

Measuring the quality and labor market results in education – Case of Slovakia

DRAFT ANALYSIS

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The document offers a brief overview of the indicators used for measuring the quality and/or labor market and other results of particular schools and/or their pupils and students in Slovakia. Further, it includes information on how the results impact the financing of particular schools. It also offers an overview of tools informing the public about the results with major focus on published school rankings. Finally, the document lists some of key lessons learned in measuring the quality in education as well as some of key challenges in this respect discussed in the country.

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The Institute for economic and social reforms (INEKO) is a Bratislava-based non-governmental non-profit organization established in support of economic and social reforms which aim to remove barriers to the long-term positive development of the Slovak economy and society. See also <http://www.ineko.sk/>.

¹ See <http://www.ineko.sk/projekty/visegrad-fund>.

Summary

In Slovakia, there is rather long tradition in measuring the results of pupils and students by means of standardized national testing at the end of primary and secondary education. However, these results have long been unavailable to the public and later they were published in user-unfriendly format without possibility to rank or compare the schools. This changed in 2012 when INEKO launched its internet portal <http://skoly.ineko.sk/>. The portal displays a set of various indicators and ranks the schools by rating. The rating of primary schools is based on two indicators: (1) National tests' results in mathematics and Slovak (or Hungarian) language, and (2) exceptional results rewarded by the Ministry of Education. The rating of secondary schools is based on three indicators: (1) National tests' results in mathematics, Slovak (or Hungarian) language, and foreign languages, (2) unemployment rate of graduates compared to the regional unemployment rate, and (3) exceptional results rewarded by the Ministry of Education. In 2015, the Ministry of Education started to measure "value added" of secondary schools and informed them internally about the results. There are no links between the results and financing the schools from the state budget. However, publishing the results influences decisions of parents and children to choose particular school which has indirect impact on schools budget as they are funded on basis of "normative" which is a defined financial amount per pupil. Officially, the quality of primary and secondary schools is examined by the State School Inspection with focus on the school management, education conditions, process of education and testing pupils. However, due to limited capacities, this control is implemented only on a selective basis. Moreover, only general results are publicly available without providing data for particular schools. The impact of this official quality monitoring is generally considered to be rather weak.

In tertiary education, the Ministry of Education launched an internet portal <http://vs.iedu.sk/> in 2012 displaying a comprehensive set of indicators including graduates salaries and unemployment rates for particular schools and programs. However, this portal has not been updated and, consequently, has not gained sufficient publicity and impact. In 2015 the Ministry of Education launched another portal <http://www.lepsieskoly.sk/> offering smaller set of indicators with fewer possibilities to rank and compare schools and study programs. However, the Ministry's ambition is to develop this portal and to expand and improve the set of indicators. Besides official activities there has long been a project of NGO ARRA (Academic Ranking and Rating Agency) regularly publishing ranking of all tertiary schools in the country based mostly on their academic results: <http://www.arra.sk/>. The tertiary schools are funded based on a complex formula with most emphasis on their academic results and number of students. Officially, the quality of tertiary education should be guaranteed by the Accreditation Commission, which has its own criteria for measuring the quality and subsequent accreditation of particular schools and programs: <http://www.akredkom.sk/en/>. However, the impact of accreditation on improving quality of particular schools is generally considered to be rather weak.

Key performance indicators – Overview of indicators used for measuring the results of particular schools

Primary education

1. National tests: The first standardized national testing at the exit from the primary schools was implemented in a school year 2002/2003. Since then all pupils of the 9th grade (at the age of 15) have been writing the tests from mathematics and Slovak language and, if applicable, also from the language of particular ethnic minority (Hungarian or Ukrainian).
2. Exceptional results: Every year, the Ministry of Education rewards the schools financially for their exceptional results in specific competitions (including national Olympic Games in various subjects) and international projects.
3. State school inspection: The official authority State School Inspection provides controls and evaluation at selected schools in following areas: school management, education conditions, process of education and tests of 9th grade pupils from Slovak language and physics, as well as tests of 4th and 9th grade pupils from natural science.
4. Private testing and competitions: On voluntary basis, the schools have the possibility to take part in up to 9 tests and competitions organized by a private firm.
5. Complementary indicators: There are several indicators offering a more detailed picture of particular schools. Among them, following are most widely used – number of teachers per 100 pupils, share of teachers using the information and communication technology regularly in the process of education, and share of qualified teachers.
6. Self-evaluation: Every year, the schools publish reports on their education activities.

Secondary education

1. National tests: The first standardized national testing at the exit from the secondary schools (at the age of 18/19) was implemented in 2000. In 2005 national tests became official school-leaving exams. The tests are written from mathematics, foreign languages (English, German, Russian, French, Spanish, Italian), and Slovak language and, if applicable, also from the language of particular ethnic minority (Hungarian or Ukrainian). The results are monitored separately for internal and external students.
2. Value added: In 2015, the Ministry of Education computed for the first time “value added” of secondary schools based on comparing individual results of school-leaving national tests in primary education and school-leaving national tests in secondary education. This information has not been made public. The Ministry informed the schools internally about their particular results.
3. Unemployment rate of graduates: The Labor Offices monitor the unemployment rate of graduates approximately 16 months after leaving the school (to the 30th of September in the next year after leaving the school). To adjust for regional differences, INEKO divides the unemployment rate of graduates by the unemployment rate in the county where the school is seated.

4. Exceptional results: Every year, the Ministry of Education rewards the schools financially for their exceptional results in specific competitions (including national Olympic Games in various subjects) and international projects.
5. Admission to higher education: The official authorities monitor the share of graduates who are admitted to tertiary education facilities in Slovakia just in the next academic year after finishing their secondary education. They also monitor the share of those who have been admitted on the total number of those who applied for the admission. The reliability of this indicator is limited because there is no information available about those who have been admitted to foreign tertiary education facilities.
6. State school inspection: The official authority State School Inspection provides controls and evaluation at selected schools in following areas: school management, education conditions, and process of education.
7. Private testing and competitions: On voluntary basis, the schools have the possibility to take part in up to 2 competitions organized by a private firm.
8. Other indicators: There are several indicators offering a more detailed picture of particular schools. Among them, following are most widely used – number of teachers per 100 pupils, share of teachers using the information and communication technology regularly in the process of education, and share of qualified teachers.
9. Self-evaluation: Every year, the schools publish reports on their education activities.

Tertiary education

1. Unemployment rate of graduates: In 2012, the Ministry of Education published the graduates' unemployment rates for particular schools computed as a ratio of unemployed graduates registered at the Labor Offices on the 31th of December and total number of graduates in previous two years. To adjust for regional differences, it is useful to divide the unemployment rate of graduates by the unemployment rate in the "higher territorial unit" where the school is seated. There are eight "higher territorial units" in Slovakia. Since 2012, this indicator has not been updated. In 2015 the Ministry of Education published the average unemployment rates of graduates for the period 2009-2013.
2. Time to get employment: In 2015 the Ministry of Education published the average time the graduates need to get their first employment after leaving the school.
3. Salaries of graduates: In 2012, the Ministry of Education published the average salaries of graduates of particular schools, faculties and study programs based on the database of the Social Insurance Agency. The salaries were monitored separately for daily and external students as well as for graduates with bachelor, master, and doctorate degrees. The Ministry published the nominal average salaries as well as their percentages of the average salary in economy and in the region where the school is situated. Since 2012, this indicator has not been updated. In 2015 the Ministry of Education published the average salaries of graduates for the period 2008-2014.
4. Scientific, research and artistic results: There are three institutions evaluating the number and the academic impact of scientific, research, and/or artistic activities of every school: (1) The Ministry of Education, (2) the Accreditation Committee, and (3) the NGO Academic Ranking and

Rating Agency (ARRA). This evaluation usually includes separate section on the number and research productivity of PhD students. The monitoring takes data from the Web of Knowledge database as well as from local databases.

5. Admission rates: In 2012, the Ministry of Education published (1) the ratio of admitted students to all students applying for the admission at particular school (admitted/applying) as well as (2) the ratio of students who really entered the school to all admitted students (entering/admitted). As a composite index reflecting the attractiveness of particular schools, the Ministry published (3) the ratio of students applying for the admission to admitted students (applying/admitted) multiplied by the ratio of students who really entered the school to all admitted students (entering/admitted). The higher the index the higher is the presumed attractiveness of the study at particular school. Since 2012, this indicator has not been updated. In 2015 the Ministry of Education published the ratio of students who really entered the school to all students applying for the admission at particular school (entering/applying) for the period 2008-2014.
6. Student mobility: In 2012, the Ministry of Education published the shares of students sent out to study abroad and the shares of students coming from abroad to study at particular schools. The higher the mobility, the higher is the presumed attractiveness of the study at particular school. Since 2012, this indicator has not been updated.
7. Feedback from students: All tertiary schools have to regularly collect feedback from students on the quality of education. However, there are no rules unifying the forms (questionnaires) for collecting this feedback. There are also no sanctions for avoiding this duty. Therefore, the results are not complete and comparable among the schools.
8. Research grants: In 2012, the Ministry of Education published the amount of money the school has received from foreign research grants per student. Since 2012, this indicator has not been updated. The NGO ARRA regularly monitors the amounts gained from both domestic and foreign grants and divides the total amount from grants by the number of creative staff.
9. Bachelors continuing at the same school/faculty: In 2012, the Ministry of Education published the share of graduates with bachelor degrees continuing in their master study at the same school or faculty. Since 2012, this indicator has not been updated.
10. Feedback from graduates: In 2015, the Ministry of Education published the results of survey among 15,444 graduates from 2008-2014. The survey includes questions on (1) whether the graduates would choose the same school/program again, (2) if they consider the program they studied to be the most suitable for their current work, (3) to what degree was their study good basis for their professional career, (4) to what degree did the school prepare them for 26 particular skills and competences required in the labor market, and (5) to what degree are the 26 particular skills and competences required/useful in their current work.
11. Other indicators: In 2015 the Ministry of Education published the percentages of graduates employed in different sectors of the economy; the frequency of browsing CVs of graduates of particular schools on the biggest Slovak web portal offering new jobs (<http://www.profesia.sk/>). The Ministry of Education as well as the NGO ARRA monitors the qualification structure of the teaching staff. The ARRA also monitors the teacher/student ratio, separately for professors as well as the share teachers with PhD on total number of teachers.

Information about if and how the results impact the financing of particular schools

There is no direct impact of the results on financing the primary and secondary schools. Both categories are financed based on a “normative” which is a specified financial amount per pupil. Thus, the total subsidy from the state is calculated as a “normative” given for a particular school category (i.e. primary school, grammar school, bilingual school, vocational school, etc.) multiplied by the number of pupils. Indirectly, the school with better results may be more successful in attracting more pupils and this would be reflected in a higher subsidy. However, this assumption is heavily dependent on reducing the information asymmetry between the schools and the parents of pupils. In other words, the assumption works, if parents get reliable information about quality and does not work if they lack it.

In tertiary education there are two main criteria of funding: (1) number of students, (2) scientific, research and/or artistic results. Small fraction of the state subsidy is also dependent on the unemployment rate of graduates of particular school. As opposed to primary and secondary education, part of funding (approximately one half) is directly dependent on the scientific, research and/or artistic results. However, the criteria for evaluating these results have not allowed for major distinction between high-quality and medium results which has led to rather weak impact on quality. Indirectly, the schools may receive more money for attracting more students. Just like in primary and secondary education, the impact of “normative” financing on quality depends on a degree of information asymmetry.

In the public discourse, the “normative” financing has often been criticized for its impact on schools incentives to accept as many students as possible regardless of their quality as well as of the quality of the education process. In other words, the schools are often motivated to accept any students and not to search for the best students who – in their search for top quality – often leave for studies abroad.

Overview of tools informing the public about the results

Primary and secondary education

Until 2012 the results of national tests have been published in user-unfriendly format without possibility to compare schools easily. This has changed in 2012 when the NGO Institute for Economic and Social Reforms (INEKO) launched its internet portal <http://skoly.ineko.sk/> displaying a set of 32 indicators (including national testing results) and ranking the schools by rating.

The rating of primary schools is based on two indicators:

Indicator	Weight
National tests' results in mathematics and Slovak (or Hungarian – for the ethnic minority schools) language	80%
Exceptional results rewarded by the Ministry of Education	20%

The rating of secondary schools is based on three indicators:

Indicator	Weight	
	Grammar schools	Vocational schools
National tests results in mathematics, Slovak (or Hungarian) language, English and German languages	60%	40%
Unemployment rate of graduates compared to the regional unemployment rate	25%	50%
Exceptional results rewarded by the Ministry of Education	15%	10%

The INEKO rating for both primary and secondary schools is computed from results in previous 4 years with following weights: 4 for the most recent year, 3 for second most recent year, 2 for the third most recent and 1 for the fourth most recent year. Small schools with less than 80 graduates are excluded from rankings; however, it is possible to display their rating on the website.

In 2015 the official authority National Institute for Certified Educational Measurements (<http://www.nucem.sk/>) responsible for national testing launched the data portals displaying the results of national testing in a more user-friendly way, however, still without possibility to display school rankings:

- Primary school leaving exams: <http://dataportal.nucem.sk/Dataportal-web/web/vysledky/testovanie/index.xhtml>
- Secondary school leaving exams (maturita): <http://dataportal.nucem.sk/Dataportal-web/web/vysledky/maturita/index.xhtml>

In 2015, the Ministry of Education started to measure the “value added” of secondary schools and informed them internally about the results. The Ministry computed the “value added” based on the difference between individual pupil results in national tests at leaving the primary school and his/her results in national tests at leaving the secondary school.

The State School Inspection publishes only general results without naming particular schools. However, INEKO required this information based on a Freedom of Information Act and publishes it among other indicators on its school portal.

Tertiary education

Since 2005, on a yearly basis, the NGO ARRA (<http://arra.sk/>) has been publishing rankings of tertiary schools based on a rating computed from following indicators:

1. Education (teachers/students ratios, professors and PhD teachers/teachers ratios)
2. Attractiveness of the study (applying students/students planned to admit, entering/admitted students, share of foreign students, shares of students sent out to study abroad, unemployment rate of graduates: 3-year average)
3. Science and research (number and impact of publications and quotations, quotations per publication, impactful artistic results)

4. PhD study (share of PhD graduates on PhD first-year students, scientific performance (publications and quotations) divided by the number of PhD students, share of PhD graduates on total number of professors, share of PhD students on total number of Bachelor and Master students)
5. Success in obtaining grants (domestic grants, foreign grants, as well as total grants divided by creative workers)

The ARRA publishes rankings separately for 11 groups of schools based on their specialization, e.g. technical, natural sciences, medical, economic, philosophical, law, artistic, etc.

In 2012, the Ministry of Education launched an internet portal <http://vs.iedu.sk/> displaying a comprehensive set of indicators including the salaries and unemployment rates of graduates. However this portal has not been updated. In 2015 the Ministry launched another portal <http://www.lepsieskoly.sk/> displaying similar indicators and adding results of a survey among graduates. For more details, see above the overview of indicators for tertiary education.

Current challenges and lessons learned

The biggest opposition to measuring the quality and other results in education is from the side of teachers. Here are the most frequent objections:

1. Most of measurements do not take into account factors beyond education process that influence the pupils' outcomes. The examples of such factors include socio-economic background of pupils, family situation, or differences in quality of students at the entry to the school. This objection partially reflects a lack of measuring the "value added". As a result, the school with better students at the entry will have better results at the exit and vice-versa. Therefore, it is impossible to talk about the school quality based only on the exit results.
2. The measurements cannot objectively assess the real quality because they reflect just a fraction of the education process. For example the national tests cover only a few subjects. Moreover, there is much more to the teaching profession than to teach for the test. In other words, there are things that teachers teach that cannot be assessed by the test, such as interpersonal skills, values, attitudes towards society, etc. Too much emphasis on the tests' results may be at the expense of other teaching activities that are important but impossible to check by a test.
3. There is still risk that the school will cheat at the test. The more emphasis on the tests' result the higher is this risk.

The Ministry of Education reacted to the first objection in 2015 by computing a "value added" of the secondary schools. The results have been communicated to particular schools internally without making them public (for more details, see above the overview of indicators for secondary education).

In November 2015, the Ministry will launch national testing of pupils of the 5th grade at primary schools. This will enable to measure "value added" for the second level of primary education (5th to 9th grade,

ISCED 2). The tests will include mathematics, Slovak language, and Hungarian language for ethnic minority schools.

As for the tertiary education, the Ministry of Education tries to develop the methodology for evaluating the success of graduates in the labor market. In 2015, the INEKO institute has taken part in a project proposing such methodology. Among the proposals it recommends to monitor the salaries and the unemployment rates separately for specific sectors of the economy as well as for specific regions.

To improve measuring of results INEKO also recommends:

- Measuring and publishing “value added” based on national testing for every education level of ISCED 1-3
- Monitoring and publishing average salaries of graduates of secondary schools
- Tracking the individual pathways from primary to secondary and tertiary schools – this would enable to assess the school’s performance based on how successful are its graduates in getting to the schools with better results
- Unifying professional school leaving exams at related vocational secondary schools and publishing the results
- Publishing average results of the psychological screening of pupils entering the primary education
- Collecting and publishing schools’ results in broader scope of competitions
- Measuring and publishing efficiency, i.e. results divided by public subsidies in given period, and/or rate of return of public investment in case of secondary vocational and tertiary facilities (based on comparing public funds used for particular school and taxes paid by its graduates)

In a near future, the decline in natality will make many schools redundant. It is crucial that the above-average schools will not be closed. Better measuring and publishing results may help to avoid this. More direct solution would be to link the schools’ public funding to the results. However, the Ministry is cautious in this respect and, before it happens, it will probably take more years to fine-tune the methodology of measuring results.