

# **The background of the improvement of PISA results in Hungary – the impact of the EU funded educational development programs<sup>1</sup>**

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Hungary, similarly to Poland, is among those countries that have been intensively using the European Structural Funds for educational improvement. The regulation of these funds<sup>2</sup> makes it clear that the impact of the development interventions co-funded by the Structural Funds has to be regularly evaluated but such evaluations typically do not go into professional (pedagogical) details. In the case of Hungary the improvement of the PISA results<sup>3</sup> provides a good opportunity to assess the possible impacts of the development programs co-funded by the EU on the improvement of the quality of education, namely on pupil performance measured by standard international assessment tools. In the first part of this article I present some evidence on the improvement of education in Hungary as revealed by the PISA survey, then I offer a short analysis of the possible background factors that may have caused this improvement, and, in the final part, I present in more detail the EU co-funded educational development programs that may be among the possible background factors.

## **The improvement of the PISA results in Hungary**

Every country participating in the PISA (*Programme for International Student Assessment*) survey of the OECD has been waiting with impatience for the publication of the results of the 2009 data collection, and particularly the 2000-2009 trend analysis that shows whether the performance of their pupils improved, remained unchanged or deteriorated. Hungary is one of those countries, similarly to Poland, where the performance of 15-year-old pupils measured by PISA has shown significant improvement. This improvement, however, has appeared only in *reading literacy*: in the two other measured literacy areas (*mathematics* and *science*) no significant change could be observed (see *1. Figure*).

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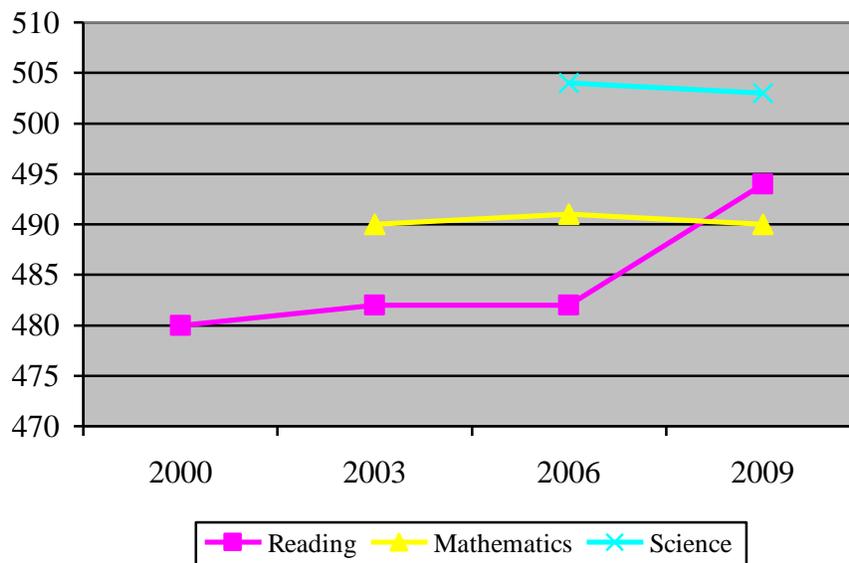
<sup>1</sup> The paper is an extended version of the presentation of the author at the conference “Trends in Performance since 2000 - International Launch of PISA 2009 Report” Warsaw. February 10<sup>th</sup>, 2011

<sup>2</sup> See „REGULATION (EC) No 1784/1999 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 July 1999 on the European Social Fund” and ”REGULATION (EC) No 1783/1999 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 July 1999 on the European Regional Development Fund”

<sup>3</sup> PISA (Programme for International Student Assessment) is a program of the OECD that aims at assessing student performance in the member countries of the organisation and also in partner countries (see the website of the program here: [http://www.pisa.oecd.org/pages/0,2987,en\\_32252351\\_32235731\\_1\\_1\\_1\\_1\\_1\\_1,00.html](http://www.pisa.oecd.org/pages/0,2987,en_32252351_32235731_1_1_1_1_1_1,00.html))

### 1. Figure

The performance of Hungarian pupils in the PISA survey (standard PISA scores, 2000-2009)

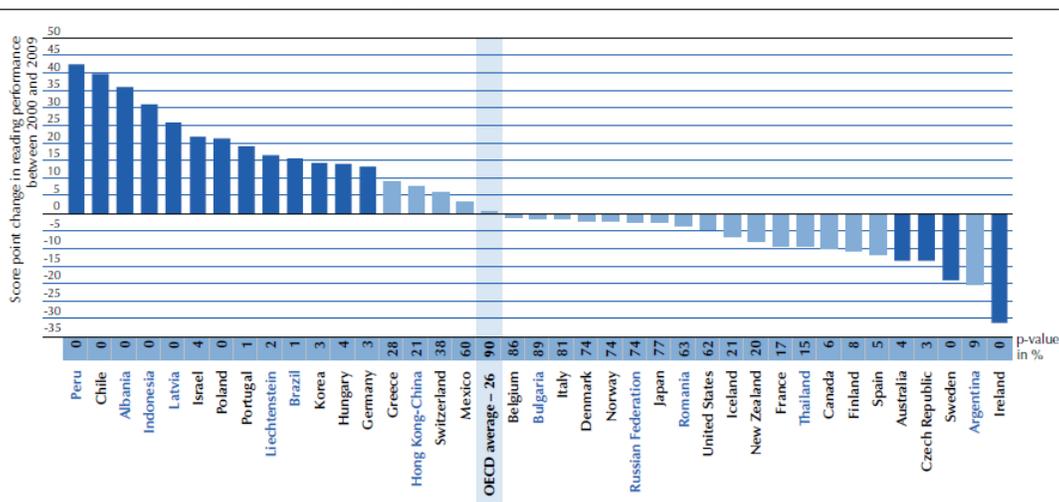


Source: PISA 2009 Results: Learning Trends Changes in Student Performance since 2000 Volume V. OECD. Paris

In the majority of OECD member countries the reading performance of pupils has remained unchanged or has deteriorated. Only seven of the member countries succeeded in their efforts to improve performance in reading literacy and Hungary is one of these (see 2. Figure). While the standard PISA scores of Hungarian 15-year-old pupils in 2000 was only 480, by 2009 this rose to 494 which is a statistically significant improvement. Most of this improvement was measured between the second and the third data collections, that is, between 2006 and 2009.

### 2. Figure

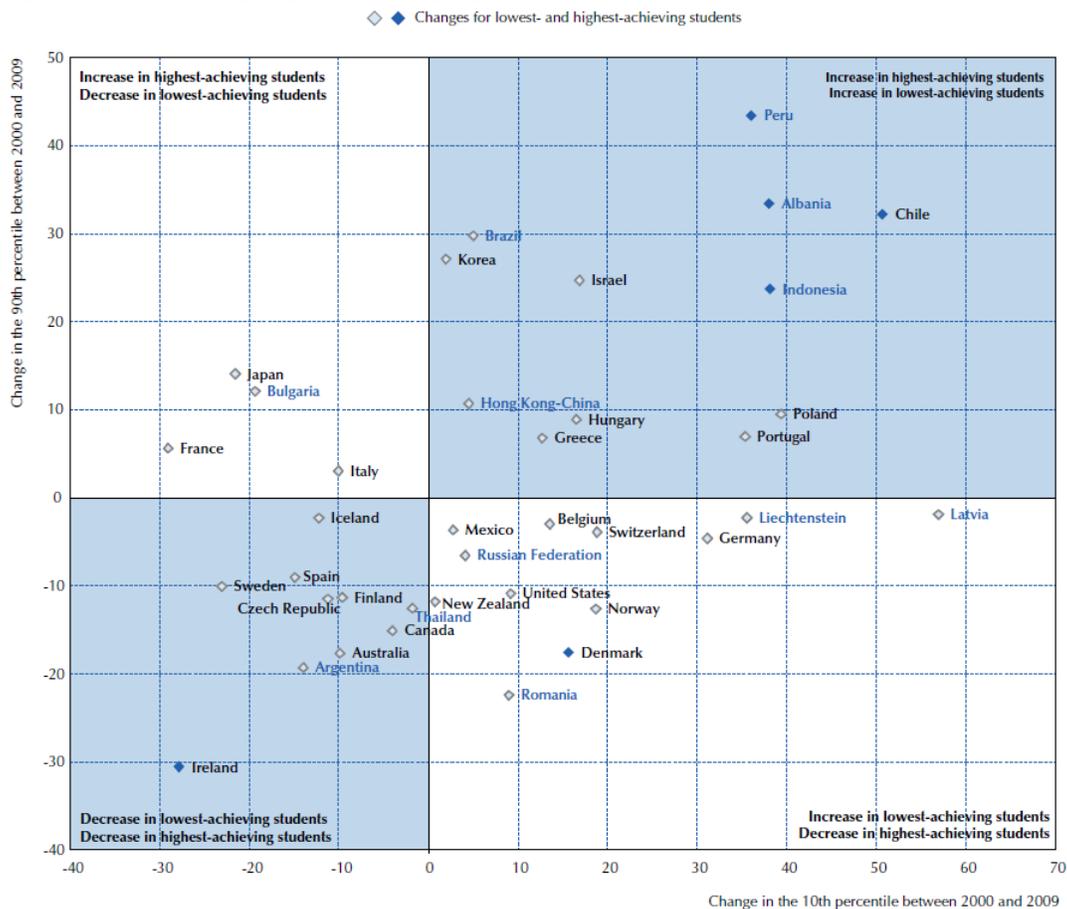
Change in reading performance between 2000 and 2009



The improvement was stronger among girls (+17 score points) than among boys (+11 score points), and it was due rather to the improved performance of *low performing* pupils than to that of the high performing. While the proportion of students below proficiency level 2 decreased from 22.7 in 2000 to 17.6 in 2009 the proportion of students at proficiency level 5 increased only from 5.1 in 2000 to 6.1 2009, that is, there was a 5.1 point improvement at the bottom level and only a 1 point improvement at the top level. Hungary is among those *seven* OECD member countries where both high and low performers have shown improvement (see 3. Figure) and among those four member countries – together with Poland – where those at the bottom improved much more than those who are at the top.

### 3. Figure

Improvement among high and low performers (standard PISA scores, 2000 and 2009)



Source: PISA 2009 Results: Learning Trends Changes in Student Performance since 2000 Volume V. OECD. Paris

## What is there behind the improvement of the results?

In both worsening and improving countries everybody is trying to find explanations for the observed changes. Naturally, neither improvement nor worsening can ever be attributed to one

single factor and typically the outcome is the balance of contradictory impacts: some of them causing improvement and some of them causing worsening. Some of the factors can be and have been kept under the control of governments, others have escaped policy control. Some of them are related with deliberate policy measures, others are the results of spontaneous processes that no one controlled. This is the case in Hungary, as well. It is still too early to expect scientifically based explanations. The only thing that is possible at this stage is formulating some assumptions based on different qualitative sources of information.

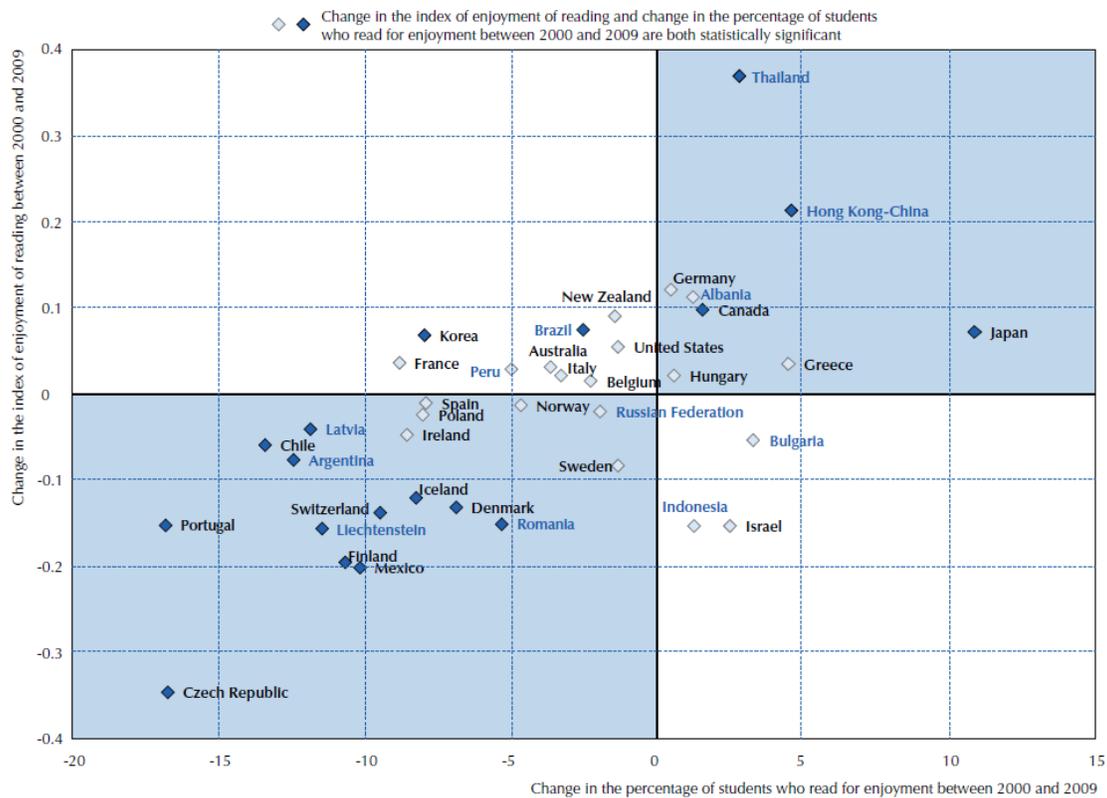
Having analysed the relevant period I see *four* major deliberate policy interventions that might have had a positive impact on the reading performance of Hungarian pupils and might be identified as possible causes of the improvement. These are the following:

- Increasing the awareness of the importance of literacy development in higher grades
- Improving the education of the most disadvantaged groups through integration programs
- Curriculum innovation and the intensive development of classroom level activities
- Creating effective feedback mechanisms

*The awareness of the importance of literacy development in higher grades* has been significantly increased after the “PISA shock” in 2001 following the publication of the results of the first PISA report. Many efforts have been made to motivate pupils to read more and to find more enjoyment in reading (for example popular youth books, such as *Harry Potter*, were included into the compulsory or recommended reading list of some schools). This has been reflected in the data showing the *index of enjoyment of reading* or the *proportion of pupils who read for enjoyment*. Hungary is among those few countries where both the index of enjoyment of reading and the percentage of students who read for enjoyment have improved, although in this case the difference is not statistically significant (see 4. *Figure*).

#### *4. Figure*

*Change in the index of enjoyment of reading and the proportion of students who read for enjoyment (2000- 2009)*



Source: PISA 2009 Results: Learning Trends Changes in Student Performance since 2000 Volume V. OECD. Paris

Putting more stress on the development of reading skills has been supported also by a structural change: in grades 5 and 6, which are considered as ISCED2 (lower secondary) level in Hungary, a certain proportion of lessons are now taught by ISCED 1 (primary) level teachers. This has been strongly supported also by the reform of the secondary school leaving (maturity) examination in 2005 which shifted the focus from the transmission of factual knowledge towards competence development, introducing new competence-based assessment tools which require higher level reading competences.

*Improving the education of the most disadvantaged groups through integration programs* has been the target of a high number of policy interventions and development programs for more than one decade, and particularly since 2004 when the access to the European structural funds was open for the country following its accession to the European Union. Immense resources have been invested into *social integration programs*, targeted mostly to the most disadvantaged student population, that is, children belonging to the Roma minority and to schools with a particularly high proportion of Roma children. These programs have been accompanied by an intensive restructuring of classroom activities and capacity building for teachers, and they also improved the infrastructural conditions in many of the most disadvantaged schools. The expectation was that that following these interventions the quality of teaching and learning will significantly improve in these schools. The decrease of the proportion of those achieving below proficiency level 2 might be a logical outcome of these massive integration programs.

*Curriculum innovation and the intensive development of classroom level activities* started also more than one decade ago, with the introduction of a new national core curriculum in 1996 and with massive capacity building among teachers that has accompanied this reform. Since the late nineties curriculum innovation accompanied by capacity building programs has been continuous and this has also been supported by the European structural funds.<sup>4</sup> In the middle of the 2000s a particularly innovative development program aiming at the developing key competences was started in the framework of the National Development Plan co-funded by the European Social Fund. This program – targeted at ISCED 1 and 2 level schools – introduced the so called „*competence based program packages*” (I come back to this in the next section and this project will be presented there in detail). This massive innovation combined curriculum development, organisation and leadership development and the development of teaching competences.

*Creating effective feedback mechanisms* is one of the most effective ways to improve the effectiveness of systems, including educational systems. In this area spectacular developments took place in Hungary during the last decade,<sup>5</sup> which might explain greatly the improvement of the PISA results. Since the middle of the 2000s every pupil in every Hungarian school in certain grades is tested in every year in the areas of reading and mathematics and the results of the tests are sent back to every school. The creation of this massive feedback mechanism was launched in 2001, in the year of the publication of the first PISA result, and the assessment framework, as well as tasks used in the tests, has been strongly influenced by the PISA assessment framework and the PISA assessment philosophy. The system called *National Assessment of Basic Competencies* has gone through evolution since its introduction until it reached its current form. Now every pupil is assessed in grades 6, 8 and 10 with national tests in literacy and numeracy. Individual student identification numbers are used which makes it possible the identification of every failing student and the calculation of “added values”. Background data are also collected on students and schools which make it possible to analyse those factors that may have caused failure or success. The tests are scored at national level by the national managing agency (Educational Authority).

Reports on the results are generated at four levels for four types of users: (1) at *national* level (for the public and for decision-makers), (2) at *maintainer* level (for every local self-government that maintain schools and also for other maintainers), (3) at *school* level (for every school) and at *pupil* level (for every school and also for parents). The first results were published in 2001 (with value added scores based on estimation related with the social-economic background of students). School and maintainer reports became available for those possessing access codes and the compulsion of intervention in case of low performance became was legislated in 2006. The introduction of individual pupil identifier codes was done in 2007 and data on every pupil became available for parents and teachers in 2009. Since 2010 value added scores can be calculated on the basis of individual pupil progress data. According to various surveys an

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<sup>4</sup> For more details see the biannual national reports for the European Commission. Monitoring the „Education and Training 2010” program ([http://ec.europa.eu/education/lifelong-learning-policy/doc1532\\_en.htm](http://ec.europa.eu/education/lifelong-learning-policy/doc1532_en.htm)); the background documents for the comparative analysis „Key Competences in Europe: Opening Doors for Lifelong Learner” ([http://ec.europa.eu/education/more-information/doc/keyreport\\_en.pdf](http://ec.europa.eu/education/more-information/doc/keyreport_en.pdf)), and the 2008 National Report on Development of Education for UNESCO BIE (online: [http://www.ibe.unesco.org/National\\_Reports/ICE\\_2008/hungary\\_NR08.pdf](http://www.ibe.unesco.org/National_Reports/ICE_2008/hungary_NR08.pdf)).

<sup>5</sup> See the Country Background Report of Hungary for the OECD Review on Evaluation and Assessment Frameworks for Improving School Outcomes. 2010 (to be published)

increasing number of schools and municipalities are using the data to identify problems and to initiate actions for improvement. In 2004, for example, three from four headmasters reported on using the school results for internal development and in 2007 every third municipality „put these results to use in its managerial work”.

It would be surprising if such a massive feedback was not producing results. The improvement of pupil outcomes, as measured by PISA, might be caused in a great part by these feedback mechanisms which allow the identification of every failing pupil and every failing school and which are increasingly used by those who can make corrective actions. Schools have been given substantial support for the appropriate use of this feedback: the school reports sent back to them are designed in a “user friendly” way (see 5. Figure), and many teachers and school leaders have participated in training programs that helped them to use of the results effectively.

### 5. Figure

*A typical figure in a school report sent back to every school following the analysis of the data of the National Assessment of Basic Competencies*

Átlageredmények								
Mérési terület	Évfolyam	Képzési forma	Átlageredmény (megbízhatósági tartomány)					
			A telephelyen	Országos	Az első viszonyítási csoport		A második viszonyítási csoport	
					Neve	Eredménye	Neve	Eredménye
Matematika	6.	ált. isk.	527 (513;544)	😊 489 (489;490)	Városi ált. isk.	😊 481 (480;482)	Közepes városok ált. isk.	😊 488 (487;489)
	8.	ált. isk.	506 (489;525)	😊 484 (483;484)	Városi ált. isk.	😊 474 (473;474)	Közepes városok ált. isk.	😊 478 (477;479)
Szövegértés	6.	ált. isk.	533 (515;552)	😊 513 (513;514)	Városi ált. isk.	😊 505 (505;506)	Közepes városok ált. isk.	😊 512 (511;513)
	8.	ált. isk.	519 (502;536)	😐 502 (502;503)	Városi ált. isk.	😊 491 (491;492)	Közepes városok ált. isk.	😊 496 (495;497)

 A telephely eredményénél szignifikánsan alacsonyabb az adott érték  
 A telephely eredménye nem különbözik szignifikánsan az adott értéktől  
 A telephely eredményénél szignifikánsan magasabb az adott érték

#### Legend:

Átlageredmény:	mean score
Mérési terület:	subject area
Évfolyam:	grade
Képzési forma:	school type
A telephelyen:	results in the given school
Országos:	national results
Viszonyítási csoport:	reference for comparison
Városi ált. isk.:	basic schools in towns
Közepes városok ált. isk.:	basic schools in middle sized towns
Matematika:	mathematics
Szövegértés:	reading

The four factors mentioned above together can give a sufficient explanation for the improvement of the PISA reading results in Hungary especially between the third (2006) and the fourth (2009) measurements. It is important to note, however, that there might be several other factors that could have influenced the results, both positively and negatively. For example the impact of the 2008-2009 financial crisis, which led to a significant reduction of teacher salaries or the increasing proportion of pupils born and living in poverty, most of them belonging to the Roma

minority, certainly have neutralised much of the impact of the policy interventions presented here. Without the many negative factors these interventions might have had a stronger positive impact. As we saw three of them were accompanied by massive capacity building programs, they have influenced directly the classroom level behaviour of teachers and their teaching capacities. As a consequence of these interventions the way of organising learning has been changed in hundreds of classrooms, so the observed improvement of PISA results can be the consequence of the accumulation of hundreds or thousands of micro level changes. These outcomes are, however, still rather modest compared to the size of the investment that has been made.

## **The role of the EU funded development programs in educational improvement**

As mentioned at the beginning of this article, Hungary has been using, similarly to Poland, the EU Structural Funds for educational development. Both countries have been using these funds to finance programs aiming at the development of curricula and teacher capacities.<sup>6</sup> Three of the four possible causes of improvement in Hungary, as presented in the previous section, are educational development programs co-financed by the EU Structural Funds. Almost the whole of the curriculum innovation project, most of the interventions targeted at the Roma minority and some parts of the establishment of strong feedback mechanisms have been co-financed from the European Social Fund. In fact any, most of these interventions could not have been achieved without using EU resources as the internal (domestic) development resources would not have been sufficient to create a critical mass of changes.

Hungary included a significant element of educational development into its first National Development Plan for the period of 2004-2006 as part of its Human Resources Development Operational Program.<sup>7</sup> This Operational Program (its Hungarian abbreviation has been HEFOP) specified five intervention areas: one of them was “Supporting education and training as part of the lifelong learning policy”. This priority area contained three specific intervention measures: (1) “*Developing skills and competencies necessary for lifelong learning*”, (2) “*Developing the content, methodology and structure of vocational training*” and (3) “*Modernizing the educational and training system*”. The first of these measures was directed to general education and it contained the following concrete actions

- Further training for teachers;
- Development of programme packages, curriculum and teaching instruments, including pedagogical development based on the co-operation of institutions involved in the provision of services for disadvantaged children;
- Establishment of advisory, information, legal assistance services and information offices, development of a communication strategy in order to improve the effectiveness of the measure;

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<sup>6</sup> For the current Polish educational development programs see „*Human Capital Operational Programme. National Strategic Reference Framework 2007 – 2013. Ministry of Regional Development. Poland* (online: [http://www.efs.gov.pl/English/Documents/HCOP\\_EN\\_18January2008\\_final.pdf](http://www.efs.gov.pl/English/Documents/HCOP_EN_18January2008_final.pdf)); For the current Hungarian educational development programs see “*Social Renewal Operational Programme. 2007-2013. The Government of the Republic of Hungary. 2007*” (online: [http://www.nfu.hu/download/2737/TAMOP\\_adopted\\_en.pdf](http://www.nfu.hu/download/2737/TAMOP_adopted_en.pdf)).

<sup>7</sup> See “Human Resources Development Operational Program”. 2004-2006. Hungary. Ministry of Employment and Labour. 2003 April 30

- IT content and software development, improvement of interactive and multimedia contents;
- Development and dissemination of E-learning educational materials;
- Support to methodological research works, utilisation of research outputs in skill-based education ;
- Provision of material conditions and infrastructure (e. g.: computer technology devices, software, educational appliances, etc.) necessary for the implementation of the measure.

The program component “*Development of programme packages, curriculum and teaching instruments, including pedagogical development based on the co-operation of institutions involved in the provision of services for disadvantaged children*” aimed directly at curriculum innovation and played a major role in changing classroom level practices in Hungarian schools. It was in the framework of this specific measure that the interventions related with curriculum innovation mentioned in the previous section have been realised.

The use of the EU structural funds for educational development was continued in the next planning period, that is, between 2007-2013. The national development program (called New Hungary Development Plan – NHDP), that is, the overall national strategic framework for social and economic development contained again a human resource development operational program which has been named „*Social Renewal Operational Programme*” (its Hungarian abbreviation has been TÁMOP).<sup>8</sup> This program (with a total budget of 4 097 million Euros) defined six areas of development intervention (“Priority axes”) covering employment, social policy, health and education. From the six priority areas there are three that have been directly related with the different education and training sectors (vocational training, primary/ secondary education and higher education), but the others also contain some education-related interventions (particularly the one that is aiming “Strengthening social inclusion and participation”).

The priority area number 3 of TÁMOP (“*Providing quality education and ensuring access for all*”) is the one that is targeted directly to primary and secondary education. The amount of resources allocated to this priority area was, according to the original planning documents, around 890 million Euros, that is about 22% of the whole TÁMOP budget. Within this priority area the following four concrete groups of intervention measures have been specified:

- Supporting the dissemination of competence-based education
- Improving efficiency of the public education system; developing innovative solutions and cooperation
- Decreasing the segregation of severely disadvantaged and Roma pupils, promoting their equal opportunities in public education
- Supporting the education of groups with different educational needs, and the integration of pupils with special educational needs, intercultural education

In fact, all the four types of interventions contain elements that can be described as *curriculum development* or the *development of classroom level practices* (including capacity development among teachers). The first intervention measure aims, particularly, at spreading those innovative “*program packages*” that had been developed in originally between 2004 and 2006 in the HEFOP

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<sup>8</sup> See: Social Renewal Operational Programme. (op.cit)

program across the whole school system (see *box* below). But this intervention measure is also used to link infrastructure developments (funded from the European Regional Development Fund) with content and capacity development (funded from the European Social Fund) and also to develop the national quality evaluation system (including the feedback system mentioned in the previous section).

### **The development of competence-based program packages<sup>9</sup>**

One of the most remarkable development interventions co-financed from the European Structural Fund between 2004 and 2007 was „*The preparation of teachers and experts for the development of competence based teaching*” This program had two major parts: (1) a central national project aiming at the development of *competence based program packages*, including the testing of these in a limited number of pilot schools, (2) a decentralised component allowing further schools to adapt the competence based program packages. The program has contained a number of complementary components like (1) a program for teacher training institutes to adapt their programs and methods to the needs of competence based teaching, (2) a program for the development of teaching materials for secondary schools in order help preparation for the reformed (competence-oriented) secondary school leaving examination).

Program packages have been developed in the following six competence areas: (1) literacy, (2) numeracy, (3) communication in foreign languages, (4) IKT, (5) social competences and (6) career competences. For each competence three versions have been developed: (1) one for regular utilisation, (2) one for utilisation as part of an existing subject taught in schools and (3) one for extracurricular activities. The program packages have been conceived so that they could be used by teacher as a tool to organise effectively the whole process of competence development. Their most important feature has been the provision of a rich variety of teaching methods. Every package comprises the following elements:

- The presentation of the pedagogical concept
- The detailed curriculum
- The presentation of the system of modules
- The tools (methods) for organising learning
- The tools for assessing the outcomes of learning
- The program for the preparation of teachers for the use of the package
- Description of the relevant support services

These program packages have first been tested in *more than 100* pilot schools, then, in a second round, more than 600 further schools started using them. The program reached this way *more than one thousand* teachers, and *more than 10 thousands* pupils. After the testing more than 20 pedagogical service institutions have been selected to support the spreading of the packages to further “ordinary schools”. These pedagogical service institutions will reach more than 900 further teachers who will start using the packages and this way, according to the plans, by the end of the program approximately 50 thousands pupils could be reached. The first evaluations show that the number of teachers who changed their teaching methods and started using methods enhancing active learning has reached a critical mass. Those involved in in-service teacher training programs often report on the growing number of participants who are already familiar with the use of active methods.

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<sup>9</sup> Source: Country fiche for Hungary. Background document for the comparative analysis „*Key Competences in Europe: Opening Doors for Lifelong Learner*” (op.cit.)

When analysing the EU co-funded interventions that may have had an impact on the improvement of pupil performance we also have to take the higher education development programs into account. There have been, within this priority area, a number of development interventions that have been targeted to *teacher education*, supporting the direct school related interventions. For example, the higher education development programmes have supported the creation of regional pedagogical development consortia by teacher training universities, in order to link better initial teacher training to schools and school development programs.

The development interventions of the 2004-2006 programming period (that is, the HEFOP programs, closed around 2008) might have certainly had a strong impact on the quality of education in Hungary and particularly on the improvement of the PISA results. As for the impact of the interventions of the 2007-2013 programming period (that is, the TÁMOP programs), they also could have some influence on the performance of schools and pupils measured by the 2009 PISA survey, but this must have been modest (given the fact that many of the programs were started only in 2008).

Understanding the nature of the relationships between the EU funded (co-funded) educational development programs and the improvement of the PISA results is naturally demanding a more thorough analysis.<sup>10</sup> The aim of this paper has been only to make the improvement of the performance of the Hungarian school system, as measured by PISA, more visible, to try to identify some possible background factors and possible causal relations, and to stress that the EU funded educational development programs might have had a significant contribution to the observed improvement.

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<sup>10</sup> The role of the EU funded programs in educational development has been presented, as mentioned earlier, in the last national report (2009) of Hungary to the European Union on the implementation of the “Education and Training 2010” Work Programme. The role of TÁMOP in the education sector innovation system of Hungary has been analysed by Tom Schuller in a study entitled “*The Hungarian Education Sector Research, Development and Innovation System (ERDIS) - an International Perspective*” (online: <http://tamop311.ofi.hu/szakmai-program/8-1>)