different effects for 1st and 2nd generation migrant students. Most markedly there is a stronger negative effect for never speaking the language of assessment at home for 1st generation migrant students, about 37 scale score points, than for 2nd generation students, about 31 scale score points. To have their own books at home has as well a somewhat stronger positive effect for 1st generation migrant students than for 2nd generation students, about 32 compared to 30 scale score points. (Appendix 2)

In addition the model 4 arrived at in Table 8 was performed for the analysis of migrant students only. Given that the group of migrant students is small not all factors were significant. The significant factors were the effect of lower educated parents, the number of books at home as well as students having their own books and also speaking or not speaking the language of assessment at home makes a difference. As might be expected migrant students have a somewhat more pronounced effect of always speaking the language of assessment at home, about 8 scale score points. For students to have lower educated parents is on the other

⁵³ The larger country difference is reflected in a somewhat smaller coefficient of about -28 if estimated as fixed for all countries in the analysis

⁵⁴ With a variance component for 1st generation migrant students at the intercept of 434.57 and for the slope 311.45 compared to 2nd generation migrant students; intercept 208.40 and slope 46.30

⁵⁵ OECD 2006

hand less negative, about 19 scale score points, and the significance of books at home is less pronounced, specifically so for students own books. (Appendix 2)

An illustration - contrasting student patterns

The model estimated above may also be used for predictive purposes – how much does it differ in estimated overall reading ability considering students with the optimal background circumstances to students with an opposite and negative pattern?

For a predicted negative pattern the group of migrant boys is targeted. If coming from a home where parents are lower educated and unemployed in combination with no available pc, newspaper, few books and no books of their own, migrant boys reach an estimated 425 scale score points. Adding the negative status of never speaking the language of assessment at home means an estimated lower value of 392 scale score points in overall reading. If defining the status of the migrant boy as 1st generation this would mean an additional reduction of about 10 scale score points, to an estimated value of 381.

A contrast is then the profile of native girls from the optimal background circumstances. An estimated value of 592 scale score points on average in overall reading ability for the group of native girls with highly educated employed parents with all resources included at home, indeed a contrast.

Estimating the predicted overall reading literacy for students from different background circumstances highlights the possible significance of factors at the individual student level. Considering such variation included in the same school, and perhaps in the same classroom, it represents a challenge for teachers and schools. It requires from teachers to adapt their teaching and education to accommodate for such variety in students 'entrance values', and as well in terms of the school's organization of education. The determining conditions on the level of classroom and school are in focus in the next two chapters.

Concluding – the level of individual student variation

Modeling the different background factors on the individual student level the effect of different family circumstances is clearly visible. In total the final model served to reduce the initial variation in students' achievement about 30 percent. Including in the model various information from students backgrounds, the gap in performance between migrant and native students was reduced from an initial about 39 points of difference to about 13 -14 points. Indicators included in the analysis were parents' level of education, employment status, possession of different assets at home, as well as students' gender, and language spoken at home. The analysis allowed for random variation and all the circumstances differed significantly between countries. The largest part of variation attributed to country variation was reflected by the circumstance of speaking another than the official language at home.

The model was also used for an illustration of what different entrance values on average could mean for 4th grade students overall reading achievement. Considering students in these 13 European countries it is migrant boys with the least favorable circumstances that represent the most vulnerable group in school. These boys represent an estimated average achievement far below the PIRLS set average of 500 scale score points. The contrasting group is native girls with all the plus values of home background.

Utilizing the full set of indicators a special analysis was as well performed to study the difference within the group of migrants, focusing 1st and 2nd generation. Compared to the estimated average for native students the difference is larger for 1st generation students - as might be expected given the difference in being born or immigrating to the country. Also quite logical, there is a stronger negative effect of never speaking the language of assessment for 1st generation migrant students. For migrant students generally the effect of always speaking the language of assessment is somewhat stronger. As the latter effect is the same for the countries included, the negative effect of never speaking varies significantly between countries.

All in all the analyses have underlined the importance of considering the variation within the category of migrant students and also more generally for acknowledging students varying family backgrounds. After all, such variation might be what teachers are dealing with in many classrooms of today.

Students in classrooms

As noted in the introduction to the report, writing the level of classroom will be carried out from the perspective of students' experiences. This reflects the design of PIRLS where students are representative at the country level but teachers not.

Student composition

On the classroom and teaching level student composition in the class might be considered an important conditioning factor for teaching. It might as well be of consequence for students' learning and achievement. It could influence students' achievement both directly, in the context of peers in the class, and indirectly, as transmitted by teaching practices. As students in the same class, or in the same school, to various degree do homework together the effect of student composition can extend over and above the actual classroom and school⁵⁶. Except for teaching practices there could be other teacher factors involved, as for instance teachers' higher or lower expectations on students' achievement.

The measures for student composition in this study are the migrant proportion in class on the one hand and the average family background, expressed in the parental level of education, on the other. A number of research studies have confirmed the general importance of family background, SES⁵⁷ for student achievement, and studies have as well investigated the effect of socio-economic student composition in classes and schools⁵⁸. As there is a general effect of ethnic segregation for students' educational outcomes, it can have special significance for migrant students, perhaps in particular 1st generation who immigrated to the country⁵⁹. It is also worth considering that student composition in class and school might not have the same effect on all student groups⁶⁰.

A special interest for this study lies in investigating what are better learning conditions for migrant students. It is not obvious which classroom setting is optimal, a classroom with more native or more migrant students. It could be the case that teachers and schools are better equipped and have better possibilities to focus on relevant practices and methods in a classroom/school with a majority of migrant students, i.e., in a more homogenous student setting. Or it might be better learning conditions for migrant students to be in a class and school with many native students, providing natural contacts with native language and native friends.

Classroom composition in terms of the proportion of migrant students in class is here based on the categorization made of students as migrant or native, described in the previous section. Another option would have been, as performed in other studies using PIRLS, to use the indicator of not speaking the language of assessment at home as representative for the proportion of students with migration background in the class⁶¹. The assumption made for this study is however that migrant status not only is a question of language but reflects a larger context. Being migrant student, also when speaking the language of assessment at home might be assumed still to represent in many cases another and more negative status than being native student. That the status of being migrant student does in fact refer to more than just language proficiency makes sense when considering both the general pattern of migrant students' lower educational achievement, and that also 2nd generation migrant students perform generally lower than native students. There are other socio-cultural differences than language in students' backgrounds that might play a role, and various factors involved at the system level, such as the level of integration in society, might as well be important.

The status of language spoken at home represents as well a broader group of students, not only migrant students. In PIRLS a proportion of native students do not report always speaking the language of assessment at home (compare table 7 above). The status of not always speaking the language of assessment at home is however likely to be different for native and migrant students. This is since the language of assessment represent native students mother tongue but migrant students second language. Thus, for native students

⁵⁶ Szulkin, Jonsson (2007)

⁵⁷ Sirin, 2005

⁵⁸ Willms, (2010), Paterson, L (1991), Fossati, F (2010)

⁵⁹ Szulkin, Jonsson (2007)

⁶⁰ Willms, D (1986)

⁶¹ See for instance Bellin, N, Dunge, O, Gunzenhauser, C (2010), Araujo, L, Dinis da Costa, P (2012)

not always speaking their mother tongue at home might represent an added value, in terms of speaking several languages. For migrant students on the other hand the same situation could indicate a lack of practice/knowledge in the official language used in the country of habitat, equal to the language of assessment.

The average classroom in these 13 countries includes about 12 percent migrant students. But the pattern is uneven, as indicated by the lower median value of 6 percent. For many of these countries a typical pattern is a class for the majority of students with zero or just a few percent migrant students supplemented with some classes with a majority of migrant students. For native and migrant students respectively, however, the average proportion of migrants in class differs, for native about 8 percent and for migrants about 34 percent.

To consider the pattern for native and migrant students respectively in different categories of classrooms is informative. Whereas migrant students are distributed more evenly across classroom categories native students are typically situated in all-native or in more native homogenous classes. Less than a tenth of native students are in classes where there are more than 25 % migrants. Between 20-25% migrant students are in classes with more than 50% migrant students. Classrooms with more than 50% migrant students have on average close to two thirds of migrants in class. (Table 10)

The pattern varies between countries. Latvia, for instance, has a higher percentage of students, 58% in all-native classes whereas Germany is an opposite example of country, with a lower percentage of students in all-native classes, 26%. Except for two countries, Italy and Scotland who represent classrooms in PIRLS with a maximum of 30-40 percent of migrant students, the countries included have students in PIRLS who are situated in classrooms with up to 70-80 percent of migrants, and some countries have classes with up to 100 percent migrant students, representative for Latvia, Sweden, French speaking Belgium and the Netherlands.

Table 10 Percentage of native and migrant students in classrooms with different proportion of migrant students across 13 European countries

| Classroom composition– %migrant students in class | Native students (%) | 1 st generation migrant students (%) | 2 nd generation migrant students (%) | Total (%) | Average percent migrants in class category |
|---|---------------------|---|---|-----------|--|
| All native | 37.0 | - | - | 32.4 | .00 |
| -10 | 33.9 | 19.7 | 14.7 | 31.7 | .06 |
| 11-25 | 21.2 | 30.3 | 32.9 | 22.5 | .16 |
| 26-50 | 6.7 | 25.8 | 31.2 | 9.5 | .36 |
| >50 | 1.3 | 24.2 | 21.2 | 3.9 | .66 |

Teachers educational backgrounds and teaching practices

Not only students' backgrounds, but also teacher backgrounds might set conditions for learning in the classroom. Having teachers well-equipped to teach, including general level of education and eventual specialization could indicate better learning conditions for students. At least it seems reasonable to assume that teacher qualifications make a difference for students' educational achievement. In fact studies have pointed to that for students to have a good as opposed to bad teacher can represent a difference of more than a full year of standardized achievement in a single academic year⁶². For migrant students it might in addition be important to have teachers with a background in second-language learning. How teachers in fact are equipped to teach students from varying cultural and linguistic backgrounds is a question asked⁶³.

In PIRLS, a higher percentage of students in migrant dominated classes (>50%) are taught by teachers who are highly educated⁶⁴. At the same time a higher percentage of these students, close to ten percent, are taught by teachers who are not certified to teach⁶⁵. However, the same category of students have teachers who are

⁶² Hanushek (2002)

⁶³ OECD (2010)

⁶⁴ About 68 percent of student have teachers with a completed first degree (ISCED 5A), including the 26 percent of student who have teachers who achieved a second or higher degree. This compares to about 45 percent students in more mixed classes and 53 percent students in all-native classes

⁶⁵ About 7 percent students compared to between 2-4 percent students in other classroom settings.

more often profiled in reading theory, literature and language (of assessment) and in language development. They as well have more often teachers with a background in second language learning, a reality for a little more than a fifth. In this respect it is noteworthy that not many students in mixed classes however have a teacher with the corresponding background, which is the case for some more than a tenth of students.

Teaching practices were also an area in focus in PIRLS2006. The section included questions on the organization of the class and the instruments/tools used for teaching. Given the composition of students, teachers have the possibility to organize class work in different ways. Analyzing these 13 countries students in native dominated classes are more frequently allowed to be self-directed in their studies whereas a higher percentage of students in classes with more migrants never work independently with their own set goals. Students in all-native classes are more frequently taught in whole-class activities and more typically have a teacher who uses the textbook on a daily basis. Students in migrant dominated classes are more frequently grouped after ability and have a teacher that more typically uses computer software and material on the internet, as well as newspapers and magazines. For the vast majority of students a pc is available in the class as is also a reading corner/library.

Questions to teachers related also to the choice of different types of texts, particular reading strategies taught and practices/actions chosen if students lagged behind.

Whereas a majority of students, between 60 and 70 percent, are taught reading on a daily basis, students in migrant dominated classes spend generally more time on vocabulary and also engage more in reading aloud in small groups or in pairs. Whereas types of texts⁶⁶ used do not vary much between categories of classes, students in migrant dominated classrooms are generally to a higher degree engaged in text reading exercises and more often use graphs, charts and diagrams⁶⁷. They are as well more involved in strategies for generalizations and drawing inferences, and in making predictions of what will happen next in the text.

For students in classroom with many migrant students they have more often a teacher aide or a reading specialist in class if falling behind in learning to read activities, and as well more often the possibility of a remedial reading classroom with a specialized teacher.

⁶⁶ Referring to, as defined in PIRLS literary (short stories, fiction, books with chapters, poems and plays).versus informational (descriptions and explanations about things, people or events (non-fiction), instruction or manuals about how things work and charts, diagrams and graphs).texts

⁶⁷ a fifth compared to between 1 and 5 percent of students in other classes

Modeling the teaching and classroom level

By modeling the factors included at the teaching and classroom level, the objective is to investigate on the one hand the influence of more objective relationships and on the other hand specific practices applied in class. Whereas the above review of data available served as pointers to which factors to include in the first modeling, many factors that proved insignificant for students overall reading ability were not included in the resulting final model (Table 11). The factors being included in the model below are thus all significantly influencing students overall reading ability. As the model is largely defined by the majority of native students, it is tested separately for the group of migrant students as well.

The introduction of factors at the classroom and teaching level served to reduce the gap between native and migrant students further, if not dramatically so still with an additional three-four points. The difference between native and migrant students when controlling for both individual factors and the factors related to teaching and classroom is an estimated 10 scale score points in overall reading ability.

The factors influencing students overall reading ability reflect the context, the objective circumstances, in the classroom. The practices – as regards teaching, the organizing of students in groups, keeping contact with students' parents, have all been tried out in various attempt of modeling, but turn out as insignificant for students overall reading ability.

Student composition in the classroom is on the other hand important. Both measures of student composition included in the modeling have a significant impact on students' overall reading ability. The composition in terms of migrant – native students⁶⁸ and the average parental educational level in class display comparatively large effects on students' achievement. The effects represent a difference between 17 and 21 scale score points for students overall reading ability, effects over and above the individual student characteristics⁶⁹. The estimated effects express a standard deviation difference in relation to the average for the countries involved. Having a reading corner or library and a PC in class has as well a significant, although more moderate, impact on students' overall reading.

It is noteworthy that the introduction of factors at the level of classroom and teaching reduce the impact of the individual student level factors. As such, the negative effect of never speaking the language of assessment at home is less negative. Having books at home or not, including own books together with other circumstances such as parents' educational levels and employment status are less important when considering the various circumstances in the classroom. However, it is also worth noting that although reduced they still exert a significant influence on students' achievement.

A preliminary conclusion might thus be that teaching does not manage more than marginally to compensate for initial differences in students family backgrounds. In fact, it does not manage at all to compensate for gender differences, as recognized at the individual student level, and as we shall see further on, for migrant students including the information from teaching and classroom the difference between boys and girls is increased.

⁶⁸ The composition of native-migrant students in the classroom is depicted in this analysis as a continuous relationship moving from 0 percent of migrants up to classes with only migrant students, 100 percent.

⁶⁹ Both variables were centered as an average 'grand mean' for the 13 countries involved.

Table 11 Variables at the teaching and classroom level (HLM)

| Variables | Estimated individual student coefficients/HLM Level1 (Model 4) | Estimated coefficients introducing Level 2 HLM / teaching and classroom |
|---|--|---|
| Overall reading ability | Sigma squared (3488.97) | Sigma squared (3049.71) |
| Migrant | -13,72 (3.96) | -10,28 (3.49) |
| Unemployed parents | -9,68 (2.35) | -6,37 (1.71) |
| Lower educated parents | -28,63 (3.26) | -23,16 (1.82) |
| >200 Books | 10,61 (2.98) | 7,53 (0.89) |
| <25 Books | -25,61 (2.64) | -22,78 (0.87) |
| Students Own Books | 30,16 (4.17) | 24,32 (1.53) |
| PC at home | 14,36 (3.18) | 11,45 (1.46) |
| Daily News at home | 7,17 (2.97) | 7,37 (1.11) |
| Boy | -5,97 (1.95) | -6,40 (1.03) |
| Always speak language of assessment at home | 6,93 (1.43) | 6,37 (2.79) |
| Never speak language of assessment at home | -35,22 (13.18) | -26,16 (8.91) |
| The level of teaching and classroom | | Context |
| Percent migrants in class | | -23,68 (9.08) |
| Aver family educational level in class | | 16,78 (2.40) |
| Available Library/ reading corner | | 3,00 (1.35) |
| Available PC | | 3,85 (1.70) |

Country differences

The table 11 depicts the estimated on average effect for different circumstances based on all 13 countries in this study. Some of the variables were tested for possibly different effects between countries⁷⁰. Both measures on student composition in class have significantly different effects between countries, indicating the how much the particular classroom context matters for students overall reading ability depend of the country in question. On the individual student level the gap between native and migrant students' performances, the effect of never speaking the language of assessment at home and the effect of lower educated families, all differ significantly between countries also after introducing the level of classroom and teaching.

Migrant students and the effect of second language teachers

The model was been tested for the group of migrant students only, as well as for the respective groups of 1st and 2nd generation migrant students. The underlying estimates for the respective models are included in Appendix 3. As applied for migrant students the model included in addition the factor of teachers having a

⁷⁰ In a so-called random slope model

background in second language learning. As this was not significant in the main model, based on a majority of native students, it was significant for migrant students' achievement.

For the model building on the total group of migrant students the results thus indicated that to have a teacher with competence in second language learning makes a significant difference for the overall reading ability, an estimated 11-12 scale score points. For other factors included, the pattern changed in comparison with the main model established. A reading corner or library in the classroom was not significant for migrant students overall reading ability, but the availability of a pc in the class was markedly more so, an estimated about 23 scale score points of difference. (Appendix 3)

The effect of language spoken at home is more pronounced for migrant students, also when having controlled for factors at the teaching and classroom level. To never speak the language of assessment at home represents a minus 33 scale score points and to always speak the language of assessment at home represents a plus 8 scale score points of difference. It is interesting to note the pronounced difference between boys and girls for migrant students, an estimated about 11-12 points.

In general, when performing the analysis on the group of migrant students the possibilities of modeling are more limited, given a much smaller sample of students. Variable effects are changed when not including native students. For instance the fact that the migrant proportion in the classroom does not have a significant effect when the modeling is carried out for migrant students only, relates to on the one hand the restricted variation, in using only migrant students, and on the other hand to the small sample of students. Also the effect of students' parents' employment status is not significant when modeling these relationships for the group of migrant students only.

The estimated effect of the model as applied for the respective groups of 1st and 2nd generation migrant students are presented in Table 12 below.

Table 12 The level of classroom and teaching applied for 1st and 2nd generation migrant students respectively

| Variables | Estimated individual student coefficients/HLM Level1 (Model 4) | Estimated coefficients introducing Level 2 HLM / teaching and classroom |
|---------------------|--|---|
| 1 st gen | -19,57 (3.44) | -14,56 (4.89) |
| 2 nd gen | -10,52 (4.99) | n.s |

Considering the impact of the total set of variables for the respective group of migrant students in Table 12, (see appendix 3) the more striking finding is found for 2nd generation migrant students. Including and controlling the factors at the level of classroom and teaching, in addition to the individual students factors, render the difference relative native students' performance insignificant. As the gap between native and 1st generation migrant students is reduced with about 5 scale score points, for 2nd generation migrant students there is no longer a difference. Comparing the generation of migrant students in terms of estimated coefficients for the variables in the model, some other differences appear. As for instance the effect of not speaking the language of assessment at home is still pronounced negative for 1st generation migrant students it is of no significance for 2nd generation migrant students. At the level of teaching and classroom it is interesting to note that the general effect of a teacher with competence in second language learning for migrants boils down to an effect for 1st generation migrant students. It has no effect on 2nd generation migrant students learning, i.e., overall reading literacy. On the other hand, the general higher effect for migrant students with a pc in the classroom applies to 2nd generation migrant students specifically. For them it is as well important to have a reading corner/library. Both relationships do not affect 1st generation migrant students learning. (Appendix 3)

Concluding – the effect of teaching and classroom on students overall reading ability

Overall, the analysis and results indicate that factors at the level of teaching and classroom do play a role for students' achievement. It is thus not only factors related to students' backgrounds that might explain achievement, although these are strongly related as has been confirmed by many studies. Teaching- and learning conditions matters as well.

The results of the analyses performed on the conditions for the 4th grade students in these 13 European countries indicate that in which classroom students are situated matters for their achievement. Both the proportion of migrant students and the average educational backgrounds in the classroom are significant for the overall reading ability. Other relationships in the context of the classroom matters as well, including the availability of a pc and a reading corner/library. For the sample of migrant students, the availability of a pc in the classroom was much more important, whereas the reading corner was non-significant. As it was not significant, and thus not included in the main model, for migrant students to have a teacher with a background in second language learning is significantly positive for their overall reading ability achievement. Also the effect of what language is spoken at home is more pronounced, as might be expected, when including in the analysis the group of migrant students only.

Conditions at school

Although a main part of research on migrant students educational achievement have focused on explanatory factors on the individual level, as well explored in this report, an increasing number of current studies focus on school level factors⁷¹. As this report's previous analysis focused the level of classroom and teaching, the question is if there is an additional effect of school. Does school matter for educational achievement, and if so what factors are important?

A stratified student group

Whereas the migrant proportion in the previous analysis was measured in a continuous relationship from 0 to 100 percent students in the class, for the purpose of this analysis it has been categorized⁷². Students have been stratified in terms of their native and migrant background and in terms of their category classroom. Stratifying the student population in such a way provides the model with an estimate of the direct interaction effect between migrant and native students and classroom conditions. Introducing this stratification of students at the student level for the analysis of school factors it is analyzed in the context of schools with different student composition. As the stratification of students represents an analytical strategy it also represents an interest from a research point of view. By no means is it obvious that the proportion of migrant students in class, when controlling for other factors on the individual and school level, will have an equal effect on native and migrant students⁷³.

PIRLS study includes school information by a questionnaire administered to the principal. The principals were asked to characterize the school in terms of describing the demographic of the student population at the school, the resources available and as well practices applied. Factors reflecting both the context and the level of policy/practice at school are investigated⁷⁴.

The distribution of students across schools

Assuming that the distribution of students across schools is not at random, the interest is directed to investigate eventual compositional effects of school, reflecting the student population demographic. As such school composition effects might be defined in this study as "...the aggregate influence of school peers on a

⁷¹ For a more recent study focusing migrant students, see for instance, Bellin, N, Dunge, O, Gunzenhauser, C (2010), for an earlier study on school composition effects see Coleman, J.S (1966)

⁷² The software used for these analyses is HLM6.08, which only allows for a three level analysis. For the analysis performed in this report the individual student level represents the first, and the countries included the third level. The second level change between focusing classroom and teaching specifically, as in the preceding chapter, to include information from the school as in this chapter. However the school level also includes aggregated information from the teaching and classroom level.

⁷³ For a study on school's composition effect for different student groups, see for instance Willms, J. D (1986).

⁷⁴ The distinction between school context and school practice is suggested by Willms (2010) in a study on school composition and contextual effects on students achievements

student's school experience, above and beyond the effects of the individual student's own particular peers"⁷⁵. In this study school composition is measured by the estimated proportion of students with migrant backgrounds at school, the estimated proportion of students from economically disadvantaged family backgrounds, and as well by the average educational level (for students' parents) at school. The proportion of migrant students and the proportion of students from economically disadvantaged families are based on the principals' estimates, but the third, the average educational level, is aggregated information from the level of classroom⁷⁶.

As school compositional effects, here defined by the student population at school, might not affect students' achievement directly it is likely to affect other relationships at school which in turn will have an effect on students' achievement. It might relate to learning climate, student relationships⁷⁷, teacher expectations, teaching styles/ practices, disciplinary climate, course content, to mention some examples. In this sense school composition might be regarded more as a proxy for a number of possibly underlying relationships⁷⁸.

Before investigating the eventual effects of school factors in the final modeling, it is informative to first review the information more descriptively. We start with the actual distribution of students across different school settings.

Considering the 13 countries involved in this analysis, an average of about eight out of ten native students are in schools with at most 10% of migrant student. This represents a school for four out of ten migrant students. Less than five percent of native students are in schools where migrant students are in majority, compared to a quarter of 1st generation migrant students. (Table 13)

These patterns represent an average across the 13 countries, but country variation is considerable. Scotland have almost all students (95%), but also France and Italy and the Netherlands have a large majority of students (80-90%) in schools with the lowest percentage migrant students (0-10%). For Austria less than half their students are in the corresponding type of school. Latvia has a considerably higher percentage of 1st generation migrant students within schools dominated by migrant students, between 75 and 80 percent. Also England has about half the group of 1st generation migrant students, and over 40 percent of 2nd generation students in schools dominated by migrant students.

Table 13 Percentage of native and migrant students in schools with different proportion of migrant students in 13 European countries

| School composition – percentage of migrant students | Native students (%) | 1 st generation migrant students (%) | 2 nd generation migrant students (%) | Total (%) |
|---|---------------------|---|---|-----------|
| 0-10 | 79.9 | 43.9 | 43.5 | 75.5 |
| 11-25 | 10.9 | 17.0 | 19.9 | 11.8 |
| 26-50 | 5.0 | 13.6 | 21.2 | 6.7 |
| >50 | 4.2 | 25.5 | 15.4 | 6.0 |

As some more than half the group of native students is in a school with the lowest percentage of students from poorer family backgrounds (between 0 to 10 percent) this is representative for a lower percentage of migrant students. For migrant students it is more common to be in schools with a higher percentage students from poorer family backgrounds. Three out of ten migrant students are in schools where a majority of students come from poorer family backgrounds, representative for less than one out of ten native students. (Table 14)

⁷⁵ Portes ,A and Hao, L (2004)

⁷⁶ As a general principle the analyses of the school level include factors already defined in modeling the level of classroom and teaching, as aggregated information. The PIRLS design in which schools are representatively selected at the country level in a first step, and classes are selected to represent the school in a second step, admits for such aggregation of information.

⁷⁷ See for instance Entorf, H, Lauk, M (2006) who found, in analyzing peer effects in different educational systems for migrant and native students in PISA, that peer effects are more pronounced in ability differentiated school systems as compared to more comprehensive systems.

⁷⁸ Willms (1986)

Countries differ also in terms of this school characteristic. Whereas for instance Spain and Flemish Belgium have a higher percentage of students within schools with no or few students from poor families England represents a contrast pattern.

Table 14 Percentage migrant and native students in schools with different proportions of students from economically disadvantaged homes in 13 European countries

| School composition – Percentage students from economically disadvantaged homes | Native students (%) | 1 st generation migrant students (%) | 2 nd generation migrant students (%) | Total (%) |
|--|---------------------|---|---|-----------|
| 0-10 | 54.2 | 34.5 | 26.6 | 51.2 |
| 11-25 | 26.6 | 19.5 | 26.0 | 26.3 |
| 26-50 | 10.7 | 17.6 | 15.8 | 11.4 |
| >50 | 8.5 | 28.4 | 31.6 | 11.1 |

The two characteristics of schools are related to some degree⁷⁹. Four out of ten students in schools dominated by migrant students are in schools dominated by students from economically disadvantaged families. More than half the students in schools with at most 10 percent migrant students are in a school with the same lower percentage students from poorer family backgrounds. (Table 15) The patterns for native and migrant students differ. For more than six out of 10 migrant students whose school is dominated by migrant students they are in a school with a majority of students from poorer family backgrounds. This is representative for less than a quarter of the corresponding native student group who are in a school dominated by migrant students. (Not in table)

The third characteristic used for the student composition at school, the average parental educational level, is related mainly to the proportion of students from economically disadvantaged home backgrounds, and not so much to migrant proportion⁸⁰. (Not in table)

Table 15 School composition - percentage students in schools with different proportion of migrant students across schools with different proportion of students from economically disadvantaged home backgrounds

| School Composition | Proportion | Of migrant | Students at | School | |
|--|------------------------|-------------------------|-------------------------|-----------------------|-----------|
| Proportion of students from economically disadvantaged homes | 0-10% migrant students | 11-25% migrant students | 26-50% migrant students | >50% migrant students | Total (%) |
| 0-10 | 57.0 | 34.6 | 18.8 | 29.7 | 50.0 |
| 11-25 | 27.1 | 28.7 | 26.4 | 12.6 | 26.3 |
| 26-50 | 8.7 | 15.8 | 30.0 | 17.8 | 11.6 |
| >50 | 7.2 | 20.8 | 24.8 | 39.9 | 12.1 |

Some countries have a more pronounced pattern of segregation in terms of the combination of poorer family backgrounds and migrant proportion at school. This is the case for the Netherlands, Sweden, Germany and Austria⁸¹, whereas for other countries there is no relationship, as for Scotland, or an opposite pattern, as for Latvia where schools characterized by a majority of students from poorer family backgrounds are predominantly native⁸².

⁷⁹ A significant correlation of .332

⁸⁰ -.415 and -.137 in relation to schools proportion of students from economically disadvantaged family backgrounds and schools proportion of migrants students respectively (Pearson correlation coefficient)

⁸¹ Correlation coefficients are for Netherlands .685, Sweden .632, Germany .526 and Austria .498. For Sweden this is confirmed, as pointed out by Szulkin, Jonsson (2007), by the national descriptive statistics which shows a clear pattern of both ethnic and socio-economic segregation in schools.

⁸² With the correlation coefficients of .052 and -.247 respectively

The patterns of students in schools across these 13 European countries clearly indicate that there is not much at random assigning students to schools. The nonrandom processes determining at large where students go to school include for many countries socioeconomic and ethnical segregation and for some countries also residential segregation comes into play⁸³.

On schools policies/practices

Other information used for the analysis of school factors relate to school's policy/practice. Questions to the principals regarded if the school had its own written curricula in reading, if there were any guidelines for coordinating reading activities between teachers, and if there were any school based programs for teachers. School policies/practices do not vary substantially in relation to the share of migrant students, but vary in relation to the percentage students from disadvantaged economic family backgrounds. For about two thirds of students in schools with a majority of students from poorer families their school has an own written curriculum for reading. As compared with schools with the lowest percentage of students from poor family backgrounds a higher percentage of students in schools with a majority of students from such backgrounds are taught by teachers who were offered a program for developing their reading literacy instruction. As this pattern might be regarded as professional development activities for teachers it fits with recommendations from research pointing to the importance of assigning more experienced teachers to classes and schools with higher proportions of students from economically disadvantaged family and/or migration backgrounds⁸⁴.

Not many students are in schools however that provide reading instruction in different mother tongues, a situation for less than a fifth of students in these 13 countries. It is more common however for students in migrant dominated schools, a service for about 44 percent of students where an estimated fifth of students actually receives/uses it⁸⁵.

For about nine out of ten students the school includes a library. To reflect school's resources, principals were asked to indicate how much school's capacity to provide instruction was hindered by a shortage or inadequacy of different aspects. This included a shortage of qualified teaching staff, teachers with a specialization in reading and, in particular for migrant students, a shortage of second language teachers. It is noticeable that as it is not schools with a large percentage of migrant students but schools with between 11 to 25 percent that complain to a higher degree about a shortage of second language teachers.

For school's practices keeping in contact with students' parents there is a general pattern of at least 2-3 times a year visible, with no differences in regard to schools with different student composition. Contacts relate to activities such as sending progress reports, making invitations to events or informing about the school (newsletters, calendars) and teacher – parents' conferences.

⁸³ Raudenbush and Willms (1995)

⁸⁴ Rivkin, S.G., Hanushek, E.A., Kain, J.F (2005)

⁸⁵ Differences in schools practices in regard to offering students instruction in their mother tongue depend on at least two circumstances. It could indicate a school's choice between providing more liberally or more restricted this service when needed. But it could also reflect differences in the student population, where not all migrant students are in need of such services. An argument for the latter might be found in the discrepancy between the percentage offered and the percentage received such instruction in the migrant dominated schools.

Modeling the level of school – context and practice

The information displayed above has been included in a first step of the modeling. As for the level of teaching and classroom the logic is to investigate on the one hand the influence of more objective relationships at school and on the other hand specific policies/practices applied.

Reflecting school context three measures of student composition are included: Migrant proportion⁸⁶, the proportion of students from economically disadvantaged family backgrounds and average parental education. In addition it was included if the school provides mother tongue instruction, the average of second language teachers, and the perceived shortage of such teachers. Also included in the model is if the school has a library and the average computers available in classroom⁸⁷. Representing the school's practices/policies information on the existence of guidelines, programs and written curricula as well as if schools keep in contact with parents were included.

As noted above the individual students are for this analysis stratified in different groups based on the classroom composition. The effect is estimated for both native and migrant students in consideration of being student in a class with, 0-10, 11-25, 26-50 and more than 50 percent migrant students respectively. As reference group for the analysis is the group of native students in classes with between 0 – 10 percent migrant students, representing the majority of students, about 62 percent of the total group.

The two measures at the school level, migrant composition and proportion of students from economically disadvantaged family backgrounds, were tried out initially in some different categorizations. Schools with between 0-10 percent students have generally been defined as reference group for the analyses, the by far more normal school characteristics for students in 4th grade in these 13 European countries. A school with 0 to 10 percent migrant students is the school for almost 7 out of 10 students and a school with 0 to 10 percent students from poorer family backgrounds is the school for about half the group of students.

A stronger negative effect is visible in schools with a higher proportion of students from economically disadvantaged family backgrounds, whereas migrant proportion is not so clearly related to students' achievement. However, as preliminary analyses indicated a relation between the two measures of student composition (compare above) the final modeling uses a combined measure.

Thus, whereas the categorization of classroom is based on four categories the modeling of school as based on a three group categorization made for the respective two proportions at school. The logic of applying a broader categorization at school as compared to the classroom level is given by an assumption made of schools and classrooms different impacts. As student composition in class is argued to affect students on a more elaborate and direct level, it is argued to affect students' achievement more broadly at the level of school⁸⁸.

The three group categorization reflect schools with 0-10, 11-50 and more than 50 percent migrant students (M1, M2, M3) on the one hand and schools with 0-10, 11-50 and more than 50 percent students from economically disadvantaged family backgrounds (D1, D2, D3) on the other hand. The categories were combined, in D1M2, D1M3, D2M1, D2M2, D2M3, and so on, in total eight different types of schools⁸⁹. At the one end of the scale is the group of schools with not more than 10 percent of migrant students and not more than 10 percent students from economically disadvantaged family backgrounds, D1M1. This category school serves as reference point in studying the effect of school composition. At the other end of the scale is the group of schools with more than 50 percent of migrant students in combination with more than 50 percent

⁸⁶ Expressed in the questionnaire to principals as the approximate percentage of students at school who do not speak the language of assessment as their first language

⁸⁷ Both the average of computers available and the average of teachers with a background in second language learning are aggregated information from the level of classroom.

⁸⁸ How class is composed is likely to make a difference on a finer level, such as including 30 or 40 percent migrant students. At the school level it is more likely to affect in terms of schools being either predominantly native or predominantly migrant or mixed, i.e., more broadly.

⁸⁹ The categories included are read for D1M2 (schools with 0-10% students from disadvantaged economical families and 11-50% migrant students), D1M3 (schools with 0-10% students from dis econ backgrounds and >50% migrant students), D2M1 (schools with 11-50% students from dis econ backgrounds and 0-10% migrant students), and so on up to the last category D3M3 representing schools with more than 50% students from disadvantaged economical families and more than 50 % migrant students

students from poorer family backgrounds, D3M3. It should be noted that as this information is given by the principal there is no connection to the individual students. As such, the D3M3 category school could signify a school where the migrant students in majority come at large from poorer family backgrounds. It could also mean a school where the poorer family backgrounds at large are represented by the minority group of native students at school.

The results are depicted in the table below. Individual student factors are located to the left and school factors to the right in the table.

The patterns are opposite for native and migrant students being situated in different kinds of classrooms. Whereas for migrant students there is a negative effect about minus 10 – 11 scale score points of being in classes with up to 50 percent migrant students, there is no effect of a class with a majority of migrant students. For native students there are no significant effects for being in classes with up to 50 percent migrant students, but a negative effect of about 11 scale score points for classes where migrant students are in majority. The estimated effects are based on the comparison with the reference group of native students in classes with between 0 to 10 percent migrant students.

The proportion of migrant students at school is significant in combination with a higher proportion of students from economically disadvantaged family backgrounds. As such, schools with a low percentage of students from poorer family backgrounds have no effect also when combined with a higher percentage of students with migrant backgrounds. Schools with a combined highest percentage of migrant students and students from poorer family backgrounds have the strongest negative effect for students' achievement, in PIRLS overall reading ability. Effects are estimated in reference to schools with at most 10 percent students from economically disadvantaged family background and as well at most 10 percent migrant students.

The presence of a library, and the availability of pc in the classrooms are positive for students overall reading ability, whereas both the provision of mother tongue instruction and the presence of teachers with a background in second language learning are not significant and thus, are not included in the model, Table 16.

At the policy/practice level to send progress reports home to students' parents and to have conference with parents, in group or individually, are both positive for students' achievement in overall reading ability in these 13 European countries. Other studies have also concluded the positive role of schools better communication with parents for students reading achievement⁹⁰

Factors at the individual student level do not change markedly when introducing the level of school. Given that individual student factors did change to some degree when introducing the circumstances in classroom and teaching (compare table 11), introducing conditions at school do not contribute to further reduce their impact on students' overall reading ability.

⁹⁰ See for instance Parcel T.L, and Dufur, M.J (2001)

Table 16 Variables at the school level (HLM)

| Variables | Estimated individual student coefficients/HLM Level 3 School | | | Estimated school coefficients/HLM Level 3 |
|---|--|--|--------------------------------------|---|
| Overall reading ability | Sigma squared (3122.48) | | | |
| <i>Individual student level</i> | | | <i>The level of classroom/school</i> | |
| <i>A stratification of students in different class categories</i> | | | <i>Context</i> | |
| Migr0-10 | -11,36 (3.65) | | SES average educational level | 13,77 (2.49) |
| Migr11-25 | -9,66 (4.05) | | D1M2 | n.s |
| Migr26-50 | -10,82 (3.31) | | D1M3 | n.s |
| Migr>50 | n s | | D2M1 | n.s |
| Nat11-25 | n.s | | D2M2 | -5,41 (2.22) |
| Nat26-50 | n.s | | D2M3 | -15,70 (5.80) |
| Nat>50 | -11,10 (5.25) | | D3M1 | -12,58 (3.52) |
| <i>Individual characteristics</i> | | | D3M2 | -17,79 (3.99) |
| Unemployed parents | -6,69 (1.70) | | D3M3 | -25,65 (6.41) |
| Lower educated parents | -23,51 (2.12) | | PC | 4,08 (2.06) |
| >200 Books | 6,47 (0.99) | | Library | 8,90 (1.95) |
| <25 Books | -22,46 (0.99) | | <i>Practice</i> | |
| Students Own Books | 23,26 (1.41) | | Written reports sent home | 4,89 (1.96) |
| PC at home | 12,19 (1.72) | | Teacher – parent conference | 6,28 (2.85) |
| Daily News | 7,20 (1.12) | | | |
| Boy | -7,62 (1.01) | | | |
| <i>Always speak language of assessment at home</i> | 7,63 (2.92) | | | |
| <i>Never speak language of assessment at home</i> | -32,23 (10.98) | | | |

Significant country differences

Some relationships included in the main model, as represented in the table 14, were of interest to investigate in terms of possible country differences. On the individual student level the effects of family background (lower educated parents) as well as the effect of not speaking the language of assessment at home are varying to a significant degree between countries. They are still defined by country specific relationships also when having controlled for, in addition to the student level factors, factors at the classroom, teaching and school level. How negative it is being native student in migrant dominated classes as well depends on the

country in question. Not so for migrant students, the negative effects being migrant student in different classes do not vary between countries but stays the same⁹¹.

The pronounced negative effect of schools with the combined majority of students from migrant and poor family backgrounds is constant, the same, for these countries. However, what effect schools with a majority of students from poorer family backgrounds and up to 50 percent migrant students have on students' achievement is varying significantly. Schools averaged parental educational level has also a varying effect for these countries. How much it means for students to be in schools with higher or lower educational status depends as such on the country in question.

The model for 1st and 2nd generation migrant students and for migrant students only

The model of the individual students' level and the model of the level of teaching and classroom factors included an analysis of 1st and 2nd generation migrant students respectively. For the modeling of school factors, an extended analysis of the effect of being 1st and 2nd generation migrant student respectively in different classroom settings has been performed. (See appendix 4) The reference group is the same, namely native students in classes with between 0 to 10 percent migrant students. Reviewing the results there are indeed differences between the two groups of migrant students. These differences at large point in the same direction as the analysis performed at the level of classroom and teaching (compare table 11) but adds to it⁹²

Being 1st generation migrant student in class rooms where at least 10 percent other students have a migrant background affects reading literacy negatively. The only classroom with no effect on the performance is the homogeneous class with predominantly native students. The negative effect is more pronounced in the heterogeneous classrooms with between 11 and 50 percent migrant students. In classrooms with a majority of migrant students the negative effect is less pronounced, an estimated about 15 scale score points. The effect of being 1st generation migrant students in classes with at most 10 percent migrant students is not significant. A possible conclusion for 1st generation migrant students is that they fare better in more homogenous than mixed classrooms, considering the student composition in terms of migrant proportion.

Being 2nd generation migrant student, represent an opposite pattern. The only classroom in which performance is affected negatively is the native homogeneous class, i.e., with 0-10 percent migrant students. Other classrooms, composed with more migrant students, mixed or in majority, do not affect 2nd generation migrant students overall reading literacy. (Appendix 4)

The model, as represented in the Table 16, was tried out also for the small group of migrant students. Due to the much smaller sample size, but also because the final school model include a larger set of indicators to be estimated, not all indicators proved significant. The estimated model, based on the small group of migrant students only, stays much the same as in Table 16. Some indicators are less pronounced when comparing effects within the group of migrant students. This relates to the effect of lower educated parents and the effect of students own books at home. However, there are some more striking differences, both on the level of school and on the individual student level. At school, the effect of computers is markedly more pronounced for migrant students overall reading literacy, about 23 compared to 4 scale score points in Table 16. There is as well a more pronounced effect of the school SES, as measured in the averaged parental educational level, about 20 compared to about 14 in Table 16. It is as well interesting to note that the larger gender effect remains for migrant students, also when including the factors at the school level. An estimated 12 scale score points – advantage girls⁹³ is demonstrated by the analysis. (Appendix 4)

⁹¹ With the exception of the variation between countries of what it means for the overall reading ability for migrant student in classes with more than 10 percent and at the most 25 percent of migrant students

⁹² The pattern achieved is quite the same even if extending the reference group to include all native students, not only native students in 0-10 percent migrant classes.

⁹³ An attempt to include teacher gender in the model was made, in order to rule out this as a cause for the larger gender difference for migrant students. However, results indicated clearly that teacher gender has nothing do to with this larger gender effect for migrant students.

Concluding – the effects of various conditions at school

The varying conditions at school and what effect these might have on students overall reading ability was the target of this final chapter. Including in the model both the contextual school factors and the practice of school complete the analysis of migrant students overall reading ability. School factors were introduced in the model controlling for factors arrived at in previous analysis at the individual student level and the level of classroom and teachers. To accommodate for the level of classroom and teaching these factors were aggregated and attributed to the level of school and the student group was stratified in terms of classroom composition.

All in all the analysis demonstrates that also school conditions have an effect on students overall reading ability. In particular it is a question of student composition of school. The results indicate quite clearly that there is not much random assignment of students to schools, and for some countries the segregation pattern is more marked. In addition, the effect of segregation is clearly negative for students overall reading ability. A positive composition effect is associated with an on average higher parental educational level at school. The negative effect is mainly associated with high percentage students from economically disadvantaged families, and not so much from proportion of migrant students. However, the most negative effect on students' achievement is found in schools with the combined features of a majority of students from poorer family backgrounds and a majority of students with foreign background.

Controlling for school compositional effects there is still a marked effect of being student in different classrooms – for migrant students. However, an extended analysis revealed that the effect of classroom composition mainly relates to, and is much more pronounced for 1st generation migrant students. It is interesting to note there is not much of a composition effect for 2nd generation migrant students. For native students, the one class negative for their overall reading ability is the class with a majority of migrant students, and the effect varies between countries included. Otherwise student composition in class has no impact on native students' achievement in overall reading ability.

It is mainly the contextual setting in school that matters for students overall reading ability. In addition to the student composition it is positive for instance for schools to have a library, and to have the availability of a pc in the classrooms. The pc has a much stronger impact on migrant students' achievement. Two of the indicators used, however, target policy/practice applied at school and they do have an impact. It relates to the strategies by which schools keep in contact with students' parent. Both meetings with parents and school reports sent home to students' parents affect achievement.

Overall conclusions

This report uses data from PIRLS2006 for a study on which factors matter for migrant students overall reading ability. Information on the individual student level, the level of classroom and teaching and the level of school are included. The analysis is based on the total student group in altogether 13 European countries. In focus is the gap in performance between native and migrant students. A working assumption is that conditions on different levels will have an impact on students overall reading ability, and that some factors will work to explain the gap between native and migrant students achievement. The eventual different effects for 1st and 2nd generation migrants have been considered throughout the analyses. The necessity to acknowledge the variation within the group of migrant students is argued. As the percentage of migrant students is comparatively small per country, no specific country analysis has been performed. However, supplementary analyses in terms of the main models functioning for migrant students only have been performed, based on all 13 countries involved.

Factors at three different levels

The modeling of what matters for students overall reading ability have demonstrated the importance of factors at all three levels. Although factors at school, teaching and classroom levels have an impact on the overall reading ability, the strongest impact was found for students' individual backgrounds. This is indicated in the reduction of the initial gap between native and migrant students of about 39 scale score points to about 14 when controlling for individual factors. As such, the study confirms what a number of other studies have concluded, namely that family background matters a great deal for students' achievement⁹⁴.

Students' individual and social backgrounds matters

Students' social background has been estimated in two separate indicators, parents' educational levels, and their connection to labor market respectively. The stronger effect is related to parents' educational levels but there is an effect also of their connection to labor market, being employed or job-seeking.

The question of language spoken at home has a large impact on students' overall reading ability. Whereas for migrant students specifically the effect of always speaking the language of assessment at home is positive, the opposite, to never speak the language of assessment at home is more pronounced and negative for the overall reading ability. The effect of never speaking the language of assessment at home represents as well the most pronounced difference between countries. It is also a circumstance more critical for 1st than for 2nd generation migrant students.

The assets at home having an impact are the number of books, students own books, the availability of a pc and the presence of a daily newspaper. As books at home and students own books are of general importance for student achievement, and as such not much different for migrant and native students, it is noteworthy that a comparatively larger proportion of migrant students comes from homes with very few books and do not have their own books.

Also related to the individual student level is gender where the general pattern reflects an advantage to girls in overall reading ability. For migrant students however the gender difference increases as factors at the level of teaching and classroom are included, and remains throughout the final analysis when including school factors. Since the analysis have controlled for the different settings, in both classroom and school, and various other circumstances as well, it is not easy to interpret the increased difference. To further control possible factors that might influence this relationship, the analysis included teacher gender but with no significant effect.

All the individual factors of significance for students overall reading ability are also significantly different between the countries involved in the analysis. Research focusing on the question of inequality within the European context concluded the relationship between individual social background and educational assessment to be nation specific⁹⁵. However, with the exception of the factor language spoken at home with a

⁹⁴ For a research review, see Sirin (2005),

⁹⁵ Schlicht, R, Stadelmann-Steffen, I, Freitag, M (2010)

pronounced large variation between countries, the individual factors are moderately different between countries.

Summing up on the individual factors importance for students achievement, this is expressed in the estimated huge gap in overall reading ability when contrasting students with the possible worse and possible better conditions at home, as illustrated in the report by migrant boys versus native girls. It is a case in point that migrant boys as a group are the most vulnerable students at school, and especially boys without much speaking to their advantage at home. As reading literacy is of main importance in terms of further education special attention is motivated for the group of low performing migrant boys in school.

Factors at the level of classroom and school...

Classrooms including both the native high performing girls and the migrant low performing boys could well represent a normal working condition for many teachers today. The question has been addressed how teachers are in fact equipped to handle such diversity in the classroom⁹⁶.

...and the significance of student composition...

The analysis pointed to student composition, in classroom and at school, as a factor that matters for students learning and achievement. At both levels it has an effect on students overall reading ability, however playing out differently for native and migrant students, and as well for 1st and 2nd generation migrants. Results are much in line with an argument pointed out by research that composition effects might not be the same for all students⁹⁷.

For these 13 countries the analysis of schools characteristics revealed a generally segregated school pattern, although countries differ in this respect. A high proportion of migrant students generally associates with a high proportion of students from economically disadvantaged backgrounds. The negative effect on students overall reading ability is primarily related to the proportion students in school that come from poorer families, although the negative effect increases with a higher percentage of migrant students.

In which schools students reside are different for native and migrant students. Whereas only a few percent of native students are located in schools with a majority of migrant students and less than a tenth are in schools dominated with students from a poorer family backgrounds, these school characteristics are much more representative for migrant students. For the majority of migrant students in a school where most of students are migrants their school is also characterized by a majority of students from poorer family backgrounds. For native students situated in a school with a majority of migrant students, this is more typically a school with few students, 0 to 10 percent, from poorer family backgrounds. Also the average educational level for students' parents was included as a school characteristic where a higher educational level is positive for students' overall reading ability.

The school level analysis included and controlled for factors arrived at, at the individual students' level and at the level of classroom and teaching, but used a stratified student group. Each native and migrant student was situated in his/her specific category of classroom, based on the proportion of migrant students in class. Considering the actual classroom patterns for students, native students are generally situated in more native homogenous classes, on average about 8 percent migrants in class. Migrant students represent a more even distribution across different categories of classrooms, but on average about a third, 33 percent, of migrant student.

...as different for migrant and native students

For native students to be student in any category of classroom has not much effect on their achievement, i.e., overall reading literacy. However there is one exception to this pattern, and this is being native in a class with a majority of migrant students which has a negative effect, although more moderate. For migrant students there is oppositely no significant effect of being in classes with a majority of migrant students, but a moderately negative effect associated for being student in classes with a lower proportion of migrants. For

⁹⁶ OECD (2010b)

⁹⁷ Willms, D (1986)

1st generation migrant students the class matters even more. The results indicate that homogenous classrooms, with either native or migrant students, are the more optimal study condition for 1st generation migrant students. A more mixed classroom in terms of migrant and native students is more negative.

That 1st generation migrant students' fare better in homogenous classrooms might depend on teachers' situation to teach more focused in more homogenous classes. This is likely to matter more for 1st generation migrant students. Also in a class including mainly native students, visibility and attention to a smaller identifiable group of migrant students is more likely. In addition the positive effect in such class could depend on being exposed to a higher degree to native friends, social contacts and native language alike, circumstances likely to affect 1st generation migrant students specifically.

Additional important contextual factors

For migrant students it is important to have a teacher with a background in second language learning/teaching. Another factor highly significant for migrant students (but not so much for native students) is having a pc in the classroom. On the level of school, for students alike, the communication between school and students' homes is important.

Discussion of results and some possible implications

Considering migrant students classroom context, in order to promote their chances to succeed in reading a possible policy implication is to ensure that they are taught by a teacher with a competence in second language learning. In terms of the classroom composition effect for 1st generation migrant students where a mixed classroom setting is more pronounced negative, there is a case to be made also for developing policies that promote teachers competence to teach in more diverse student settings. The question has been raised how teachers are equipped to handle an increasing diversity in classroom, whereby initial teacher education and/or teacher professional development is targeted. Thus it could be a case argued for teacher training programs to include as a general component the competence to teach in multicultural or more generally to teach in diverse student settings, including students with varying 'entrance values'. However, it could also be strategic to consider locating 1st generation migrant students in more homogenous classroom settings, as for instance in classrooms with predominantly native students.

Also the pc in the classroom and in school has a much more pronounced positive effect for migrant students. The results indicate that teachers in migrant dominated classes more typically use the computer software and internet as part of their teaching. As related to teaching second language learners, it could well be that a larger variety of techniques used in the classroom is of benefit. Perhaps is this an example of a more concrete policy measure that could be undertaken to enhance migrant student overall reading abilities.

More general policies, directed to all students, are related to informing and encouraging schools to be in closer contact with students' parents/homes. The results indicate significant positive effects of schools arranging conferences for parents – teachers meetings, and as well for school sending progress report on students' achievement to students' homes.

As the vast majority of migrant students represent another mother tongue not many schools provide for mother tongue support in reading instruction. Although it is a more frequent practice in schools with high proportion of migrant students, only an estimated about fifth of students are supported in this matter. The more pronounced country effect for language spoken at home might be due to a difference in migration profile. It is a case that the migrant population in countries might vary in terms of migrants' general knowledge of the new country, and that it might include as well knowledge of the language spoken. Such knowledge would facilitate the general integration into society⁹⁸. If a majority of migrants speak a mother tongue which is not distant in relation to the official language spoken, let's say different versions of English, the effect of never speaking the language of assessment at home will be less, as compared to if the majority of migrants speak mother tongues which are remote to the lingua spoken. However, it could also relate to different policies as regards learning the official language, or stand in relation to the stance taken to other mother tongues - as either entertained, compensated for, or ignored.

An alternative for schools and educational systems would be to embrace this competence that migrant students bring in speaking another language than of the host country. The question could be phrased how to maintain or even how to build on and develop bilingualism, a worthwhile goal in itself⁹⁹. To maintain one's mother tongue has bearing on questions of identity and culture. For schools to regard students other mother tongues as a capital would contribute to secure migrant students' self-esteem and formation of identities, which could be positive for their student status¹⁰⁰.

As such, the knowledge of another language, as represented by migrant students other mother tongues, could be regarded an asset rather than a deficit in the educational system. Such perspective would correspond to the generally held positive view on speaking more than one language, represented in most countries today. However, perhaps in too many countries there is a contradiction in terms of language. While trying to develop foreign language learning from earlier ages on, and where the proficiency in several languages represents a national goal, the question how to regard minority languages remains unsolved¹⁰¹.

⁹⁸ Hoschshild, J L and Cropper, P (2010)

⁹⁹ Christensen, G and Stanat, P (2007)

¹⁰⁰ Eurydice (2009)

¹⁰¹ See for instance Helot, C and Young, A (2002)

A pattern of segregation was revealed by the analysis, considering schools student composition, and as well in considering different patterns for native and migrant student in terms of in which classroom they reside. The negative effect of both school and classrooms are visible, and not least for migrant students. Policies should recognize that composition at school and in classrooms has different effects on different group of students, as in this report demonstrated for 1st generation migrant students¹⁰². Both classroom and school composition are however likely to represent various conditions in the background rather than, or in addition to, exerting a more direct effect in relation to student achievement. It could for instance relate to teachers' higher or lower expectations on students' achievement or to varying teaching practices, or to the learning or disciplinary climate, peer relationships and/ or perhaps chosen course content in the class/ school¹⁰³. Students from the same class or from the same school tend to spend time together also outside school, including studying and doing homework.

Altogether the effects of student composition in classroom and in schools are well worth considering, especially since they are likely to extend over and above the actual classroom and school situation, and might affect student aspirations and achievement on a longer time perspective. National policies could do well to address the question of segregation in the educational system.

A wider outlook

As this study has pointed to some possible factors of importance on the level of school and classroom, the individual student factors are still strong also when including important school and classroom relationships. Hence, it might be concluded that school, and teaching, does not in fact manage more than marginally to compensate for students different backgrounds. Research in the sociology of education has focused on the extent to which the effects of family SES on educational achievement are mediated, enhanced or might be neutralized by school context. Research studies have also concluded the effect of family SES as resilient across different school contexts, although school context can affect the strength of the relationship¹⁰⁴.

The large influence of social background factors on student achievement plays a pivotal role also in public affairs. It can be regarded a waste of human capital, as educational achievement might depend more on social background than ability. The transmission of social background status from parents to students by way of the educational system also circumvents the ideal of a meritocratic system. It is also negative with such large influence of students' social backgrounds in regard to the role that educational systems play in the functioning of democracies, where equality in education is imperative¹⁰⁵.

As this report has concentrated on the educational achievement of migrant versus native students, it has only briefly touched on the question of country effects. Comparing countries in terms of how successful countries are in integration politics would include an analysis of the system level. In such an analysis aspects such as migration policies and practices and educational policies for incorporating 1st and 2nd generation immigrants at the country level could be targeted¹⁰⁶.

¹⁰² Raudenbush, S.W and Willms, J. D (1995), Willms, J. D (1986)

¹⁰³ Willms, J. D (1986)

¹⁰⁴ Portes, A., MacLeod, D (1996)

¹⁰⁵ Schlicht, R, Stadelmann-Steffen, I and Freitag, M (2010)

¹⁰⁶ Hochschild, J.L and Cropper, P (2010)

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APPENDIX 1-4

Appendix 1

PIRLS2006 Distribution of native and migrant students in PIRLS2006 for countries included in the analysis

| | Native students % | 1 st generation migrant students | 2 nd generation migrant students |
|-------------------|----------------------|--|--|
| Austria | 84.5 | 3.9 | 11.6 |
| Denmark | 91.3 | 2.5 | 6.2 |
| France | 86.4 | 2.7 | 10.9 |
| Germany | 84.2 | 3.9 | 11.9 |
| Italy | 93.9 | 3.2 | 2.9 |
| Latvia | 78.8 | 18.6 | 2.4 |
| Netherlands | 88.3 | 2.4 | 9.3 |
| Spain | 89.6 | 7.8 | 2.7 |
| Sweden | 86.8 | 3.4 | 9.8 |
| England | 85.6 | 6.8 | 7.6 |
| Scotland | 94.1 | 2.2 | 3.7 |
| Belgium (Flemish) | 91.9 | 3.0 | 5.1 |
| Belgium (French) | 80.7 | 6.8 | 12.5 |

Appendix 2

| Variables | Baseline model (MODEL 0) | Migrant – native status (MODEL 1) | +Socio /economic status (MODEL 2) | +Home possessions (MODEL3) | +Individual student characteristics (MODEL4) |
|--|--------------------------|---|-----------------------------------|----------------------------|--|
| Overall reading ability | | 1 st generation – 496, 09 (8.20 ¹⁰⁷) Sigma squared (4595,76) Native – 542,79 (5.46) Sigma squared (4598.31) | Sigma squared (3937.11) | Sigma squared (3545.91) | Sigma squared (3483.36) |
| 1st gen | | -46, 65 (7.00) | -36,46 (4,78) | -27,39 (5,01) | -19,57 (3.44) |
| Unemployed parents | | | -14,93 (3.32) | -10,39 (2.41) | -10,16 (2.26) |
| Lower educated parents | | | -40,76 (4.05) | -30,89 (3.93) | -28,63 (3.26) |
| >200 Books | | | | 10.21 (2.94) | 10.61 (2.98) |
| <25 Books | | | | -25.64 (3.03) | -25,61 (2.64) |
| Students Own Books | | | | 34.25 (4.44) | 32,19 (4.74) |
| PC at home | | | | 15.60 (3.88) | 14,46 (3.49) |
| Daily News at home | | | | 6.95 (3.12) | 6,96 (3.03) |
| Boy | | | | | -6.10 (1.78) |
| <i>Always</i> speak language of assessment at home | | | | | 6.83 (1.60) |
| <i>Never</i> speak language of assessment at home | | | | | -37.01 (12.12) |

¹⁰⁷ Numbers within parenthesis, if not flagged as sigma square, represent the standard error of the estimated coefficient

Appendix 2

| Variables | Baseline model (MODEL 0) | Migrant – native status (MODEL 1) | +Socio /economic status (MODEL 2) | +Home possessions (MODEL3) | +Individual student characteristics (MODEL4) |
|--|--------------------------|--|-----------------------------------|----------------------------|--|
| Overall reading ability | | 1 st generation – 508,06 (5.26 ¹⁰⁸) Sigma squared (4535,02) Native – 542,79 (5.46) Sigma squared (4598.31) | Sigma squared (3888.00) | Sigma squared (3499.51) | Sigma squared (3430.89) |
| 2nd gen | | -34,77 (2.90) | -24,33 (5.07) | -14,50 (4,63) | -10,52 (4.99) |
| Unemployed parents | | | -13,79 (3.28) | -9,83 (2.59) | -9,83 (2.45) |
| Lower educated parents | | | -39,93 (3.03) | -29,76 (2.59) | -29,04 (3.00) |
| >200 Books | | | | 10.20 (3.18) | 10.69 (3.14) |
| <25 Books | | | | -25.71 (2.92) | -25,78 (2.55) |
| Students Own Books | | | | 31.75 (3.11) | 29,89 (3.56) |
| PC at home | | | | 15.27 (3.32) | 14,46 (3.49) |
| Daily News at home | | | | 7,03 (2.93) | 7,16 (2.93) |
| Boy | | | | | -6.10 (1.78) |
| <i>Always</i> speak language of assessment at home | | | | | 6.86 (1.38) |
| <i>Never</i> speak language of assessment at home | | | | | -30.79 (11.48) |

¹⁰⁸ Numbers within parenthesis, if not flagged as sigma square, represent the standard error of the estimated coefficient

Appendix 2

Migrant students only - Student level Table 8 Model 4

| <i>Migrant students only</i> | Full student model (MODEL4) |
|--|-----------------------------|
| Overall reading ability | Sigma squared (3694.24) |
| Variables | |
| | |
| Lower educated parents | 19,16 (2.58) |
| >200 Books | 9,08 (3.70) |
| <25 Books | -22.72 (2.81) |
| Students Own Books | 20,15 (4.39) |
| PC at home | 17,52 (2.41) |
| | |
| Boy | -6.,85 (2.58) |
| <i>Always</i> speak language of assessment at home | 8,39 (2.79) |
| <i>Never</i> speak language of assessment at home | 16,84 (7.17) |
| | |

Non-significant variables were excluded from the model, representing daily newspaper at home, unemployed parents.

Appendix 3

Teaching and classroom level – 1st and 2nd generation migrants respectively

| Variables | Estimated coefficients introducing Level 2 HLM / teaching and classroom | Estimated coefficients introducing Level 2 HLM / teaching and classroom |
|---|---|---|
| Overall reading ability | 1st generation Sigma squared (3065.97) | 2nd generation Sigma squared (3006.39) |
| | -14,56 (4.89) | n.s |
| Unemployed parents | -7,56 (1.67) | -6.88 (2.09) |
| Lower educated parents | -22,38 (1.00) | -23,09 (1.60) |
| >200 Books | 6.74 (0.97) | 7,63 (1.97) |
| <25 Books | -23,44 (0.94) | -22,99 (1.66) |
| Students Own Books | 24,75 (1.58) | 25,24 (3.13) |
| PC at home | 10,99 (1.66) | 12,62 (2.49) |
| Daily News at home | 6,23 (1.23) | 6,12 (2.09) |
| Boy | -6.82 (1.13) | -6,00 (1.88) |
| <i>Always</i> speak language of assessment at home | 10,04 ¹⁰⁹ (5.24) | 7,81 (3.83) |
| <i>Never</i> speak language of assessment at home | -34.88 (7.80) | n.s |
| <i>The level of teaching and classroom</i> | Context | Context |
| Teacher with a background in second language learning | 3.22 (1.62) | n.s |
| Percent migrants in class | -20,36 (5.32) | -10,46 (5.06) |
| Aver family educational level in class | 17,98 (1.03) | 16,76 (2.18) |
| Available Library/ reading corner | n.s | 4,27 (1.33) |
| Available PC | n.s | 4,71 (1.69) |

The estimates for the respective 1st and 2nd generation migrant students are based on the model excluding non-significant factors. Non-significant factors are included in the table for reason of comparison only.

¹⁰⁹ P.06

Appendix 3

Teaching and classroom level – migrant student only

| Variables | Estimated coefficients introducing Level 2 HLM / teaching and classroom |
|---|---|
| Overall reading ability | Migrant students Sigma squared (3256.00) |
| Lower educated parents | -16,59 (3.09) |
| <25 Books | -19,15 (2.68) |
| Students Own Books | 21,12 (3.97) |
| PC at home | 11,94 (3.94) |
| Daily News at home | 7,96 (2.24) |
| Boy | -11,59 (2.40) |
| <i>Always</i> speak language of assessment at home | 8,10 (2.84) |
| <i>Never</i> speak language of assessment at home | -32,99 (13.80) |
| <i>The level of teaching and classroom</i> | Context |
| Teacher with a background in second language learning | 11,50 (4.82) |
| Aver family educational level in class | 20,70 (5.41) |
| Available PC | 23,33 (5.44) |

Excluded from the model were the non-significant variables; a reading corner, library in the classroom, percent migrants in class, parents' unemployed and many books at home.

Appendix 4

1st and 2nd generation migrant in class – school level

| Variables | Estimated individual student coefficients/HLM Level 3 School | | Estimated school coefficients/HLM Level 3 |
|---|--|--------------------------------------|---|
| Overall reading ability | Sigma squared (3118.53) | | |
| <i>Individual student level</i> | | <i>The level of classroom/school</i> | |
| <i>A stratification of students in different class categories</i> | | <i>Context</i> | |
| Gen1 0-10 | n.s | SES average educational level | 13,79 (2.50) |
| Gen1 11-25 | -22,66 (5.53) | D1M2 | n.s |
| Gen1 26-50 | -25,34 (5.83) | D1M3 | n.s |
| Gen1 >50 | -15,49 (7.83) | D2M1 | n.s |
| Gen2 0-10 | -11,52 (4.78) | D2M2 | -5,55 (2.23) |
| Gen2 11-25 | n.s | D2M3 | -15,74 (5.80) |
| Gen2 26-50 | n.s | D3M1 | -12,72 (3.96) |
| Gen2 >50 | n.s | D3M2 | -18,12 (3.99) |
| Nat11-25 | n.s | D3M3 | -25,78 (5.52) |
| Nat26-50 | n.s | PC | 3,96 (2.06) |
| Nat>50 | -10,74 (5.24) | Library | 8,89 (1.94) |
| <i>Individual char</i> | | <i>Practice</i> | |
| Unemployed parents | -6,44 (1.68) | Written reports sent home | 4,80 (1.95) |
| Lower educated parents | -23,86 (2.15) | Teacher – parent conference | 6,24 (2.85) |
| >200 Books | 6,45 (0.99) | PC | 3,96 (2.06) |
| <25 Books | -22,36 (0.99) | Library | 8,89 (1.94) |
| Students Own Books | 23,36 (1.42) | | |
| PC at home | 12,05 (1.71) | | |
| Daily News | 7,25 (1.12) | | |
| Boy | -7,60 (1.02) | | |
| <i>Always speak language of assessment at home</i> | 6,90 (3.00) | | |
| <i>Never speak language of assessment at home</i> | -26,72 (10.56) | | |

Appendix 4

Migrant students sample - school level

| Variables | Estimated individual student coefficients/HLM Level 3 School | | | Estimated school coefficients/HLM Level 3 |
|---|--|--|--------------------------------------|---|
| Overall reading ability | Sigma squared (3212.00) | | | |
| <i>Individual student level</i> | | | <i>The level of classroom/school</i> | |
| <i>A stratification of students in different class categories</i> | | | <i>Context</i> | |
| | | | SES average educational level | 20,18 (5.22) |
| Migr 11-25 | n.s | | D1M2 | n.s |
| Migr 26-50 | n.s | | D1M3 | n.s |
| Migr >50 | n.s | | D2M1 | n.s |
| <i>Individual char</i> | | | D2M2 | n.s |
| | | | D2M3 | n.s |
| Lower educated parents | -16,90 (3.15) | | D3M1 | n.s |
| | | | D3M2 | n.s |
| <25 Books | -18,36 (2.70) | | D3M3 | n.s |
| Students Own Books | 17,38 (5.51) | | PC | 22,83 (6.26) |
| PC at home | 13,38 (4.49) | | | |
| Daily News | 8,16 (2.38) | | | |
| Boy | -11,99 (4.59) | | | |
| <i>Always speak language of assessment at home</i> | 8,04 (2.73) | | | |
| <i>Never speak language of assessment at home</i> | -32,84 (13.35) | | | |

Not included were the non-significant factors belonging to school – library, home reports and conferences, At the individual level were unemployed parents and many books at home not significantly influencing migrant students overall reading ability

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Abstract

This report on migrant students overall reading ability is part of a larger project on migrants in education. Within the same project a parallel report focuses on what matters for migrant students' overall mathematical ability. Both reports address 4th grade migrant students achievement in European countries. The present report makes use of the IEA study PIRLS2006. The parallel report on migrant students overall mathematical ability makes use of the IEA study TIMSS2007.

This report focuses on 13 European countries participating in PIRLS2006 and who met the criteria of at least 3 percent migrant students in their samples. The analyses performed demonstrate that although a larger impact is found for various factors at the individual student level, factors at the level of classroom and school have an impact as well on migrant students overall reading ability. The study argues the importance of acknowledging the difference within the migrant student group where special analyses are performed for 1st and 2nd generation migrant students. The findings are discussed in terms of possible policy implications.

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