Viktória Ferenc

Invisible for International Assessments: Student Competencies in Subcarpathia

Researchers have been long intrigued by the issue of school choice and the related strategies in a minority context as well as by the consequences of the decision for the individual and the community. Studies[1] examining the school choice of ethnic Hungarian parents from a theoretical perspective have found, among others, that besides ethnically neutral motives (such as the proximity of the school or the ratio of graduates going into higher education), *language-based decisions* (aimed at ensuring children a more successful career and homeland integration than those of their parents' thanks to a high competence in the majority language) are especially important in the ethnic Hungarian communities of the Carpathian Basin. Looking at this linguistic issue alone, our research has shown that parents usually contrast the preservation of the minority language and choosing a minority school to the successful acquisition of the majority language, not conceiving of the latter in an ethnic sense in the first place, but as a practical skill of key importance for their children's future success and social mobility. Since the Hungarian schools of the neighbouring countries of Hungary teach the majority language only in the framework of language classes and with questionable efficiency,[2] parents believe that their children will get by easier in the long term if they learn the state language properly at a majority school. Thus, parents do not necessarily perceive their decision as a step towards moving away from their "Hungarianness" or towards conscious assimilation, but as a reaction to a constraint (i.e. the low-efficiency teaching of the state language at Hungarian schools).[3] But the question arises: don't these families pay too high a price for the acquisition of the

[1] See for example the paper summarizing a research carried out in 2011-12: Papp Z., Attila: Motivations for school choice and minority perspectives. *Minority Studies,* 2013. 99-121. Árendás, Zsuzsanna: Az iskolaválasztás elbeszélései. *Társadalmi Együttélés,* 2012/1; html version without page number. Downloaded from: http://www.tarsadalmiegyutteles. hu/id-17-tarsadalmi_egyutteles_2012_1_szam_arenda.html; 12.10.2014.

[2] Concerning Subcarpathia, see for example: Csernicskó, István: *Megtanulunk-e ukránul? A kárpátaljai magyarok és az ukrán nyelv.* PoliPrint, Ungvár, 2012. 152.

[3] Csernicskó, István: Egy kényszerű „túlélési stratégia": a többségi nyelven való tanulás. *Együtt,* 2011/4. 81-94; Ferenc, Viktória: Nyelvet tanulni, továbbtanulni, „létesülni" – többségi iskolaválasztási stratégiák Beregszászban. *Kisebbségkutatás,* 2013/4. 98-121.

state language? Besides mastering the language of education, other competencies are also critical for a successful adult life, which need to be developed at school age and which contribute fundamentally to the successfulness desired in the long run.

It is precisely through testing these curriculum-independent competencies that international assessments[4] measure the efficiency of the educational systems of the given countries. Following the same logic, our research group[5] gathered data in three Subcarpathian settlements (Berehovo – *Beregszász*, Muzhiyeve – *Nagymuzsaly*, Mukacheve – *Munkács*). With our case study, we attempt to fill the vacuum resulting from the lack of meaningful subsamples concerning Subcarpathian Hungarians in international assessments, (a lack less typical of other ethnic Hungarian communities).[6]

The primary aim of our research was to find out whether the assumptions of parents opting for majority schools are justified: will ethnic Hungarian children, indeed, be more successful if enrolled at a majority-language school instead of institutions offering education in their mother tongue? Or is the price of acquiring the language of education (to a certain extent) that they will produce worse results in certain competence areas than among their peers who study in their mother tongue? In order to verify that, we prepared a test focusing on two major competence areas (reading and mathematics) based on

[4] The biggest international assessments are carried out by OECD (Organisation for Economic Co-operation and Development) and IEA (International Association for the Evaluation of Education Achievement). Such well-known assessments include the *Programme for International Student Assessment* (PISA), initiated by the OECD and conducted every three years since 2000, which focuses on the assessment of reading comprehension, mathematics and science competences. Organized by the IEA, the *Trends in International Mathematics and Science Study (*TIMSS*)* measures students' performance every four years in the areas of mathematics and sciences. Another survey, also initiated by the IEA, deals with the assessment of reading comprehension skills: the *Progress in International Reading Literacy Study (*PIRLS*)* is conducted every five years.

[5] This research project was supported by the Domus Homeland Grant Programme of the Hungarian Academy of Sciences. The lead researcher was Zsombor Csata and Attila Papp Z., Tünde Morvai, Rita Rózsa and Viktória Ferenc participated in the research.

[6] Although Ukraine takes part in TIMSS since 2007 (out of all the international assessments), due to the size of the country and the small ratio of ethnic Hungarians, no data can be retrieved on Hungarians and the language spoken at home from the database of the latest interviews of 2011 (involving 148 schools and 3378 students). On the utilization of the data of international assessments concerning ethnic Hungarians living in the other regions, see Papp Z., Attila: Selecting a Majority-Language School by Hungarian Minority Students, or From PISA Results to Discourses in the Carpathian Basin. *Minority Studies*, 2014, 87-99.

the above mentioned international assessments and their subtasks available. Students were then asked to complete these tests.

The sample

In Subcarpathia, altogether 290 students of 13-15 years of age[7] took our competence tests and the related background questionnaire, among whom some children were studying in Hungarian classes and some attended majority-language classes. Each student completed the test in his or her language of education. If we classify our sample according to that criterion, 39% of the respondents (112 persons) filled in the test in Ukrainian and 61% (178 persons) in Hungarian. This proportion was closer to being fifty-fifty in Berehovo: 43% in Ukrainian and 57% in Hungarian.

From the language of the test and the questions related to language use in the background questionnaire, we could establish with certainty whether students use a different language at home than their language of education. Thus, we can make a comparison between the test scores achieved by the three student groups:[8]

1. Hungarians who attend a Hungarian school (60%)
2. Hungarians who attend a Ukrainian school (17%)
3. Ukrainians who attend a Ukrainian school (21%)

The focal point of our research was Berehovo, the town representing the centre of the ethnic Hungarian bloc in Subcarpathia. This is where we collected 79% of the questionnaires, involving nearly all the schools of the settlement (in total, nine) in our project. Besides that, we also had students fill in the questionnaire in the only Hungarian-Ukrainian bilingual school of Muzhiyeve (7% of the sample) and two other Hungarian schools in Mukacheve (14%). We surveyed all of the classes in the language corresponding to their language of education.[9] Altogether 290 students of 14 classes in 12 schools of 3 settlements completed the test (see *Table 1*).

[7] Based on the international assessments, we chose 14-year-olds as our target group. In Subcarpathia, 14-year-old students are usually in eighth grade, but since classes are not entirely homogeneous, children of a different age were also included in the sample.

[8] There was a minimal proportion (2%) of children who came from Ukrainian families, but attended a Hungarian school. Due to their small number, we will not attempt to analyse the performance of this group in this paper.

[9] In the Ukrainian educational system, dual or mixed language educational institutions are basically two educational institutions functioning in the same building and teaching in separate languages. Thus, in this case, students attending a Ukrainian class are taught only in Ukrainian while those attending a Hungarian class are taught only in Hungarian.

Table 1. *Distribution of the tests filled in by research sites*

Settlement	School	Language of education (classes)	Number of students in survey
Berehovo	Secondary school 1	Ukrainian	21
	Secondary school 3	Ukrainian and Hungarian	37
	Secondary school 4	Hungarian	26
	Secondary school 5	Ukrainian	26
	Primary school 6	Hungarian	14
	Primary school 7	Hungarian	7
	Secondary school 10	Hungarian	12
	Hungarian grammar school	Hungarian	51
	Ukrainian grammar school	Ukrainian	34
Mukacheve	Primary school 14	Hungarian	15
	Secondary school 3	Hungarian	26
Muzhiyeve	Secondary school	Ukrainian and Hungarian	21
Total: 4	**12**	**14**	**290**

The three settlements selected proved to be optimal sites for testing our research hypothesis as they all provide school choice alternatives: both Hungarian- and Ukrainian-language institutions can be found in these settlements, occasionally within the same school building. We had already noted during our previous research that the trend of choosing the majority language in education is quite strong both in locations considered to be ethnic blocs (for Hungarians) and in geographically disconnected settlements where ethnic Hungarians are present only sporadically. This observation was further reinforced by the data gathered during our school visits. For instance, in Berehovo, where parents can choose between several Hungarian schools, the ratio of Hungarian students studying in the majority language varies from 16% to as much as 41% (see *Table 2*).

Table 2. *Hungarians in majority-language education in Berehovo*[10]

School	Language of education	Number of students in HUNGARIAN classes	Number of students in MAJORITY language classes	Hungarians in MAJORITY language classes	Hungarians in MAJORITY language classes (%)
Sec. school 1	Ukrainian	-	826	200	24
Sec. school 3	Hungarian and Ukrainian	230	178	72	41
Sec. school 4	Hungarian	450	-		
Sec. school 5	Ukrainian	-	700	240	34
Prim. school 6	Hungarian	194	-		
Prim. school 7	Hungarian	345	-		
Prim. school 9	Hungarian	95	-		
Sec. school 10	Hungarian – Russian*	105	74	12	16
Total	**-**	**1,419**	**1,778**	**524**	**30**
(%)	**-**	**44.4**	**55.6**	**16.4**	**-**

* Secondary school 10 is the only school in the town, where Russian language education is available.

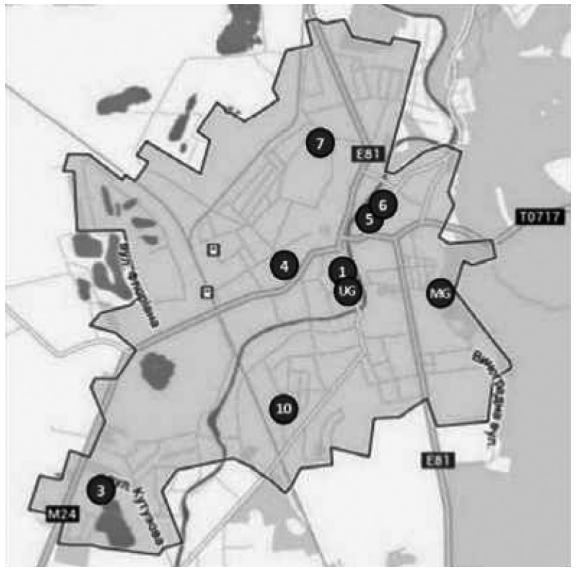
The third research location, Mukacheve constitutes the type of geographically disconnected settlements where ethnic Hungarians are present only sporadically. There is a greater chance that parents will opt for a majority-language school, since the choice of Hungarian institutions is more limited. But in this case, we were also curious to see whether we would find majority-language students in the two Hungarian schools of the town, also studying in a language other than their mother tongue. However, their proportion within the sample turned out to be too small for serious consideration (a mere 2%).

First of all, it is important to mention that the schools included in this research project differ from each other not only with respect to the language of education, but also to their location and social composition. Among the schools of Berehovo, we can find – without regard to the language of education – elite schools (1, 4, 5) with central locations, but some that are on the periphery as well, that tend to attract

[10] The figures concerning Hungarian schools are taken from our research carried out in the academic year of 2011/12, whereas the data for the mixed and Ukrainian-language schools were registered in the second year of the research project (academic year of 2012/13). The figures were supplied to us by the Educational Authority of Berehovo via personal communication.

students from the nearby villages, but less those from the town (3, 10) (see *Figure 1*). We have included Hungarian and Ukrainian grammar schools as a separate category, where of course, we found the most talented, carefully selected children. But to mention the other extreme, the students of one of the Hungarian primary schools (7) that we visited in Berehovo were mostly Hungarian-speaking Roma, while another school (6) also had an increasing number of Roma students.

Figure 1. *Centre and periphery: the location of the schools of Berehovo within the town. (Numbers in the figure and in the analysis refer to schools indicated by that number, UG – Ukrainian Grammar Sch.; MG – Hungarian Grammar Sch.)*



Similar fissures have appeared in Mukacheve, where one of the Hungarian schools (14) can be regarded as a segregated Roma school, located next to the Roma colony on the outskirts of the town, while the other one is the only Hungarian elite school situated in the centre of the town (3). The socioeconomic index scores created on the basis of the background questionnaire that we will present below also reveals differences between the schools.

Heterogeneity with respect to location and social background mostly characterizes the Hungarian schools. Ukrainian schools are more homogeneous in that respect, which greatly determines the

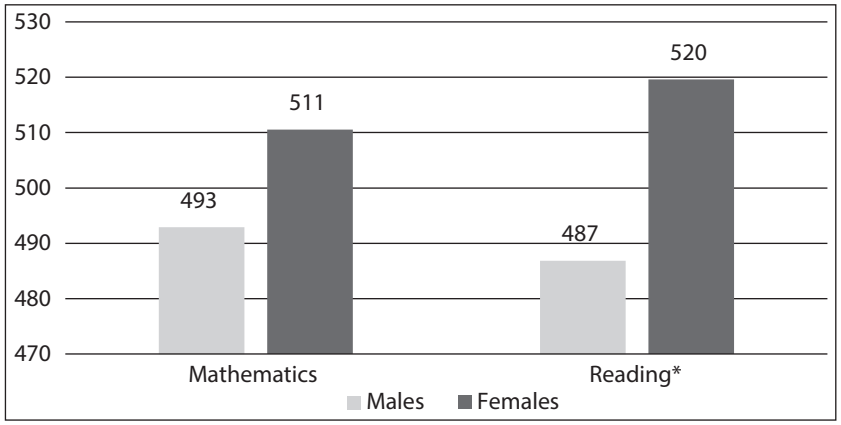
school performance of students in our sample. In our analysis, we will interpret the mathematics and reading comprehension skills of Subcarpathian children participating in our survey first along a few general background variants and then also from a linguistic/ethnic perspective, since we have also looked into minority-related issues. The test was composed of 11 reading comprehension and 13 math tasks, which were evaluated individually, i.e. every student was assigned 24 scores that could be achieved on the 24 test questions. For the sake of clarity, however, we have merged the scores achieved in the subtasks of the given areas into an overall competence value, so in the following, we will be working with a single aggregate math competence value and a single aggregate reading comprehension value per student. The competence values have been established with a standardized variable: the mean of the latter is 500 points and its standard deviation is 100.

School performance along some general and linguistic variables

If we examine the students' performance according to gender, we can see that girls perform better both in the domain of math and reading comprehension (*Figure 2*), but the difference is significant only in the case of the latter.[11] Regarding their age, our target group was composed of 14-15-year-olds, similarly to the international assessments, but the classes were not entirely homogeneous, and in some of the schools, seventh and ninth graders also attempted to complete the test due to the low number of students in the eighth grade. The results show that 14-15-year-olds scored higher both in math and reading comprehension than their older and younger peers (*Figure 3*). The groups falling behind the most are the youngest (aged 13) and the oldest (aged 16). As for the youngest, the test most likely contained knowledge not yet acquired, while 16-year-olds might have had to repeat a number of school years already.

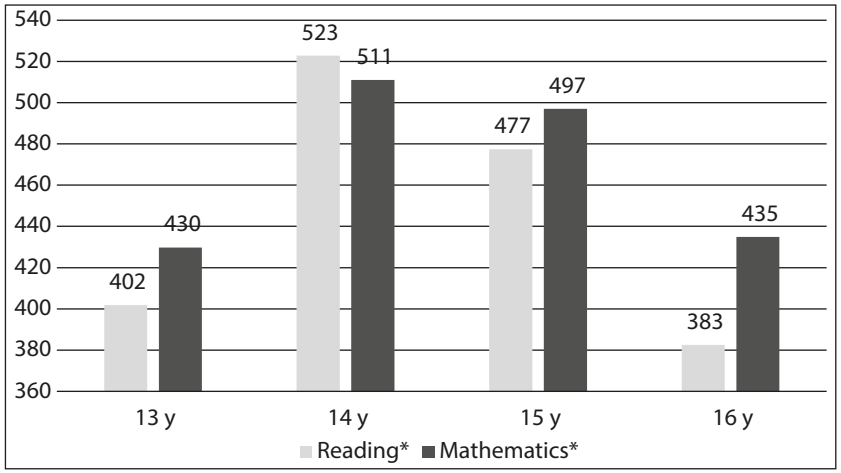
[11] If the difference between two variables is statistically significant (which means that the significance level of the Anova test is less than 0,1 due to the small number of the sample), then * will mark it on the diagrams.

Figure 2. *Differences in the individual competence areas by gender*



Reading: the significance level of the Anova test: 0.006, Eta squared: 0.027

Figure 3. *Differences in the results of the competence test by age*



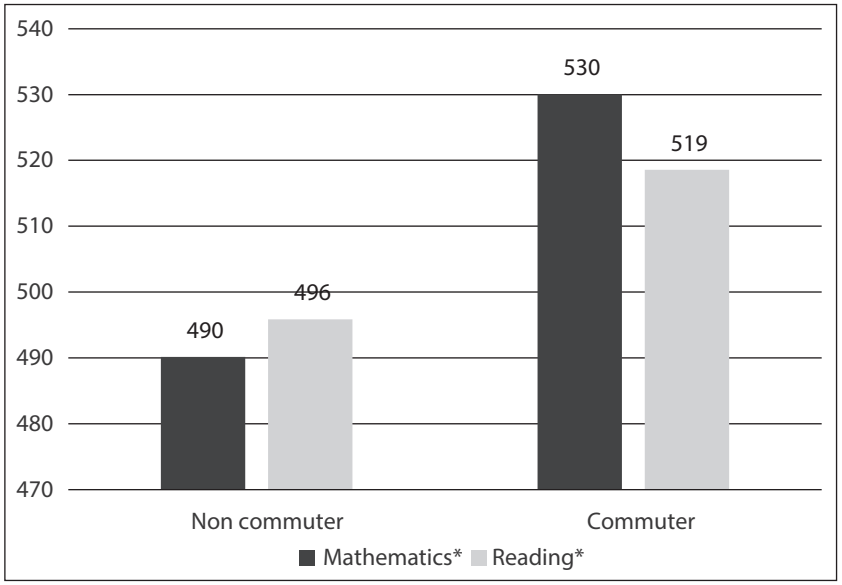
Reading: the significance level of the Anova test: 0.000, Eta squared: 0.124
Mathematics: the significance level of the Anova test: 0.016, Eta squared: 0.037

One of our previous researches has confirmed that in the context of Subcarpathian schools, commuting is a widespread phenomenon: urban schools generally attract schoolchildren from the villages.[12] Choosing an urban school is especially typical of villages around

[12] Ferenc, Viktória: School choice in Subcarpathia – the case of Beregszász (Berehovo). Minority Studies, 2013. 161-184.

Berehovo. In this study, 35% of the students do not live in the settlement where they go to school; i.e. they either commute to school or attend a boarding school (e.g. the Hungarian grammar school of Berehovo). According to our data, commuters do significantly better in both competence areas (*Figure 4*), so in this case, the extra burden of commuting does not seem to impair studying. The other side of the coin is that village schools suffer from the negative consequences of this trend: the most talented children leave the village schools, which are left with students of more modest abilities. The brain drain effect of towns puts village schools in an even more difficult situation.

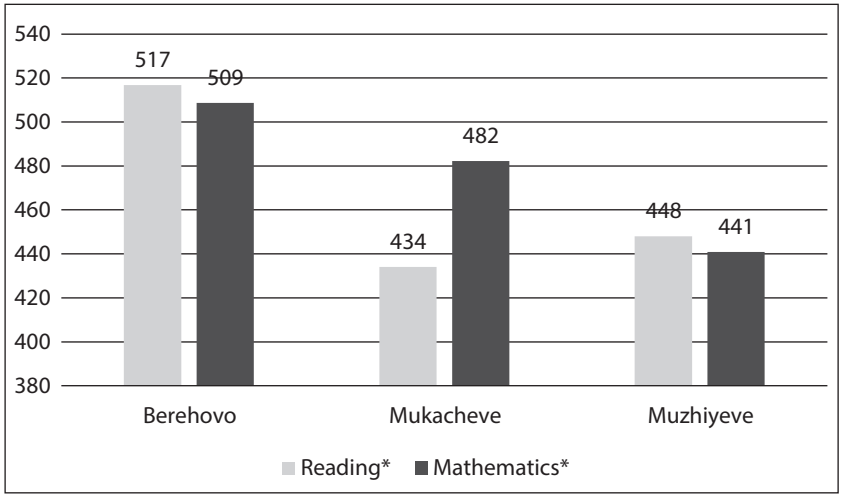
Figure 4. *The scores of commuting students and local students on the competence test*



Reading comprehension: the significance level of the Anova test: 0.077, Eta squared: 0.012
Mathematics: the significance level of the Anova test: 0.002, Eta squared: 0.034

If we examine our data by settlement, we can see that the highest scores in math were those of the urban schools and within that, the overall values of the schools of Berehovo (*Beregszász*). At the same time, the students of the secondary school of Muzhiyeve (*Nagymuzsaly*) did better in reading comprehension than those of Mukacheve (*Munkács*), but the schools of both settlements lag behind the scores obtained in the schools of Berehovo (*Figure 5*). The differences are significant for both competence areas.

Figure 5. *Differences in competence test scores by settlement*



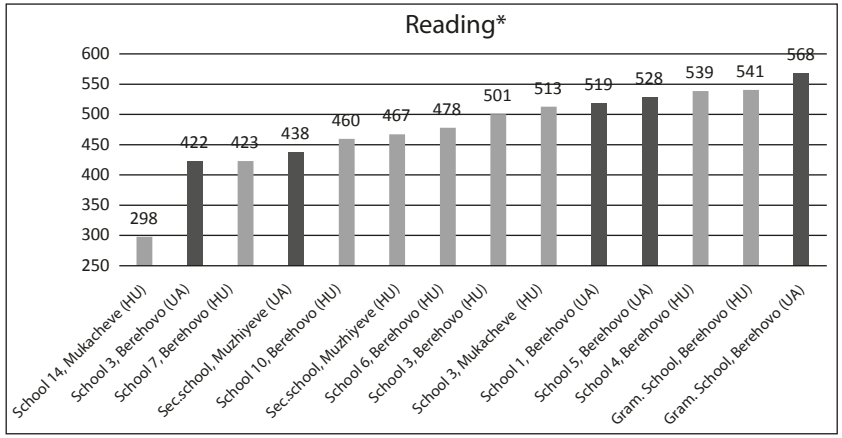
Reading: the significance level of the Anova test: 0.000, Eta squared: 0.104
Mathematics: the significance level of the Anova test: 0.005, Eta squared: 0.036

When it comes to the differences by settlements in the context of the ratio of ethnic Hungarians, they might be put down to the fact that the weakest performance in reading comprehension was produced by those Hungarians who live in ethnically mixed environment (Mukacheve). On the other hand, the results at institutional level (*Figure 6*) show clearly that the scores in Mukacheve were more influenced by the fact that one of the schools (14) educates Roma children whose mother tongue is Hungarian (and who can barely read based on our field experience), who produced poor results in both competence areas. The latter aspect diminished the average of the Berehovo schools as well, since it is here that the institution nicknamed the "Roma school"(7) can be found. At the same time, several elite schools in this group compensate for the final outcome – the two grammar schools, among others, outperformed the rest in both competence areas.

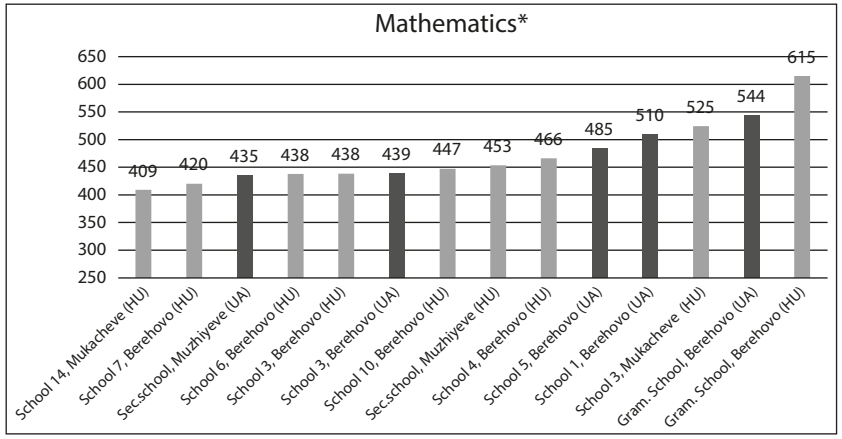
Figure 6 shows school performance not only by institution, but also according to the language of education of the classes surveyed: the lighter colour marks the aggregate competence points of the Hungarian classes while the darker colour indicates the results of the tests completed in the Ukrainian classes. It is evident at first glance that since fewer Ukrainian schools were included in the research, the Ukrainian sample by language of education is not so diversified: three out of the five schools (1, 5 and the Ukrainian grammar school) can

be found in the top tier, while in the Hungarian sample by language of education, there are both institutions tending upwards and downwards. In mathematics, the divergence between the leading and the most underperforming Hungarian school (Hungarian grammar school vs. School 14) is 206 points whereas it is nearly 250 points in reading comprehension, which obviously also affects the average of all the Hungarian schools.

Figure 6. *Differences by school in the competence test results*[13]



Reading: the significance level of the Anova test 0.000, Eta squared: 0.400



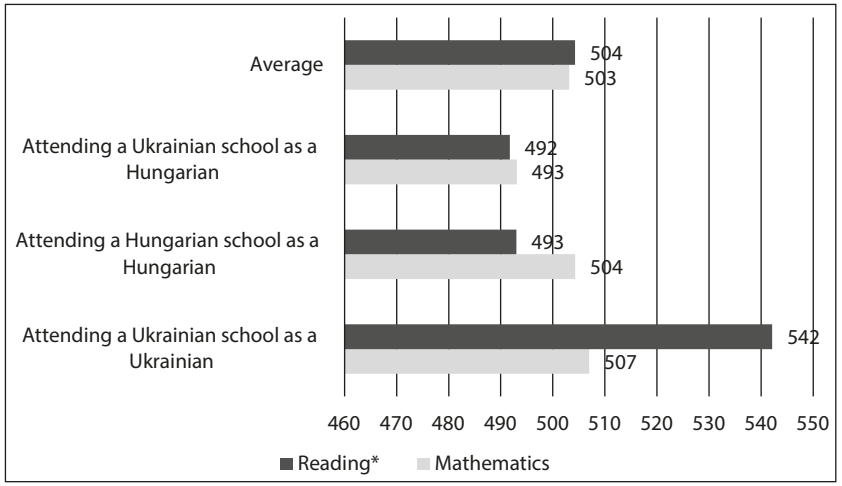
Mathematics: the significance level of the Anova test 0.000, Eta squared: 0.439

[13] Abbreviations after the names of the schools: UA = the language of education is Ukrainian (darker colour); HU = the language of education is Hungarian (lighter colour).

If we move from the institutional level to a more general one, that is, if we divide the test results into two greater categories according to the language of education, then the situation is not so straightforward: it is hard to judge whether it was Ukrainian or Hungarian schools that did better on the test on the whole. *Figure 7* demonstrates that despite their significant heterogeneity, those children who attend a Hungarian school do better in math than those going to a Ukrainian one. However, the situation is the opposite in reading comprehension: those studying in Ukrainian are better than the students of the Hungarian institutions. Nonetheless, the differences between the competence points of the students are not significant in this merged category.

Still on this general level, if we compare the language spoken at home with the language of education and analyse the test results according to the above described three categories, we can see that Ukrainians studying in their mother tongue outperform the others both in mathematics and reading comprehension – though the difference is significant only in the case of reading comprehension. Between Hungarian children studying in their mother tongue and their peers studying in the majority language, there is a difference in favour of the former in the area of mathematical competencies, but in reading comprehension, the members of both groups produced almost equally poor results.

Figure 7. *The overall impact of the language spoken at home and the language of education on competence points*



Reading: the significance level of the Anova test: 0.007, Eta squared: 0.044

It became evident from the competence values registered at the institutional level that because of the great heterogeneity, it would be hard to demonstrate the differences between Ukrainian and Hungarian schools on a general level and in a statistically valid manner. Indeed, this hypothesis turned out to be true. However, if we take the parents' perspective and the arguments behind decision-making, then perhaps it is not on the general level that we have to assess the differences between the schools, but within each school type category. Since decisions about the language of education are made while choosing between similar types of schools, it is the differences in the language of education within the distinct categories of grammar schools, elite schools and schools providing a more general type of education that are of real interest to us: i.e. the competence points of the classes of the Hungarian and the Ukrainian grammar schools and the majority- and the Hungarian-language classes of the mixed-language schools should also be compared to each other. If we split the previous *Figure 6* (showing the performance by institution) in the middle into two subgroups, then we get categories within which we have a better chance of assessing whether the schools belonging to these two types (those performing better and those performing worse) show any kind of divergence in their test performance by the language of education. Following this logic, we created a lower and an upper competence group, where we classified the schools in the manner described in *Table 3*.

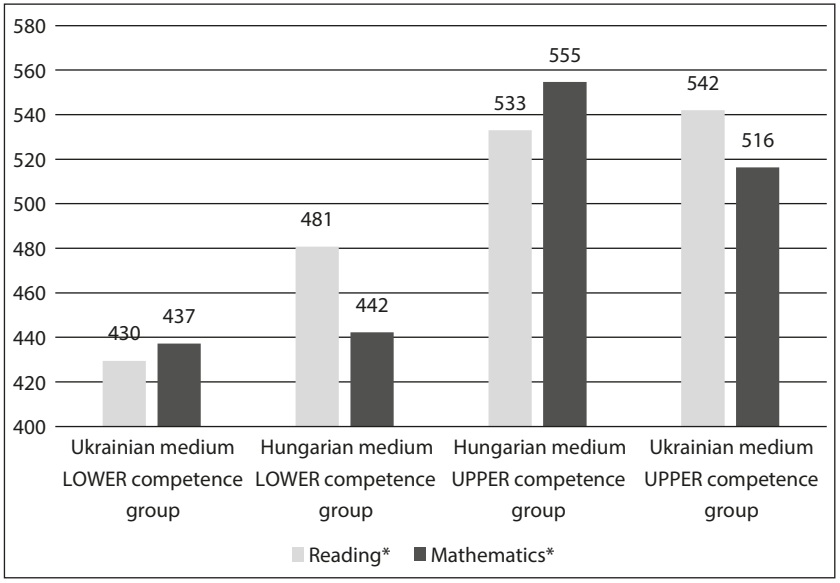
Table 3. *Schools assigned in the lower and upper competence groups*

Lower competence group*	School 3, Berehovo (HU) School 3, Berehovo (UA) Sec. school, Muzhiyeve (HU) Sec. school, Muzhiyeve (UA) School 10, Berehovo (HU) School 6, Berehovo(HU)
Upper competence group	School 3, Mukacheve (HU) School 1, Berehovo (UA) School 5, Berehovo (UA) School 4, Berehovo (HU) Grammar school, Berehovo (UA) Grammar school, Berehovo (HU)

* *Schools 7 and 14, the "Roma schools" were not included in the ranking as they had no Ukrainian-language alternative.*

After the classification, we also examined the relationship between the schools with respect to the language of education, and we found significant differences in both competence areas. In mathematics, the average of the Hungarian schools is higher in both the upper and the lower groups; however, in reading comprehension, the two groups differ from each other: the Hungarian schools are better in the lower group while the Ukrainian schools prevail in the upper one (*Figure 8*).

Figure 8. *Competence points in the upper and lower competence groups according to the language of education*



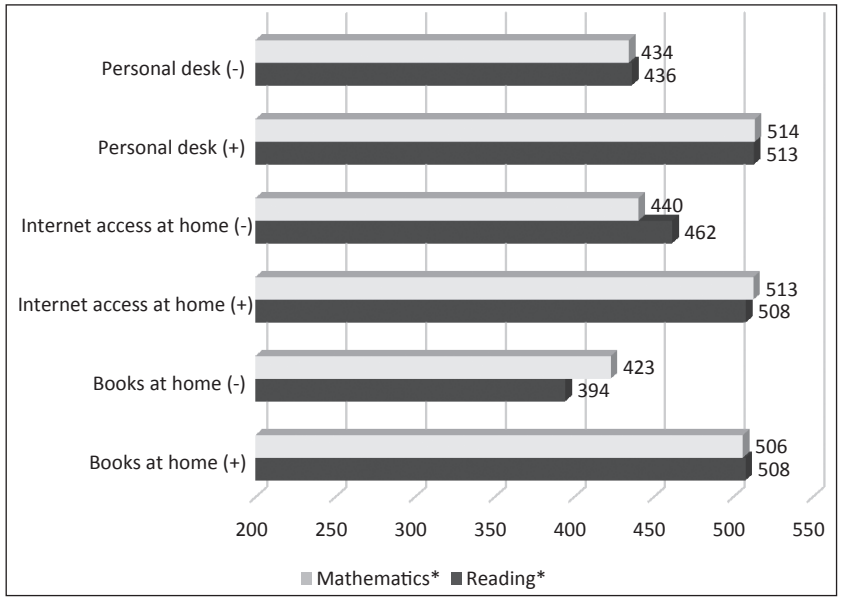
Reading comprehension: the significance level of the Anova test: 0.000, Eta squared: 0. 183
Mathematics: the significance level of the Anova test: 0.000, Eta squared: 0.229

Socioeconomic background and school performance

We tried to interpret the students' performance also in light of their socioeconomic background and home circumstances. The educational level of the parents and the fact whether they had a regular job produced substantial differences in the results of the children: that is, the higher the parents' educational level was, and the more stable their position was on the job market, the better their children performed in both competence areas. Factors used in international assessments, like circumstances enhancing learning such as books in the children's home, Internet access and a personal desk, also produced significant differences in their test scores (*Figure 9*). The most conspicuous difference could be observed in the case of books:

the difference was more than one hundred points (114) between the reading comprehension scores of those children who had books at home and those who did not.

Figure 9. *The effect of tools enhancing home learning on students' performance*

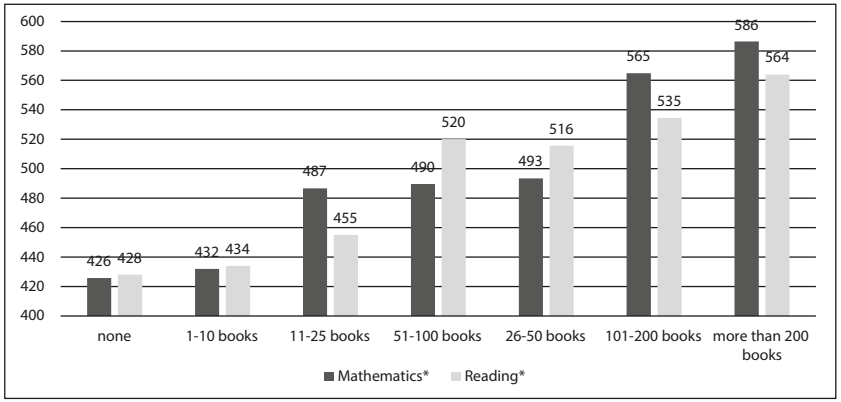


Personal desk: *Mathematics: the significance level of the Anova test: 0.000, Eta squared: 0.089 Reading: the significance level of the Anova test: 0.000, Eta squared: 0.083*
Internet access at home: *Mathematics: the significance level of the Anova test: 0.000, Eta squared: 0.076 Reading: the significance level of the Anova test: 0.003, Eta squared: 0.031*
Books at home: *Mathematics: the significance level of the Anova test: 0.003, Eta squared: 0.030 Reading: the significance level of the Anova test: 0.000, Eta squared: 0.058*

If we also look at the number of books, again we can see that with the quantitative increase of books at home, the results achieved on both the reading comprehension and the math competence tests improve, and the differences are significant (*Figure 10*).

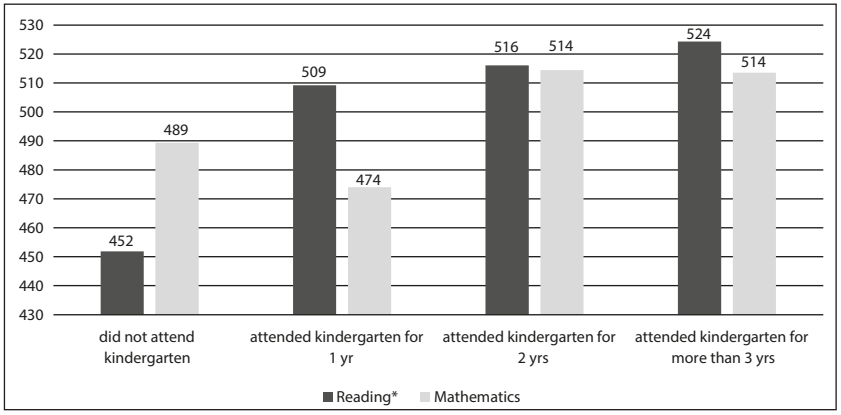
Based on our research findings, we can also affirm that kindergarten education and the time spent in kindergarten contribute positively to the development of competencies. In our sample, 73% of the students went to kindergarten, and apparently, this life stage had a significantly positive effect mostly on the development of their reading comprehension skills. Concerning mathematics, we could not detect a notable correlation (*Figure 11*).

Figure 10. *The impact of the number of books owned by the family on the students' performance*



Mathematics: the significance level of the Anova test: 0.000, Eta squared: 0.298
Reading: the significance level of the Anova test: 0.000, Eta squared: 0.230

Figure 11. *The impact of the time spent in kindergarten on students' performance*



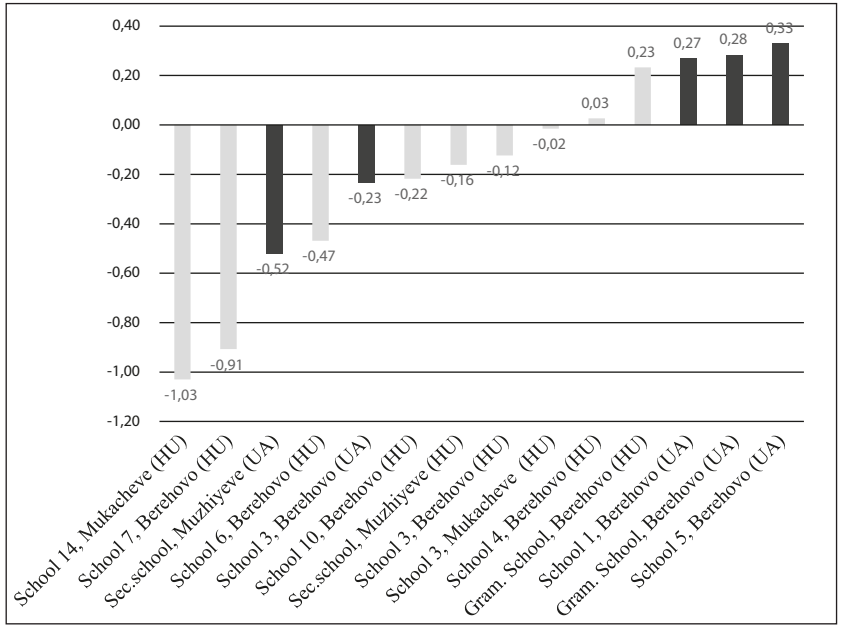
Reading comprehension: the significance level of the Anova test: 0.000, Eta squared: 0.091

In order to assess the overall impact of the socioeconomic background and circumstances enhancing home learning, we have created an aggregate variable from the above variables, which we called socioeconomic index scores (SIS).[14] Earlier on, at the presentation of

[14] The aggregate socioeconomic index scores (which have been established with a standardized variable, where mean is zero and the standard deviation is 1) take into consideration the highest educational level of the parents, the type of their

the competence test results by institution, we have already observed an extraordinary heterogeneity (Figure 6), which is further intensified on the basis of the socioeconomic background. If we classify the sample according to the language of education only, the results differ significantly on the basis of the socioeconomic background of the students of the Hungarian and Ukrainian schools: while the former show a negative average (-0.13), the average of the latter is positive (+0.12). On the institutional level, only two of the Hungarian schools (School 4 and the grammar school) have an SIS above the average, while the three schools at the top are all Ukrainian. It should also be pointed out regarding the schools' performance that the SIS on the negative end of the scale is the threefold of the highest SIS on the positive end. Extremely negative values can be observed in the case of the two Roma schools (14 and 7) (*Figure 12*).

Figure 12. *Differences between the schools based on the aggregate socioeconomic index scores of students*

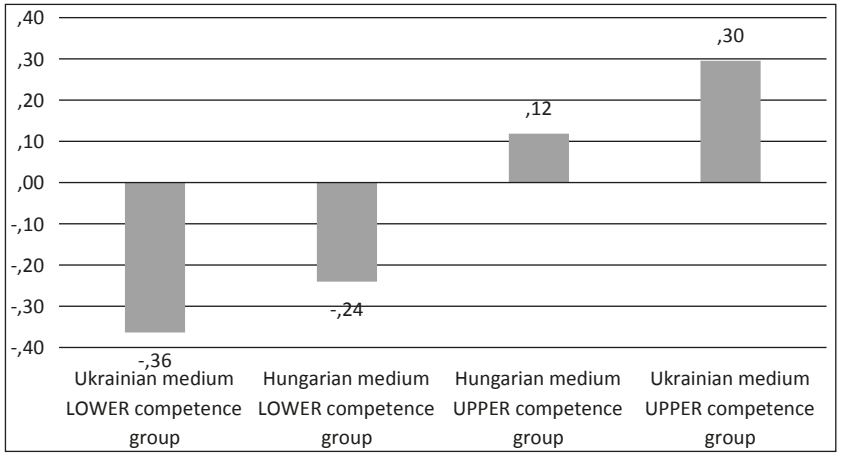


The significance level of the Anova test: 0.000, Eta squared: 0.431

employment, the number of living rooms for the family, whether they have a car, a bathroom, a mobile phone, a computer, Internet access at home, books and whether the student has books and a personal desk of his or her own. This aggregate variable can account for about 15% of the academic skills.

As we could see in *Figure 12*, the difference between the schools is quite remarkable on the basis of socioeconomic background, which affects the majority of the Hungarian schools for the most part: that is, they have to deal with a more disadvantaged student body than the Ukrainian institutions. Nevertheless, there are a few exceptions: although both classes have a below-average SIS in the two mixed-language institutions, the students attending the majority-language classes are at a multiple socioeconomic background disadvantage compared to the Hungarian classes (in the Ukrainian class of School 3 in Berehovo, the SIS figure on the negative side is half the value of the Hungarian class, while in the schools of Muzhiyeve, this figure is three times smaller than that of the Hungarian class).

Figure 13. *Socioeconomic index scores by competence group and language of education*

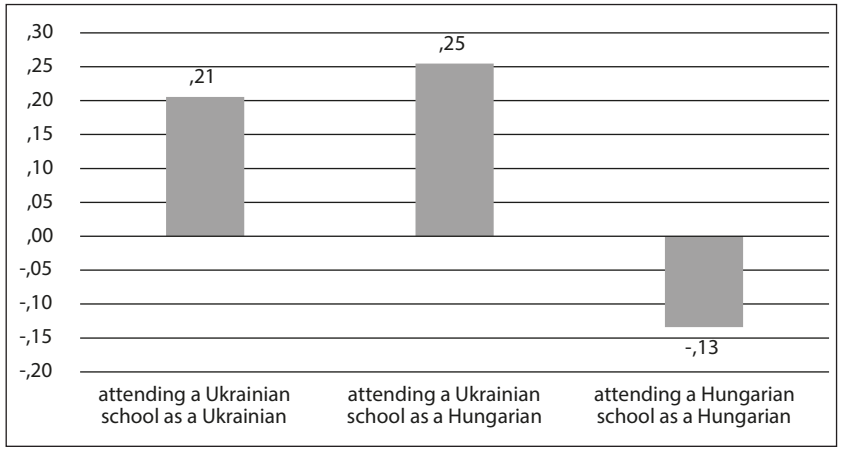


The significance level of the Anova test: 0.000, Eta squared: 0.225

Figure 13 shows that if we examine the SIS among the students of the schools belonging to the lower competence group, then we can see that the Ukrainian schools are at a disadvantage (the Roma schools were not included in this category). If we look at the students of the schools in the upper category, the situation is the opposite: the Ukrainian schools are educating students with 2.5 times bigger SIS than the Hungarian ones.

Figure 14 also reveals that among Hungarian children, those with a better socioeconomic background choose a majority-language education while those attending a Hungarian-language education have the lowest SIS in this category.

Figure 14. *Socioeconomic index scores on the basis of the language of education and the language spoken at home, in three groups*



The significance level of the Anova test: 0.000, Eta squared: 0.118

The inequalities due to socioeconomic background between the students can be normalized within the institutions with the help of the added value of pedagogical work. Value-added measures (VAM) can be defined by those competence points[15] that cannot be explained by the socioeconomic background. The value-added measures can diverge from the average of 0 both negatively and positively. Depending on the direction, this measure (if negative) can mean that the school did not bring out the potential talents of the child, or if it is positive, it can demonstrate that the pedagogical work carried out in that school was able to surpass the level that would have been predictable by the socioeconomic background. How that actually manifests itself in our case can be assessed with the help of the *Table 4*, where we publish these measures in two columns based on the results of the math and reading tests as the trends are quite different in these two academic domains. There are only three schools where the VAM of both competence areas appear as positive values. There are four schools (in italics, marked with an *) in which the difference between the value-added measures of the two competence areas exceed 50 (*) or even 100 (**) points – in other words, the inner world of these schools is likely to be very heterogeneous. In Schools 3 and 4

[15] On a more detailed methodology about how to calculate the VAM in education, see: Papp Z., Attila: Pedagógiai hozzáadott érték a roma tanulói arány függvényében a magyar iskolarendszerben. In: Bárdi, Nándor – Tóth, Ágnes (eds.): *Önazonosság és tagoltság*. Argumentum, 2013: 69-88.

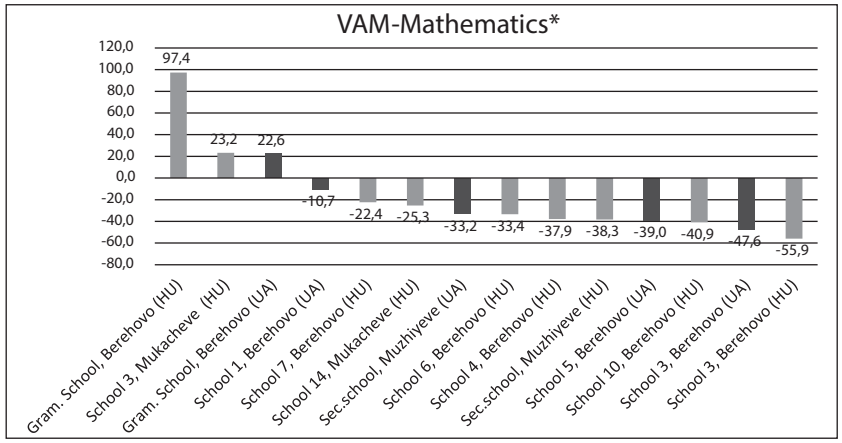
of Berehovo, the VAM had a much greater influence on reading than on mathematics. In the Hungarian grammar school and the Roma school (14) of Mukacheve, it is the opposite case: the VAM is much higher in the domain of math competences than in reading comprehension (but these schools cannot be assigned in the same category based on other criteria, of course: one of them represents the positive end, while the other is the negative extremity).

Table 4. *Value-added measures by schools*

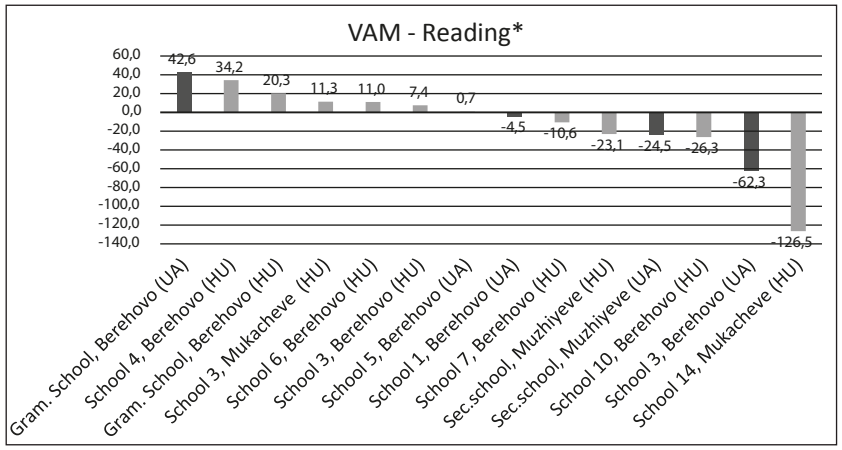
	Mathematics	Reading
*Grammar school (HU)**	*97.4*	*20.3*
School 3, Mukacheve (HU)	23.2	11.3
Grammar school (UA)	22.6	42.6
School 1 (UA)	-10.7	-4.5
School 7 (HU)	-22.4	-10.6
*School 14, Mukacheve (HU)***	*-25.3*	*-126.5*
Muzhiyeve (UA)	-33.2	-24.5
School 6 (HU)	-33.4	11.0
*School 4 (HU)**	*-37.9*	*34.2*
Muzhiyeve (HU)	-38.3	-23.1
School 5 (UA)	-39.0	0.7
School 10 (HU)	-40.9	-26.3
School 3 (UA)	-47.6	-62.3
*School 3 (HU)**	*-55.9*	*7.4*

We have demonstrated the VAM value of the schools with the help of a diagram (*Figure 15*) as well in order to see how schools can contribute to that effect. In the case of the SIS (*Figure 12*), we saw that it is the students of Ukrainian schools 1 and 5 as well as the grammar schools that have the most favourable socioeconomic background, but at the same time, only the grammar school is able to add something positive to the given skills of the children, whereas the other two schools, especially School 5, have a negative influence on the students' potential. The grammar school has attained an outstanding VAM in reading comprehension, while School 5 has a mildly positive value around the average and School 1 has a negative measure.

Figure 15. *Value-added measures (VAM) by schools in each of the competence areas*



Mathematics: the significance level of the Anova test: 0.000, Eta squared: 0.310

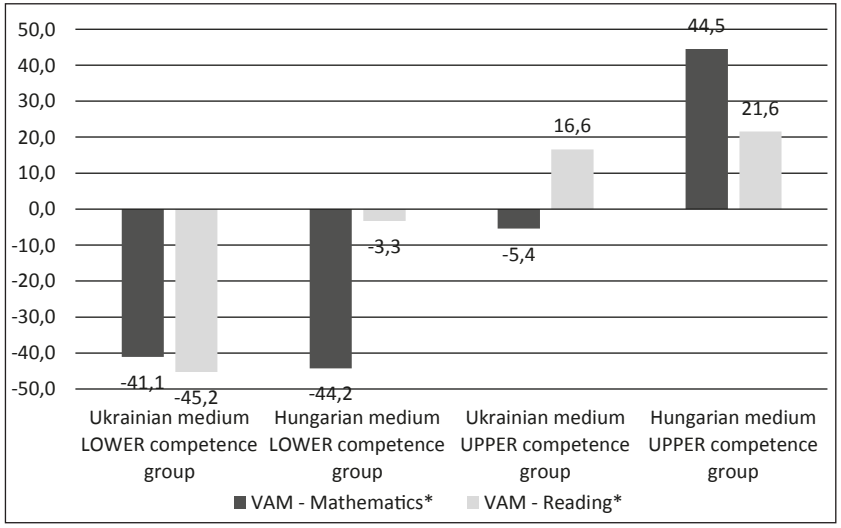


Reading: the significance level of the Anova test: 0.000, Eta squared: 0.190

Among the Ukrainian-language schools, the Ukrainian classes of the school of Muzhiyeve and School 3 of Berehovo did the poorest in terms of SIS. Overtaking several schools with potentially more successful children, the school of Muzhiyeve ranked in the middle range, but in the domain of reading comprehension, there seems to be no fluctuation. On the other hand, the Ukrainian class of School 3 falls much behind the position that could have been predicted from its originally low SIS. It has ranked last but one in both competence areas, which means that even one of the Roma schools was able to produce a better VAM in reading comprehension and both of the Roma schools did better in mathematics than this institution.

Among the Hungarian schools, it was the student composition of the grammar school as well as that of School 4 and School 3 of Mukacheve that seemed to be the most favourable on the basis of the SIS. In mathematics, this advantage is well-exploited by the grammar school and the school in Mukacheve, while School 4 drops back in that respect although it does exploit its fore in reading comprehension. It should be pointed out that the two Roma schools (7 and 14) with the worst SIS can develop their students in mathematics more than some other schools, but in reading comprehension, it is only School 7 that shows a similar tendency.

Figure 16. *Value-added measures (VAM) by competence groups*



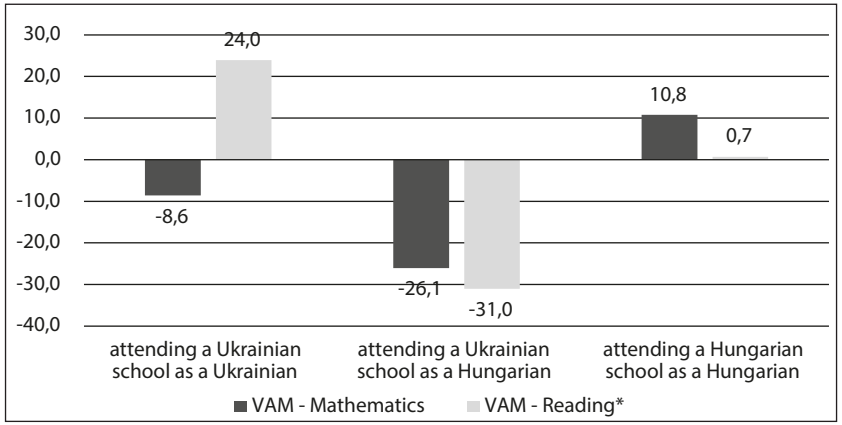
Reading comprehension: the significance level of the Anova test: 0.001, Eta squared: 0.061
Mathematics: The significance level of the Anova test: 0.000, Eta squared: 0.148

If we analyse the pedagogical work of the schools within the two competence groups, we can find significant differences in both areas: although all the values are negative in the lower group, the VAM in reading comprehension is much closer to 0 in the Hungarian schools. On the other hand, the Hungarian schools of the upper group produce a better result in math competencies (*Figure 16*).

Examining the VAM in the three groups composed on the basis of the language of education and the language spoken at home, we can see that it is only in the area of reading comprehension that we can identify

statistically significant differences (*Figure 17*). Accordingly, the potentials of Hungarian children choosing a Ukrainian school (about whom we know that they are the most favourable group in terms of SIS, see *Figure 14*) remain unexploited while the pedagogical work performed in the same schools is able to enhance the educational performance of Ukrainian children with a lower SIS. This can be a warning for parents choosing the majority language in the hope of an easier acquisition of the state language that their children destined to have better competencies cannot be appropriately developed in this form of education.

Figure 17. *Value-added measures(VAM) in the three groups formed on the basis of the language of education and the language spoken at home*



Reading: the significance level of the Anova test: 0.017, Eta squared: 0.036

Although the difference is not significant, it should be noted that pedagogical work is the most successful in those Hungarian schools that have the least advantageous student composition (negative SIS).

Conclusion

In the course of our research we have established on the basis of a survey of 290 Subcarpathian students aged 13-15 that academic competencies vary the most along ethnically neutral background variables such as gender, age, settlement and socioeconomic background.

Most of the questionnaires were collected in the schools of the town of Berehovo, but many children were also included in our sample who do not live in this settlement and commute to school. However, the extra burden of commuting does not seem to impair studying, for these children actually did better on the tests. At the same time, village schools are afflicted by the negative implications of this trend: while truly talented children leave village schools, less apt students remain there.

One of the most characteristic features of the research data is the heterogeneity of the schools concerning their location and socioeconomic background. This diversification is most typical of the Hungarian-language institutions; the Ukrainian schools are more homogeneous in that respect, which largely determines the school performance of the students in our sample. Since fewer Ukrainian schools were included in the research than Hungarian ones, the Ukrainian sample by language of education is not so diversified: three out of the five schools are situated in the upper tier, while the Hungarian sample by language of education comprises institutions tending upwards and downwards as well. If we set apart leading and underperforming schools and examine them also on the basis of the language of education, we can find significant differences in both competence areas between the schools of the group. In mathematics, the average of the Hungarian schools is higher in both the upper and the lower groups, but when it comes to reading, the two groups differ from each other: the Hungarian schools are better in the lower group, but the Ukrainian schools prevail in the upper group.

If we compare the language spoken at home with the language of education, we can observe that in both mathematics and reading comprehension, it is Ukrainian students studying in their mother tongue who perform the best – although the difference is significant only in the case of reading comprehension. Between Hungarian children studying in their mother tongue and their peers studying in the majority language, differences appear in the area of mathematical competencies in favour of the former. However, regarding reading comprehension, the members of both groups achieved an almost identical (low) score.

Examining the value-added measures in the three groups established on the basis of the language of education and the language spoken at home, we can see that it is only in the case of reading comprehension that we can identify statistically significant differences. Accordingly, the potentials of Hungarian children choosing a Ukrainian school (whom we know to be the group with the most favourable socioeconomic background) remain unexploited, while the pedagogical work carried out in the same schools is able to contribute to the academic performance of those Ukrainian children who come from a less advantageous socioeconomic background. For the parents choosing a majority language school this should be a warning that their selection will not necessarily provide the best conditions for the development of their children's talents.

Ethnicity