

Secondary analysis of performances in reading literacy from early school grades to university

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The results of the PIRLS and PISA data collection of 2006 were published in December 2007. A PIRLS – probably in every five years – examines the competences of 4th grade pupils in reading literacy. The PISA Assessment organized by the OECD every three years from 2000 to 2015 analyses the competences of 15-year-olds in reading, mathematics and science literacy. Both programmes provide opportunities for measuring and internationally comparing the improvement of reading skills.

The results of the Hungarian 4th grade pupils in PIRLS were among the top ones. Data of the PISA Assessment, however, show that the performances of Hungarian 15-year-olds do not reach the average performances of participating countries. This shows that the competence developed effectively in the first four grades is not strengthened in the upper grades. The effects of this tendency is analysed by a series of research that we have carried out annually since 2005 on the reading skills of first year university students. The data on the performances of these students prove that higher education that has become mass education very quickly since 1991 produces the same problems as the ones reflected in the achievements of the 15-year-olds of the PISA assessment.

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Background

In the past decade Hungary participated in the major international assessments of pupils' achievements aiming at exploring the topical levels of reading, mathematical or science literacy, namely:

- PIRLS (Progress in International Reading Literacy Study);
- PISA (Programme for International Student Assessment);
- TIMSS (Trends in International Mathematics and Science Study).

PIRLS – initiated by IEA (International Association for the Evaluation of Education Achievement) assesses competences of 4th grade pupils in reading literacy every five years. The first assessment was carried out in 2001, which was followed by the next survey in 2006.

PISA – coordinated by OECD (Organisation for Economic Co-operation and Development) – assesses the competences of 15-year-old pupils in reading, mathematical and science literacy. The tests are taken every three years, each time with a different focus – in 2000 reading literacy, in 2003 mathematics and in 2006 science.

TIMSS – initiated also by IEA – assesses 4th grade and 8th grade pupils' competences in mathematical and science literacy every four years. The first test was taken in 1999 by 8th grade pupils. In 2003 the 4th grade pupils were assessed while in 2007 both grades took part in the assessment. From the aspect of our chosen subject TIMSS is irrelevant, and therefore it will be ignored.

In higher education there were no international assessments similar to the above mentioned tests. (It should be noted, however, that one component of the AHELO programme – Feasibility Study for the International Assessment for Higher Education Learning Outcomes – launched by OECD in 2008 measures Generic Skills Strands, and thus it is slightly similar to the content of the PISA Assessment). In Hungary the so called academic skills of students entering higher education were first measured in 2005. This experiment was motivated by the fact that the number of students in higher education had quadrupled in the 20 years preceding 1991, it had become mass education and many students whose preparedness would not have made it possible to enter higher education before were also admitted. The reading literacy problems indicated by the 2000 PISA Assessment appeared gradually in higher education as well, although there had been no data to support that. The following areas were included:

- mapping the socio-cultural background;
- monitoring reading comprehension skills on the basis of different kinds of texts (publicistic text, professional text, text for testing language usage, text for elaborating different notions);
- solving (mathematical) logical problems;
- testing psychological immune system.
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2,800 students from 15 Hungarian universities took part in the assessment in 2005. The assessment was repeated annually using the same methodology and test booklets, each time including further 2,000 students. In the following only the areas of this higher education research connected to reading literacy will be discussed.

Regarding the above assessments of reading literacy a demand for comparative analyses of outcomes of the various measurement procedures may arise – an outstanding example of such an analysis is

Ildikó Balázs' and Péter Balkányi's study analysing the results of PIRLS and PISA Assessments¹. At the same time methodological problems arise that can make the comparisons of results of measurements with various aims, carried out at various times, covering various age groups, measured by various tools, recording various performances and having various reference points and scopes of validity questionable. This problem is made especially difficult by the attempt of comparing international measurement results in public education with reading literacy outcomes in Hungarian higher education. The problem is made even more serious by the fact that international comparisons are not available in the field of higher education. We tried to find an answer for this – methodologically extremely complex – problem.

Outcomes of the international assessments of reading literacy in Hungary

The achievements of Hungarian pupils were behind the average of the OECD countries in all the three cycles of PISA Assessment, while the achievements of children participating in PIRLS measurements were among the top performers. This indicates that the reading skills of 4th grade pupils are at a relatively high level while 15-year-olds struggle with the lack of such skills.

In the PIRLS assessments Hungary was among the top performers both in 2001 (543 scores) and 2006 (551 scores), and the achievement of only three or four countries were higher. The two measurements indicate that the reading skills of 4th grade pupils are permanently at a high level, moreover they can improve as well. The reading literacy average of OECD countries was 492 scores in the 2006 PISA Assessment, while this average in Hungary was lower, 482 scores. This latter achievement level was characteristic for Hungarian pupils in all the three PISA assessments:

- PISA 2000: 480 scores;
- PISA 2003: 482 scores;
- PISA 2006: 482 scores.

All this indicates that over the years our 15-year-olds achieve permanently at the same level, and there are no signs of either improvement or significant change.

The differing results of PIRLS and PISA can be influenced by several factors. In Hungary conscious, curriculum-based development of reading literacy is carried out only in the first four years of public education. The subject-based education in the upper grades diverts teachers' attention from the continuous improvement of this competence, and probably "it goes unnoticed" that pupils have difficulties in understanding the texts of the various science subjects. The improvement of this competence is not the task of those teaching Hungarian language and literature either, and consequently improving the comprehension of scientific texts lags behind that of other countries taking part in the PISA Assessment.

The difference in comprehending various text types is seen in PIRLS assessments as well. The comprehension level of experience-retrieving texts is higher than that of information-retrieving texts, the difference being 16 scores. Although our pupils performed above the international average in both cases, the significantly lower level of comprehending information-retrieving texts can be recorded among 4th grade pupils as well. This trend becomes even more marked in the upper grades due to the above-mentioned shift of focus.

A considerable difference can be observed in the role concepts that teachers teaching in the first four grades and those teaching in upper grades have of themselves. In the first four grades the focus is usually on competence development, while in the upper grades it is shifted onto subject learning and knowledge acquisition. Thus pupils are usually familiar with tasks and texts similar to those of the PIRLS assessment. However, pupils usually find the tasks of the PISA Assessment strange as they are little prepared for applying their knowledge in new situations.

¹ Balázs, Ildikó – Balkányi, Péter: A PIRLS és a PISA vizsgálat eredményeinek összehasonlítása. *Új Pedagógiai Szemle*, 2008. No. 4, pp 3-11.

The differences in the role-concepts of the teachers are due to the dual nature of teacher training as well (training teachers separately for the first four grades and for the upper grades). Training class teachers for the first four grades is more practice-oriented while training subject teachers for the upper grades is more of a theoretical nature, and is linked to subject departments transmitting a more “aristocratic” approach.

To compare the outcomes of the PIRLS and PISA Assessment the afore-mentioned authors Balázs and Balkányi apply a remarkable approach. The data of the 2001 PIRLS assessment are compared to the reading literacy data of the 2006 PISA Assessment. This approach is justified by the fact that “in Hungary and also in other countries there is a considerable overlap between the target populations of the two assessments. In 2001 about two thirds of the concerned pupils were 10 years old, which means that in 2006 they belonged to the 15-year-old target population of the PISA. And vice versa: two thirds of the 15-year-olds participating in PISA 2006 were 9th grade pupils, which means that in 2001 they were 4th graders”.² Thus a delicate methodological problem could – at least partly – be solved, the target population was identified. This approach seems to be applicable in higher education assessments as well.

Outcomes of reading literacy in higher education

The outlined assessments of reading literacy in higher education cannot be regarded representative as they were carried out on a voluntary basis, so the performances of only those students whose universities or university departments volunteered to participate could be assessed. Were they representative, they could not be considered valid for any given cohort either as only a maximum of 40 percent of a given age group enter higher education, so the target population of those entering higher education could not be identified with the target population of the 2003 PISA Assessment, for example. Thus the conclusions that can be formulated as a result of a comparative analysis of various measurements can be of low validity.

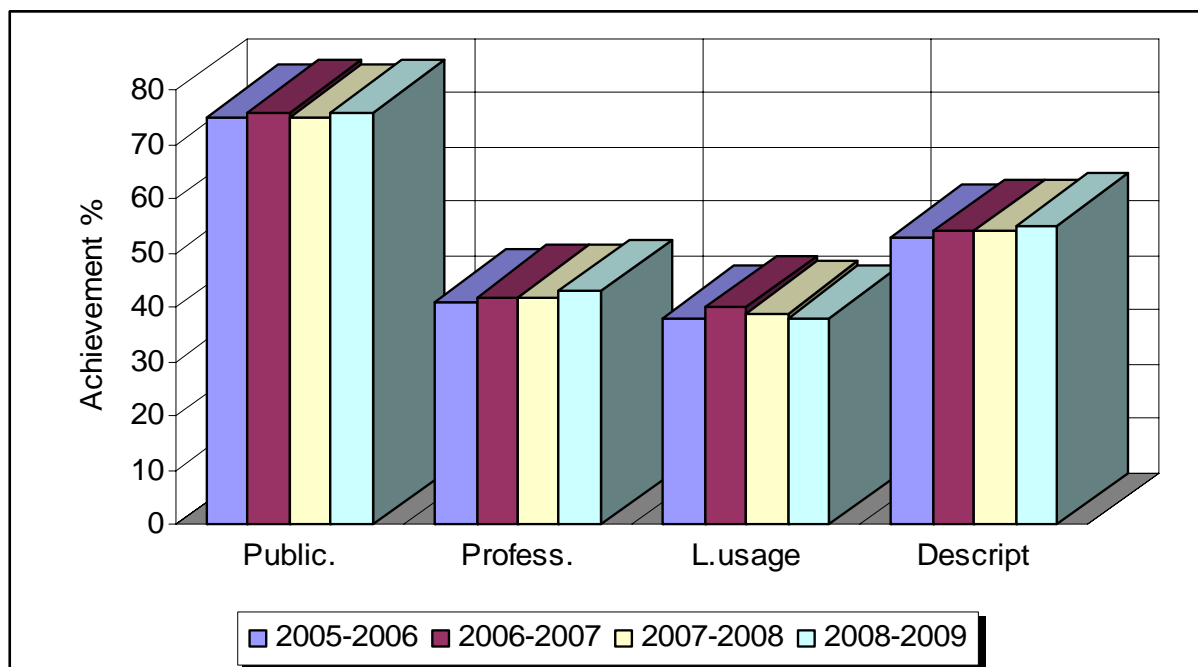


Figure 1. Achievements of students in the case of various types of texts in the case of reading comprehension skills

² Balázs, Ildikó – Balkányi, Péter: A PIRLS és a PISA vizsgálat eredményeinek összehasonlítása. *Új Pedagógiai Szemle*, 2008. No. 4, p. 8.

The measurements that we have carried out show a relatively permanent – or seemingly permanent – level of achievement of students in higher education. In reading comprehension the average performances of those studying in higher education show only a minimum of difference in the examined text types and years, so the reading comprehension skills of university students of various years can be regarded as homogeneous (*Figure 1*). Similar, permanently same-level performances characterised the target population of PISA Assessments well. A considerable part of these target populations – about 40 percent – entered universities. A part of the 15-year-olds participating in PISA 2003 entered universities in 2006, and many members of the 2006 target population will enter universities in 2009. So an interesting similarity can be observed here: the relatively permanent achievement level in PISA reading literacy assessment can be seen in the population of university students as well.

The reading literacy tests carried out at universities show considerable differences in the achievements by various text types. We have already mentioned the differences that could be observed in PIRLS achievements related to experience- or information-retrieving texts. We have also referred to the fact that in the upper grades improving reading comprehension skills concerning scientific/professional tests is usually thrust into the background so the differences in the achievements that can be recorded in PISA Assessments increase. The differences in the achievements of university students are considerable (*Figure 1*).

The so-called slope effect is often mentioned by analysts of PISA outcomes in Hungary referring to the differences among settlements and their schools, or the effect of the parents' educational attainment on their children's achievement. This phenomenon will not be discussed here but it has to be noted that the same trends are reflected in the assessments of university students' achievements. It also has to be mentioned that the differences in the achievements of various years are minimal so even the more differentiated analyses show the general features of the target populations of the PISA Assessments (*Figures 2 and 3*).

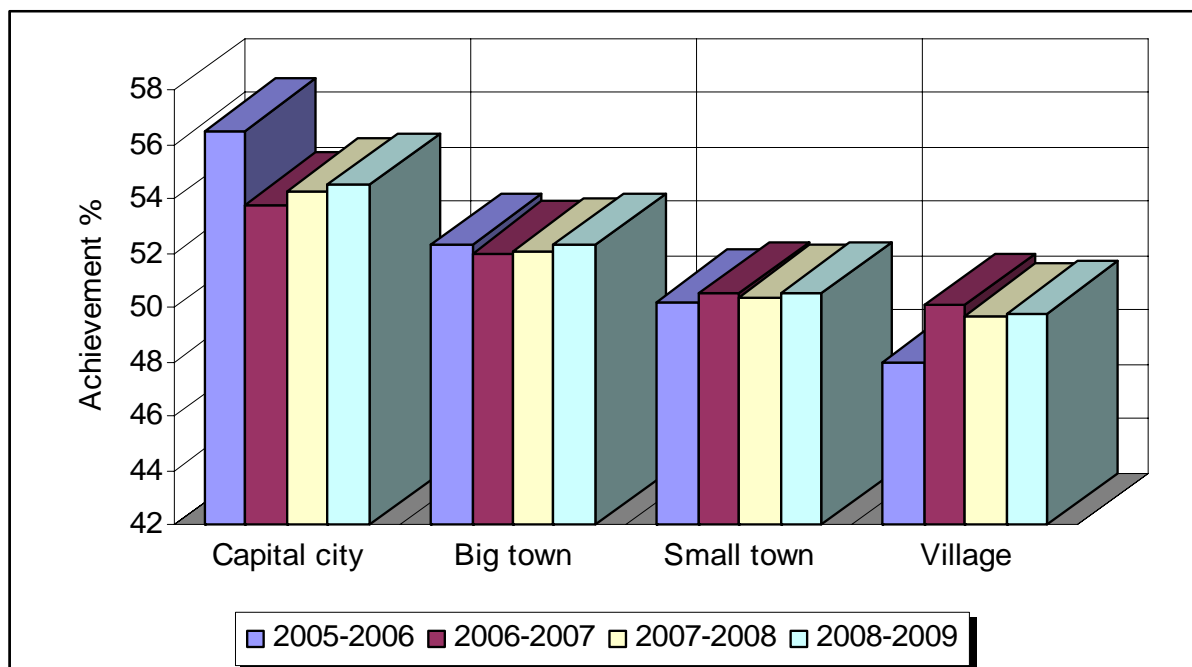


Figure 2. Achievements of students from various types of communities in the case of reading comprehension skills

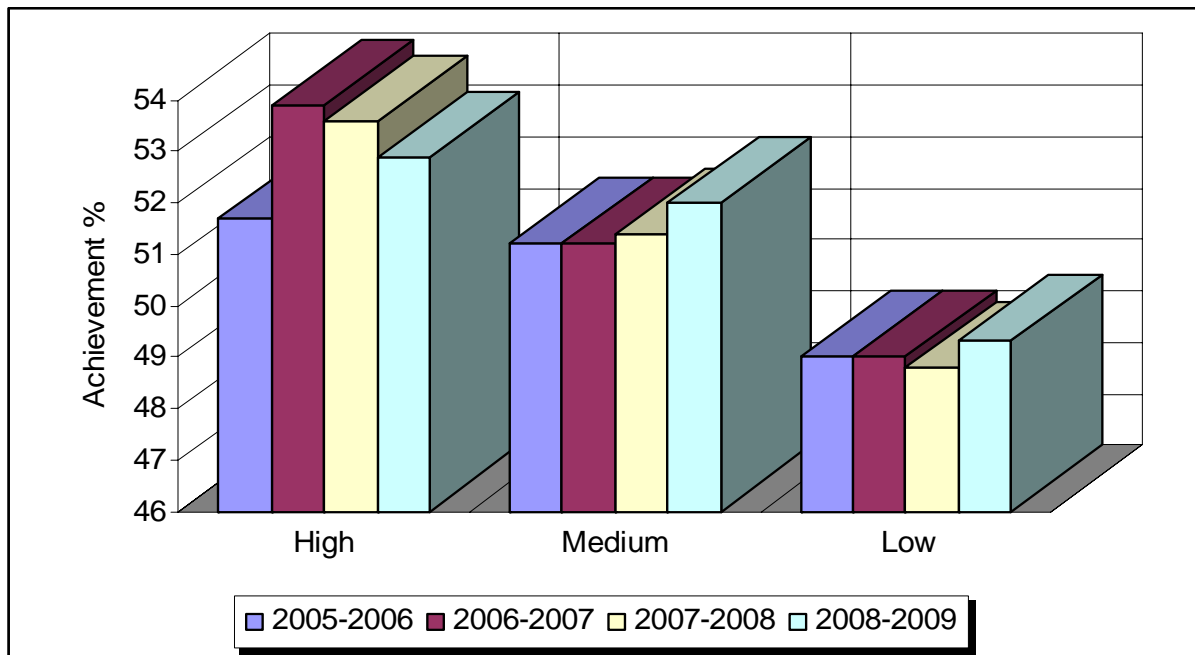


Figure 3. The level of education of mothers and the achievements their student children in the case of reading comprehension skills

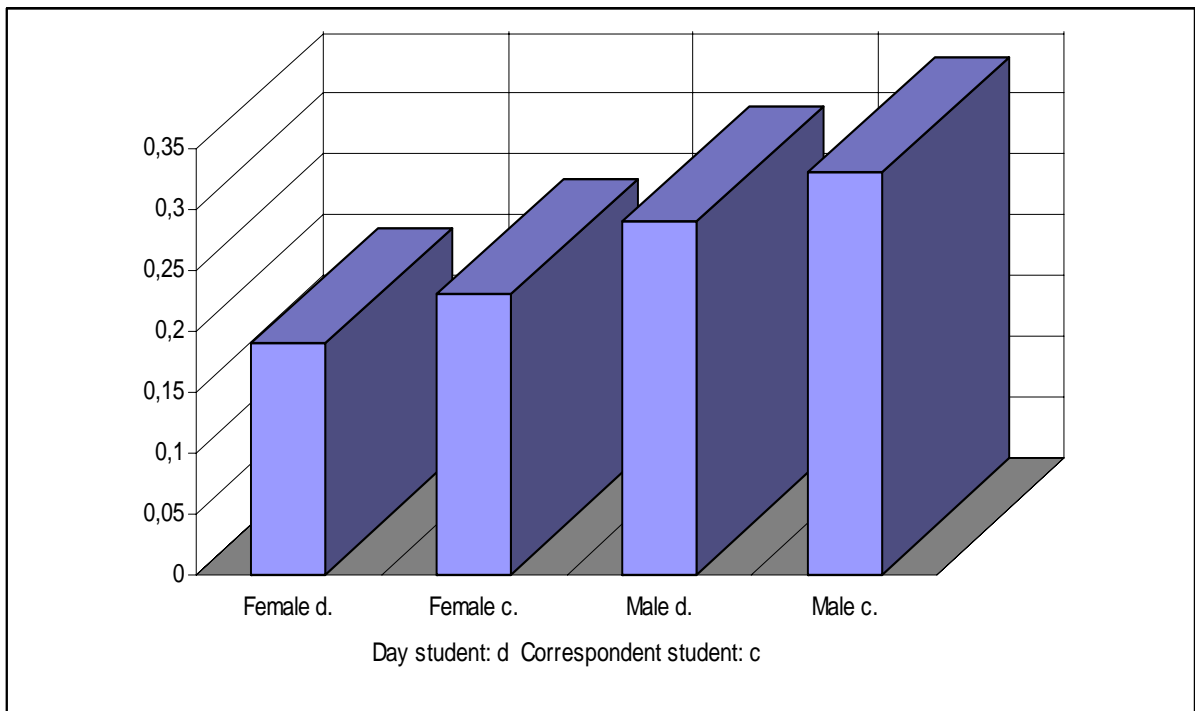


Figure 4. Correlations of reading comprehension and logical tests

The data from the assessments of university students' achievements differ significantly from those of the PISA measurements in one particular area. The measurements of reading literacy of pupils in public education show a significant advantage of girls over boys. This cannot be observed in the measurements carried out at universities, in the sample of university students males show a slight advantage over females. The phenomenon can be explained by the simple fact that two thirds of university students are females, so a smaller, probably better prepared or more motivated part of males – as compared to females – get into higher education. The transfer effects of the advantage of males in reading literacy can lead to other advantages – at least in trends. Between the achievements of males in

reading comprehension and solving logical problems there is a higher correlation than in the case of females. Life experiences also reinforce this correlation (*Figure 4*).

Conclusions

Following our measurements of reading literacy of university students achievement maps were sent to those interested in e-mails. 20 percent of the students participating in the measurements showed interest, affinity or motivation. As of the third year of the measurements courses were offered aiming at improving reading literacy for students needing it or interested in it. However, no students have applied for the offered courses – so the case of improving reading literacy at university level is regarded to be inadequate at this time.

All this can be considered as an experiment to correlate the data collected at various times, ages, with various aims and by various methods and to acquire new information by a comparative analysis of these data. However, it can be seen from this short summary as well that the problems present at universities can be found in the assessments of 4th graders' achievements – so far as small differences. Therefore the following should be considered:

- to regularly review the experiences related to measurements of reading literacy and all key competences, to correlate these data and to provide methodological support for comparative analyses;
- to transform the outcomes of comparative analyses into a programme aiming at the improvement of public education;
- to ensure second chances in higher education as well.