



IT Fitness Test—2023

V4 and Ukraine

FINAL REPORT



Digitálna
koalícia

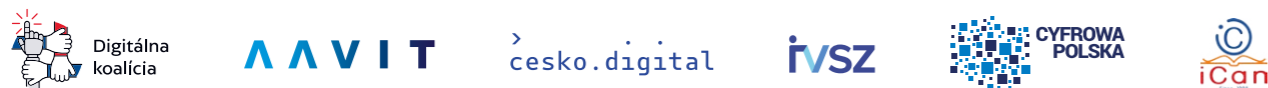
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Slovak Republic

Mário Lelovský
/ Chairman, Digital Coalition



2023 was declared by the European Commission the Year of Skills. However, every year thereafter must remain a Year of Skills. Learning and competence building is a never-ending process, and anyone who wants to enter the labour market, get a quality job, and add value to the growth of the economy must invest in growing their own skills and competences.

Through its projects in 2023, Digital Coalition has also contributed to ensuring that Slovakia's young generation has the necessary skills, which are now absolutely essential for successful entry into the labour market and obtaining a well-paid job. One of these projects is IT Fitness Test, the international results of which are summarised in this report.

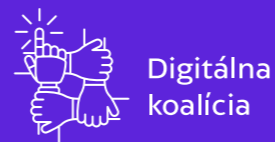
The 12th edition of the IT Fitness Test brought fantastic success in terms of respondent participation not only in Slovakia, but also in the other participating countries. Almost 150 thousand respondents took part in the testing, while our Hungarian partners managed to almost double their number of participants and in the Czech Republic 10 times more participants completed the IT Fitness Test than in the previous year. That is why our partners in the V4 countries deserve a big thank you for a job well done and for helping to spread awareness about

the importance of digital skills among the young generation and also among key institutions in the public and private sector.

Despite slight year-on-year improvements in respondents' average percentage, the trends observed over the last few years have been confirmed. Young people find it difficult to work with office tools and to solve complex tasks that require them to perceive the context of an assignment, to think in context, and to have a good understanding of an assignment's text. However, employers hardly have the capacity to teach new employees to read with understanding, to look up data in tables, or to interpret simple graphs. We are reminded every year that we need to start in schools, and it turns out that it is not only the teaching of mathematics and computer science that is key, but we need to incorporate digital elements into the educational process for any subject, instructing young people how to behave safely online and, in particular, how to critically evaluate information from the digital environment.

With the growing influence of artificial intelligence and other innovations, further investment in a digitally educated society and workforce will be absolutely essential. The figures presented in this final report must especially resonate with the Ministry of Education, which needs to prepare and implement fundamental changes to increase the digital skills of both pupils and educators.

Last but not least, I would like to thank all the partners and supporters from the public and private sectors, without whose financial, logistical, and communication support the successful implementation of IT Fitness Test would not have been possible. We are ready to again bring a new test in 2024 with updated topics and to continue collecting the data necessary for the better and more efficient functioning of the education system in Slovakia and in other countries.



Website: <https://digitalnakoalicia.sk/>
More information about the Slovak IT Fitness Test: <https://itfitness.eu/sk/>
Contacts: slovakia@itfitness.eu | martiskova@digitalnakoalicia.sk



Slovak Republic

Richard Raši
/ Minister of Investments, Regional Development,
and Informatisation of the Slovak Republic



I am very pleased to be able to address you in the IT Fitness Test 2023 Final Report, of which our Ministry has been a partner for the past 3 years.

The 12th edition of IT Fitness Test took place during a year that will probably go down in history as the year of artificial intelligence. Since the ChatGPT chatbot was introduced thirteen months ago, it has been used by more than 180 million people worldwide, including in Slovakia. Last year, generative artificial intelligence had an impact on all sectors of the economy, including the education sector, where it created pressure to change the method and content of teaching and learning.

IT Fitness Test was more than a decade ahead of its time in this respect. It allows for the testing of not only IT knowledge, but also competences in the areas of working with information, understanding context, problem solving, and critical thinking. The importance of technical and soft skills will only increase in the future, given technological developments and the related demand for them from employers. It is therefore to the advantage of policy makers in the V4 countries to have a detailed report on the quality of the skills possessed by pupils and

students on a regular basis, enabling them to inspire each other with examples of good practice and to develop more targeted capacity-building policies for the labour market.

I am pleased to see that Slovak pupils achieved the highest test pass rate among the countries of the Czech Republic, Hungary, Poland, and Ukraine, not only for primary schools but also for respondents over 15 years of age. It is also good news that, although in all the countries there was a slight predominance of males in the group of respondents, for Slovak pupils the groups were almost equally sized. As Slovakia has one of the lowest proportions of females among ICT professionals, it would be interesting to know the success rate of respondents by gender to further motivate girls to study engineering and to continue to work with this knowledge.

The report on the testing results also identifies Slovak pupils' weaknesses, which they have the opportunity to work on. Pupils show limitations in solving tasks of higher cognitive complexity, in which it is necessary to solve a problem at a complex level. There is also the need to improve knowledge and skills in office tools, which have long been weak and inadequate, e.g. for employers' requirements.

Finally, I would like to thank the students, teachers, and the test organizer, Digital Coalition, for the effort put into IT Fitness Test 2023.

Website: <https://www.mirri.gov.sk/>





Czech Republic

Jaromír Hanzal
/ Director, Association for Applied Research in IT

We are happy that this year's edition of IT Fitness Test, which was also the first that we have been involved in, ended up as a success. We would like to thank our partners from Česko.Digital, who played a key role in achieving such large numbers of tested individuals. Participation within the Czech Republic in IT Fitness Test 2023 was almost ten times higher compared to the previous year. We see this as an obligation for next year, as we will try to reach or even surpass these numbers, even though it will not be an easy task. We would also like to take this time to thank the Czech Ministry of Education, Youth and Sports and the Digital Team of the Government of the Czech Republic for being crucial in spreading awareness about the project. Last but not least, we must appreciate the pupils, students, and teachers who took the time to participate in and promote the test. We are looking forward to the next year.



Martina Habová
/ Marketing and Communication Lead, Česko.Digital

We are very pleased to have developed this year's 2nd edition of IT Fitness Test in the Czech Republic together with AAVIT and with the professional patronage of the Ministry of Education, Youth and Sports of the Czech Republic, the Ministry of Labour and Social Affairs of the Czech Republic, the Association of Industry and Transport of the Czech Republic, and the Deputy Prime Minister of the Czech Republic for Digitalization and Minister of Local Development, Ivan Bartos.

Everyone who took part in the testing between April and October received an electronic certificate confirming their level of digital competence. This also gave them information on which areas they needed to improve. This is where we see a significant benefit of the test. The fact that more than 88,000 respondents took part in this year's test was also very positive; often these were entire schools. Huge thanks are therefore due to all the active headmasters and headmistresses and to the teachers themselves. It shows that they also care about the level of digital competence.

Website: www.aavit.cz | www.cesko.digital
More information about the Czech IT Fitness Test: <https://itfitness.eu/cs/>
Contact: czechia@itfitness.eu



Poland

Michał Kanownik
/ President, Digital Poland Association



The results of the latest edition of the IT Fitness Test in Poland are slightly better when compared to last year. Although we still have a lot to work on (cybersecurity is still a priority!), the test results show that widespread educational campaigns do make a positive impact. Students get better at navigating the digital world and they feel more confident and secure.

One might say that digital competences are the skills of tomorrow. We believe, however, that tomorrow is today. We need to prepare our societies as quickly as possible for the technological challenges of the coming years, e.g. the transformation of the labour market. Furthermore, we want today's students to be able to find a modern, well-paid job after graduating, and we want the Polish digital economy to be internationally competitive.

Summing up the results of this year's IT Fitness Test in Poland, I would like to thank all the participants and partners. We were supported by the ministries responsible for education, digitization, and development, as well as private sector companies: Acer, Lenovo, and Google for Education. Thank you, and you are invited to also take part in the next edition, which, I strongly believe, is coming soon.

Website: <https://cyfrowapolska.org/>
More information about the Polish IT Fitness Test: <https://itfitness.eu/pl/>
Contact: poland@itfitness.eu

I am very pleased that IT Fitness Test is conducted across borders, in several Central and Eastern European countries. In 2020 we established a coalition in Warsaw of industry organizations from the countries of the Three Seas Initiative. Nowadays, the CEE Digital Coalition is made up of as many as 19 organizations from 11 countries. Although we sometimes have separate interests, we ultimately face the same challenges. In a globalized world, we need to create a regional community, because only together will we be able to compete with the world's major technology centres.





Hungary

Krisztina Bodáné Tajthy

/ Secretary General, IVSZ – Association of Digital Companies



We believe that advanced digital skills are indispensable for current and future employees to secure a suitable job and for countries to remain competitive. Continuous improvement of these skills must already begin when young people are in their school years. To consciously develop digital skills, people need to be able to measure the actual status of these skills. It is at the same time the government's, the employers', and citizens' responsibility and in their interest to enhance digital competences. Hungary's digital economy cannot grow without a skilled workforce.

IVSZ consistently seeks opportunities to delve into topics related to digital skills, aiming to understand the current landscape, explore areas for development, and provide recommendations to the government and employers on addressing this issue.

Engaging in the IT Fitness Test alongside the V4 countries and Ukraine supports our efforts. This project allows us to approach the promotion of digital skills in various ways, such as raising students' awareness of their importance, engaging with schools and teachers on fostering digital competencies, and formulating specific recommendations for the government regarding educational focus areas based on the results.

We are very proud that in the second year of running IT Fitness Test in Hungary, we doubled the number of participants compared to the previous year, and the overall results improved as well. However, there is still much work to be done. Fortunately, IT Fitness Test provides us with a clear understanding of which areas we need to channel our improvement efforts towards.

We are looking forward to next year's IT Fitness Test and aim to increase the number of participants even further, with the expectation of achieving even more impressive results.

Website: <https://ivsz.hu/>
More information about the Hungarian IT Fitness Test: <https://itfitness.eu/hu/>
Contact: hungary@itfitness.eu



Hungary

Gábor Major

/ Partner Maker's Red Box



Successful digital skills development relies on the preparedness of schools and teachers, establishing a foundation for effective education in the digital age. Bridging the gap between what students learn and what they need to succeed in a fast-moving, tech-driven environment is becoming a top-of-mind question for schools everywhere. The findings of the IT Fitness Test not only shine a light on the current situation but also draw attention to areas requiring improvement. The digital citizens of the future must be prepared to use technology to research, create and collaborate, and share their ideas with impact. This requires teachers to equip students with skills they sometimes lack themselves and are near-impossible to teach in a traditional classroom setting.

Providing support to educational professionals is the only way we can empower them for future success. Edtech Hungary delivers programmes that help schools meet rapidly changing labour market needs. Designed to enhance teachers' digital skills and facilitate problem- and inquiry-based learning, Maker's Red Box course materials serve as the backbone of our programmes. While teachers act as mentors, students are challenged to find solutions to real-world problems using digital technology and work together to achieve a larger goal. We can foster an engaging learning environment where students of all interests and abilities can thrive, effortlessly acquiring future-proof skills. This environment, fortified by cutting-edge technological tools and a new pedagogical approach, transforms the educational experience into one that is both motivating and highly effective for educators and students alike.





Ukraine

Alona Kurotova

/ Managing Director, iCan School



The twelfth edition of the IT Fitness Test was unique for two reasons. It expanded to include Ukraine as another country where pupils were tested, but more importantly from our point of view, the test was also designed for and administered to Ukrainian pupils and students living in Slovakia for an extended period due to the war. As shown by the test results, where Slovakia came out best followed by Ukraine, this country and its pupils and students have very good IT knowledge and skills. For many of them, online learning was the only way to continue their studies, and when we add almost two years of war to the two years of Covid, we can see that the need for IT skills is crucial for their education and further employment in life. In addition, of course, it is also true for them that the rapid changes in society towards the greater digitisation of all processes will require a number of experts and specialists with new IT knowledge and skills in a short time. IT Fitness Test is precisely aimed at being able to correctly evaluate the current situation and set up possible changes. As our society has changed with the beginning of the war in Ukraine and the arrival of large numbers of people who fled the war to Slovakia, it is very right that we involve Ukrainian pupils and students in the same projects as their Slovak classmates, as they are already an integral part of our educational system and we cannot estimate the timeframe of their stay in Slovakia in the current situation. It is also already clear to us that a large group of these pupils and students will remain in Slovakia after the end of the war, as they have nowhere to return to. We therefore very much appreciate the fact that the Slovak National Coalition for Digital Skills and Jobs (Digital Coalition) has enabled and supported the participation of Ukrainian pupils and students in digital skills testing and we believe that this tradition will continue in the future.

Website: www.icanschool.sk
More information about the Ukrainian IT Fitness Test: <https://itfitness.eu/ua/>
Contact: ukraine@itfitness.eu



Characteristics and implementation of the IT Fitness Test

The test consisted of three parts:

Part I: Profile

In this section, respondents filled in their basic **personal information**. As the test was evaluated after the end of the testing period and the most successful participating schools were to be rewarded, the data collected in this part of IT Fitness Test was used to identify them.

Part II: Information Part

This part contained 14 questions focused on basic characteristics of the test taker in terms of their use of information technologies (what tech they use, from what age and for what purposes, what their most frequent sources of information are, what they use the Internet for, etc.). This part was optional.

Part III: Testing

The last part of the test, **knowledge and competency**, focused on practical skills and the actual testing of the respondents in different IT areas. Two types of tests were used, one with a view to checking the digital skills of regional school graduates aged 15 to 18 for continuing their studies at a higher level of education or in practice, the other for primary schools. University students, teachers, and members of the public of all ages were also involved in the testing.

The priority target groups targeted by the testing were made up of:

- pupils and graduates of primary schools or eight-year grammar schools – aged between 14 and 16.
- secondary-school and university students – over 15 years of age.

In addition to pupils and students, IT Fitness Test could also be taken by teachers and educators, as well as other interested people of any age.

There were two types of questions in the test: questions with a choice of one answer out of four options, with just one being correct, and questions that had several sub-questions (statements) that had to be decided individually – for example, whether they were true/false or correct/incorrect, etc. (so-called cluster dichotomous items). The correct answer was the complete

sequence of answers to the sub-statements, i.e. respondents scored a point if they answered all the sub-questions correctly (or chose the correct answer from the pair of options).

In order to reduce the risk of advanced knowledge of test questions gained from respondents who had already completed the test, the test was generated randomly for each respondent using four previously created versions of each question.

Each respondent's score was continuously calculated during testing and converted into a percentage success rate at the end of the test, based on which the respondent was assigned to one of five levels. At the end of the testing, the respondent was not only informed of their result in the form of their pass percentage, but was also shown the level they had achieved, together with an appropriate characterising written comment.

Certification testing in the 12th edition of IT Fitness Test took place from 3 April in the Czech Republic, 5 April in Hungary and Poland, and 13 April in Slovakia. **The test was also available in the Ukrainian language in 2023 to test the skills not only of pupils studying in Ukraine, but especially of pupils involved in the education systems of the Visegrad Four countries.** The test could also be completed in English.



Certification testing was completed in all participating countries on 31 October 2023. During this period, test respondents also received an electronic certificate and could compete for incentive prizes according to the rules and status of the competition

as announced in each country. After the certification testing was completed, the correct answers were made available to the respondents, and everyone could repeat the test several times in order to improve their IT skills.

A. Test characteristics for respondents over 15 years of age

The test is intended primarily for secondary school and university students and their teachers, allowing for the verification of skills that are focused on more practical advanced knowledge, skills, and competences of IT literacy. Computer literacy is now not only an important competitive advantage in the labour market but is becoming a necessity of everyday life. This test will give a school graduate a clear idea of whether they can work with computers and the Internet at the level commonly required by employers today. Teachers and school digital coordinators had the opportunity to manage student testing in their classroom and thus also use the results of the testing in the educational process.

Of course, the test can also help those both employed or unemployed to identify areas where they need to improve their IT skills. After completing the test, all participants receive a certificate which, in addition to a short written evaluation, also includes a score of their mastery of the five tested categories as a recommendation on what they should work on improving.

Test tasks were divided into five main categories:

- The Internet**
- Security and Computer Systems**
- Complex Tasks**
- Office Tools**
- Collaborative Tools and Social Networks**

Five items were included in each category of the test for respondents aged 15 years and over, **making a total of 25 items**. Respondents were also given information about their success rate in each category after the testing had been completed.

The test was designed for high school and college students and was aimed at finding out their level of:

- basic and advanced IT knowledge and skills,
- competences in creating and presenting information (office software, the Internet),
- practical skills in searching for and processing information (sources, searching and sorting, communication).

The assumed optimal time to solve the test was 60 minutes (the test was timed for 15 days at the time of its assignment).

Table 1 shows the distribution of success levels and each level's corresponding comments.

Percentage success rate	Level	Comment
95 – 100%	Excellent level of knowledge and skills in the field of IT	Congratulations on your great results! You must be an IT professional or a very skilled IT user.
81 – 94%	Above-average level of knowledge and skills in the field of IT	Very good result. Your knowledge and skills in the field of IT are at a very good level, you are familiar with the IT world, and you can work effectively with IT tools.
51 – 80%	Average to slightly above-average level of basic IT knowledge and skills	Your IT skills are at an average to slightly above-average level. In order to be able to use IT effectively, you should pay more attention to this area.
21 – 50%	Lower to average level of basic IT knowledge and skills	Your IT knowledge and skills are below average to average. You are on the right track, but you still have to work on yourself for better orientation in IT.
0 – 20%	Low level of basic IT knowledge and skills	Unfortunately, the test showed only a low level of basic IT knowledge and skills. For a better orientation in the modern digital world, we recommend intensive study in this area.

Table 1 Characteristics of the different levels of test results for secondary and tertiary education

B. Test characteristics of the test for primary schools

The test was designed for ninth graders and elementary school graduates. This means that it contained tasks that pupils finishing primary school and graduates of primary school should be able to solve (i.e. optimally for the age group of 14- to 16-year-olds).

The tasks were focused on different areas of computer science. The test was designed in such a way that the tasks tested mainly skills, specific subject competences, but also some key competences. An attempt was made to avoid testing specific knowledge, facts, and encyclopaedic knowledge. Rather, the intention was to focus on testing the ability to analyse input information. Further, emphasis was placed on understanding connections and drawing conclusions, problem solving, and critical thinking.

The test includes tasks at different, but chiefly higher cognitive levels (comprehension, application, analysis, and evaluation).

Some tasks are more complex and it is important to take several steps to master them successfully (e.g. to open a table in a prepared file, understand the information contained in it, calculate the result using a simple formula, and evaluate it according to a given criterion; to find information on a web page and obtain the resulting information according to a given criterion; to analyse the properties of a certain process, estimate its rules, and predict the next behaviour, etc.).

The test was divided into five categories:

- I. The Internet
- II. Security and Computer Systems
- III. Complex Tasks
- IV. Office Tools
- V. Collaborative Tools and Social Networks

Percentage success rate	Level	Comment
95 – 100%	Excellent level of basic IT knowledge and skills	Your basic knowledge and skills in the field of IT are at an excellent level, you are familiar with the world of IT, and you can work very well with IT tools. You are probably an IT enthusiast and are one of the most skilled IT users. You are excellently prepared for high-school study.
81 – 94%	Above-average level of basic IT knowledge and skills	Your basic knowledge and skills in the field of IT are above average, you are familiar with the world of IT, and you can work effectively with IT tools. You only make mistakes occasionally in small details. You are very well prepared for high-school study.
51 – 80%	Average to slightly above-average level of basic IT knowledge and skills	Your IT competencies are at an average to slightly above-average level. You are able to find your way around and use IT for work or play. However, there is still room for improvement. You are ready for your high-school studies.
21 – 50%	Lower to average level of basic IT knowledge and skills	Your IT knowledge and skills are below average to average. You have some skills that you can use in your everyday life and which you will need in your further studies. But you still have a lot of work to do. You are ready to continue your studies in high school.
0 – 20%	Low level of basic IT knowledge and skills	Unfortunately, the test revealed only a low level of basic IT knowledge and skills. We recommend intensive study in this area to better manage high school and living in our modern world full of IT.

Table 2 Characteristics of the different levels of test results for primary schools

Each part contained four tasks, meaning the test had 20 questions in total. The optimal time to complete the test was assumed to be 45-60 minutes (the test was timed for 15 days at the time of its assignment).

Many of the tasks required the use of the Internet to solve the test. Perhaps solvers also used it when working on other tasks (this is not possible to avoid and no such endeavour was undertaken here).

An attempt was made to design the test to include tasks of varying difficulty but to avoid extremely difficult and extremely easy tasks – as stated in testing theory, the optimal task difficulty is approximately from the interval of

20 to 80 percent. The goal of the test is to distribute the test takers well, therefore the test was designed so that the average success rate would be around 50 to 60 percent (we could only estimate this, as the tasks were not pre-piloted).

The aim of the test was to create tasks that are more interesting, more practice-based, and less directly focused on the context that is taught in primary school. We believe that the test could be insightful for teachers and show the appropriate direction of teaching in primary school.

Table 2 shows the distribution of success levels and each level's corresponding comments.



I. Evaluation of the test for primary schools

Ia. Basic overview

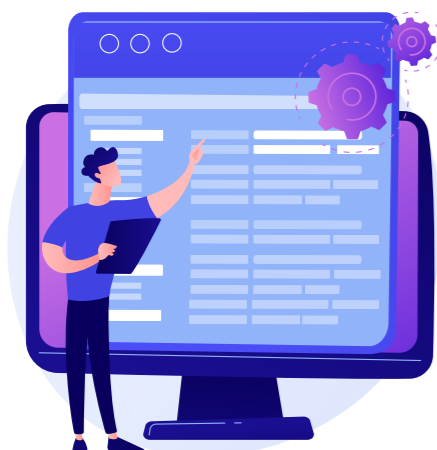
	CZ	HU	PL	SK	UA
Total number of respondents	44,041	2,533	8,357	18,186	361
Respondents who completed the test for primary schools aged 7 – 16	33,784	1,868	6,361	13,240	270
Average success rate, aged 7 – 16	53.04%	52.63%	50.84%	58.17%	56.04%
Average success rate, aged 7 – 13	49.32%	54.02%	51.38%	54.36%	–
Average success rate, aged 14 – 16	54.96%	50.42%	49.93%	61.51%	–
Sensitivity of the test	56.90%	60.80%	58.60%	61.68%	60.56%
Average teacher success rate	71.58%	73.39%	62.80%	71.91%	–
Test reliability (Cronbach’s alpha)	0.77	0.79	0.78	0.81	0.80

Table 3 Basic psychometric parameters of IT Fitness Test 2023 for primary schools

Note: Please note that a comparison of average year-to-year test pass rates cannot reliably assess the evolution of the population’s IT skills as both the test and the test takers change from year to year. Comparisons of test results with previous years should be seen as indicative only.

Ib. General data on respondents

The test was published on a publicly accessible portal and anyone who filled in the required data could participate. **The total number of respondents to the test for primary schools was 73,478.** In the evaluation of the tests, data from 55,523 tests corresponding to the age group 7 to 16 years was used. In the primary sample, we did not evaluate: respondents due to age outside the interval < 7 to 16 > years; respondents who did not complete the test; teachers (they are evaluated separately); employee respondents; respondents who classified themselves as “Curious (Other)”.



A. Overview of respondents by age

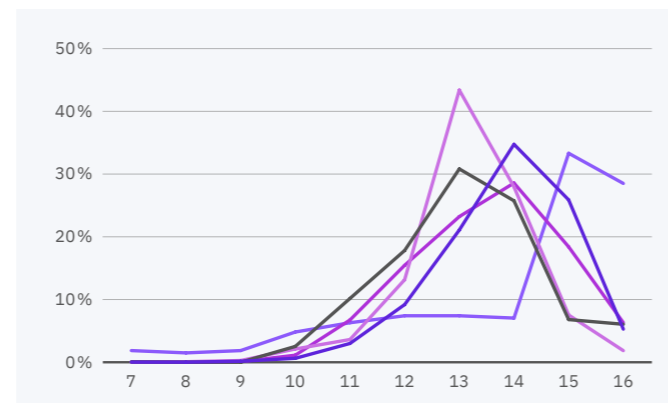


Chart 1 Breakdown of respondents by age group

In Hungary and Poland, the largest age group was 13-year-olds. In the Czech Republic and Slovakia, the largest age group was 14-year-olds. Ukrainian pupils had the highest representation of 15-year-old pupils.



B. Representation of respondents by gender

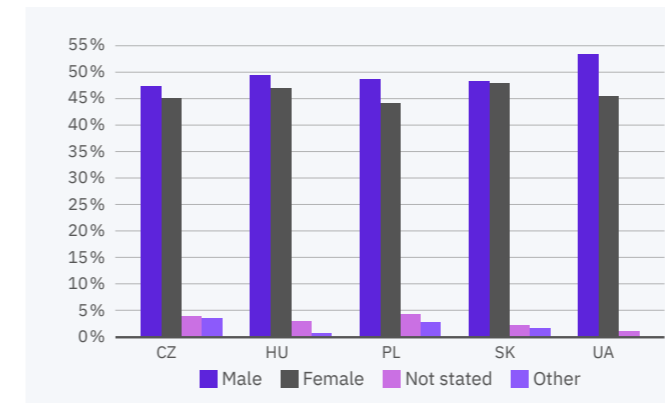


Chart 2 Representation of respondents by gender

In all countries, males were slightly over-represented. The most pronounced differences in male representation were between Ukrainian and Polish pupils. For pupils in the Slovak Republic, the groups were almost equally large. However, the difference in representation between male and female respondents is smaller (except for Ukraine) than the number of respondents who did not indicate a gender.

Ic. Evaluation of the test part of the test for primary schools

A. Raw score of the entire test

The raw score captures the results of testing by number of respondents and number of points earned.

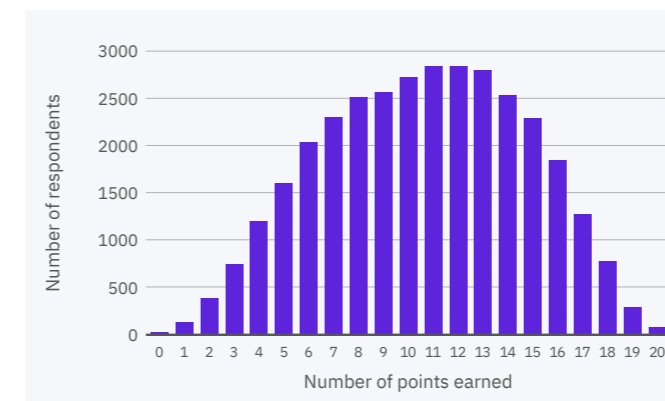


Chart 3 CZ – Distribution of pupils’ raw scores

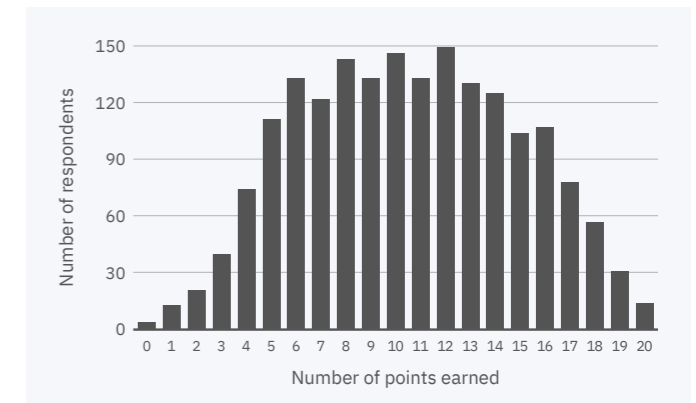


Chart 4 HU – Distribution of pupils’ raw scores

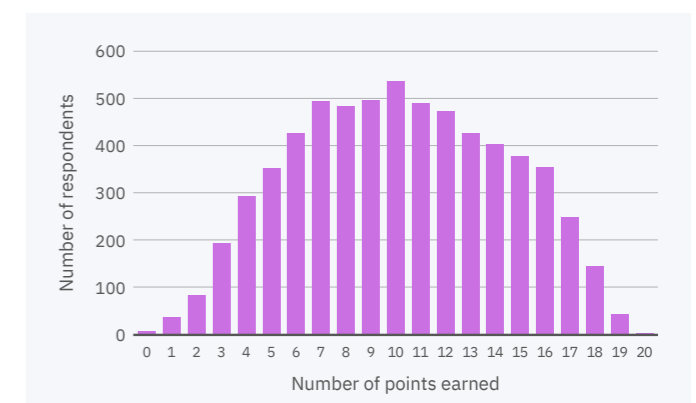


Chart 5 PL – Distribution of pupils’ raw scores

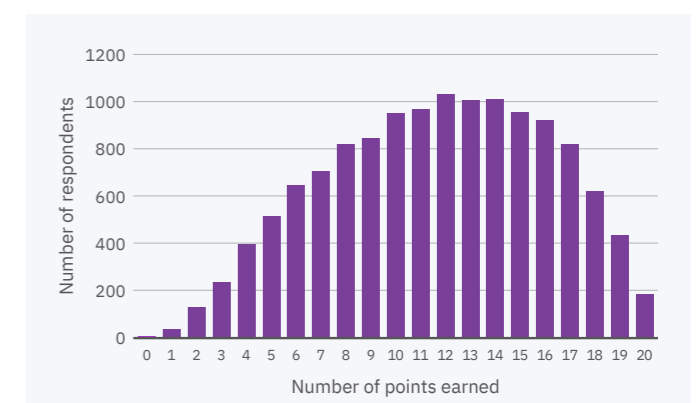


Chart 6 SK – Distribution of pupils’ raw scores

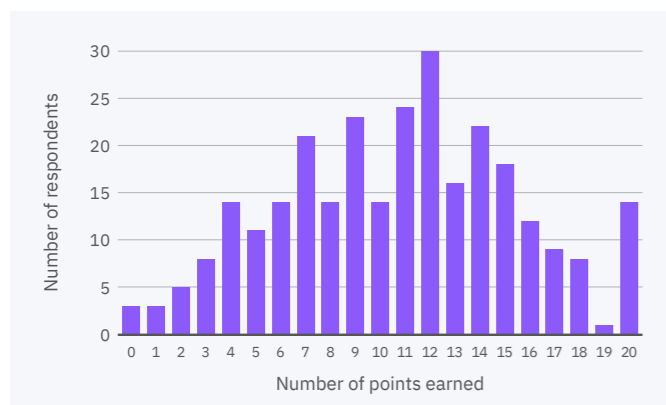


Chart 7 UA – Distribution of pupils' raw scores

Comparing the distribution of raw scores, we see differences between the countries. In the Slovak and Czech Republics, the peak of the distribution curve is shifted more to the right, which means that respondents scored higher on the test. The sample of Ukrainian students was too small for statistical evaluation.

B. Success rate of respondents by age group

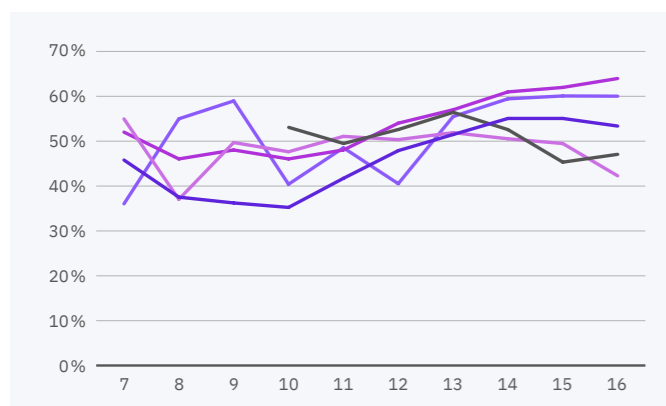


Chart 8 Pupils' performance on the test by age

In the Czech and Slovak Republics, the pattern of test performance by age is roughly similar, in contrast to Hungary and Poland. Interestingly, the success rate of the youngest participants is relatively higher. However, it is possible that this could reflect respondents' misrepresented age here. We see more pronounced fluctuations for Ukrainian pupils, which may also be due to the small number of respondents. Interestingly, in some countries (CZ, HU, PL) the success rate of the oldest respondents is not higher compared to the younger age categories.



C. Respondent success rate by region

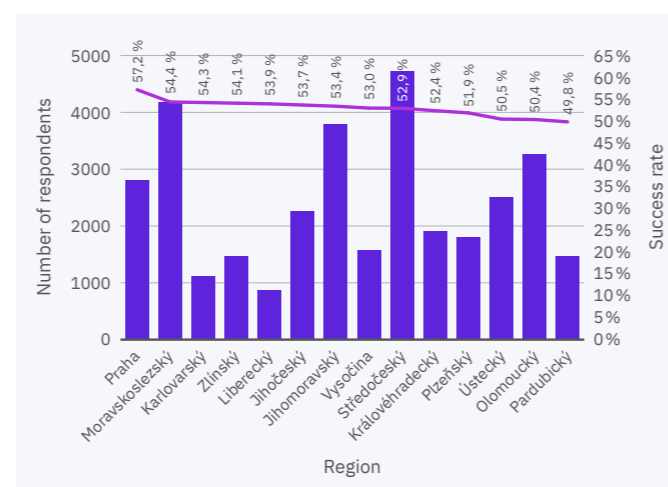


Chart 9 CZ – Representation of test respondents by region and their success rate

The highest success rate was obtained by pupils from Prague (region). The lowest success rate was in the Pardubice Region. The difference between the regions with the highest and the lowest success rate is approximately 7 percentage points. From the graph it can be seen that a region's success rate does not depend on the number of respondents.

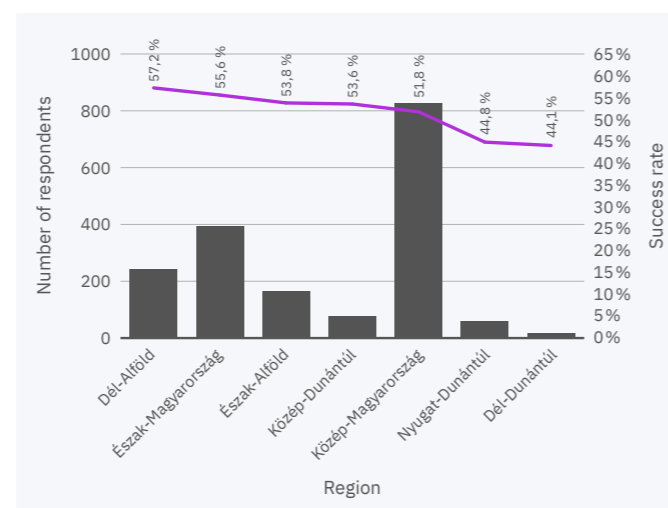


Chart 10 HU – Representation of test respondents by region and their success rate

The highest success rate was achieved by pupils from the region of Dél-Alföld (south-eastern Hungary). The lowest success rate was in Dél-Dunántúl (south-west Hungary). The difference between the highest and the lowest regions is significant – approximately 13 percentage points. It can be seen from

the graph that a region's success rate is not dependent on the number of respondents, although it should be noted that in most regions turnout was very low. The region of Közép-Magyarország (central Hungary) had significantly better turnout.

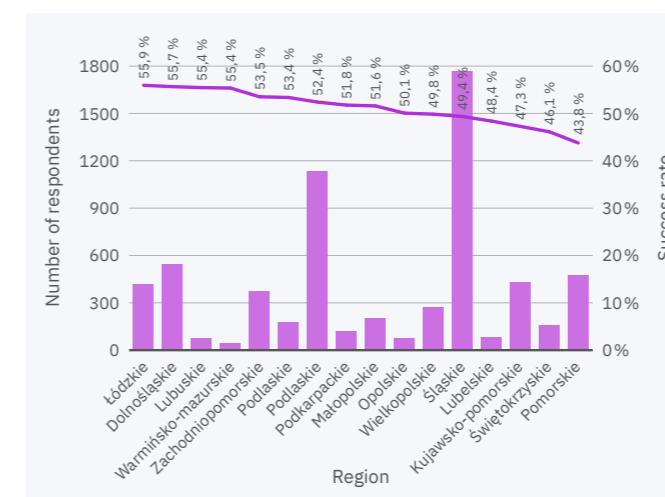


Chart 11 PL – Representation of test respondents by region and their success rate

Pupils from the province of ŁÓDZKIE (Łódź) had the highest success rate. The lowest success rate was in the province of POMORSKIE (Gdańsk). The difference between the highest and the lowest performing provinces is significant – approximately 12 percentage points. It can be seen from the graph that a province's success rate does not depend on the number of respondents, although it should be noted that in most provinces there was very low turnout. The Silesian Voivodeship had significantly better turnout.

D. Success rates in individual test categories

The test was divided into five thematic categories. Each category contained four test items. The following table shows the average success rate in each category:

Category	CZ	HU	PL	SK	UA
I. The Internet	66.7%	62.1%	64.6%	70.5%	67.4%
II. Security and Computer Systems	55.8%	51.8%	54.3%	57.7%	52.8%
III. Complex Tasks	42.1%	46.5%	44.2%	49.3%	44.5%
IV. Office Tools	42.1%	43.9%	40.4%	49.6%	52.9%
V. Collaborative Tools and Social Networks	58.4%	58.9%	50.7%	63.7%	62.6%

Table 4 Success rate in each test category

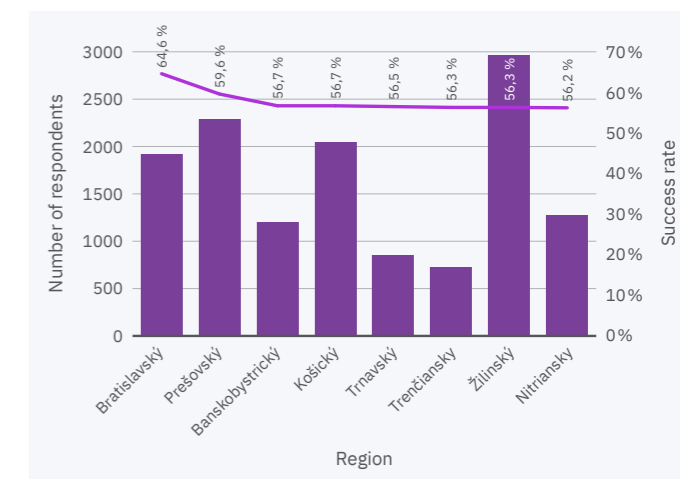


Chart 12 SK – Representation of test respondents by region and their success rate

The highest success rate was achieved by pupils from the Bratislava Region. The second in order is the Prešov Region. Interestingly, the other 6 regions are approximately at the same level. The lowest success rate was in the Nitra Region. The difference between the regions with the highest and the lowest success rate is approximately 8 percentage points. From the graph it can be seen that a region's success rate does not depend on the number of respondents. Žilina Region has the highest participation rate.

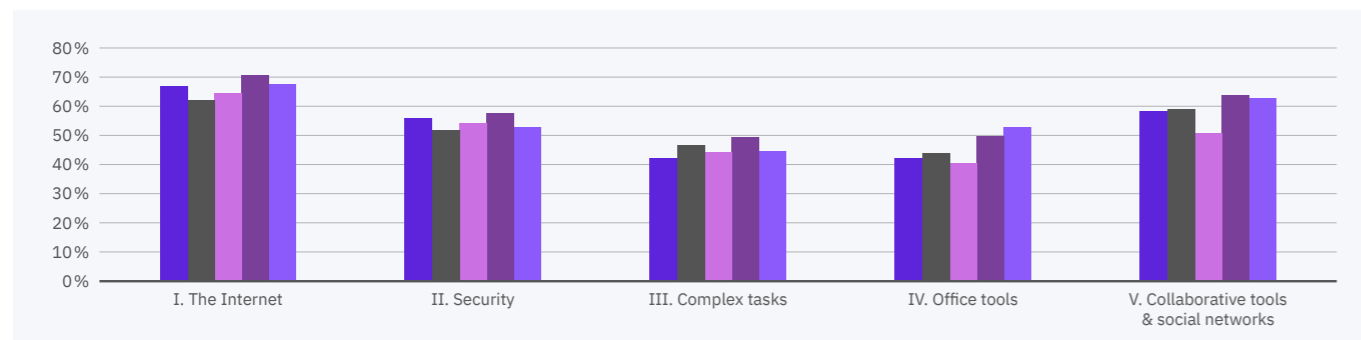


Chart 13 Success rate in each test category

The maximum differences (highest and lowest scores) in the countries' performance in each category of the test are at a level of 13 percentage points. The smallest differences between countries are in the Security category. The highest differences between countries are in the category of Collaborative Tools and Social Networks. The highest success rates are in the Internet category, while respondents' lowest success rates are in the Complex Tasks and Office Tools categories. Pupils from the Slovak Republic had the highest success rates in almost all categories; only in Office Tools did pupils from Ukraine have higher success rates. In the Collaborative Tools and Social Networks category, pupils from Poland had a weaker success rate compared to other countries.

E. Success rates for individual test tasks

In the following table, we show the average success rate of all four variants of the test:

Task	CZ	HU	PL	SK	UA
I. 1 Station	64.03%	67.83%	65.89%	71.76%	66.67%
I. 2 Competition	66.02%	59.26%	61.25%	71.15%	67.78%
I. 3 Travel	65.88%	52.36%	67.60%	74.86%	65.19%
I. 4 ChatGPT	71.00%	68.84%	63.53%	76.28%	70.00%
II. 1 Wi-Fi	56.16%	44.54%	60.71%	59.88%	31.48%
II. 2 Sensitive data	38.78%	38.12%	36.47%	44.34%	38.89%
II. 3 Ranking	54.26%	45.56%	46.38%	59.44%	53.70%
II. 4 Warning	74.01%	79.01%	73.60%	80.79%	87.04%
III. 1 Vault code	65.76%	60.22%	60.30%	70.14%	55.93%
III. 2 Application	29.25%	49.57%	49.82%	53.79%	46.67%
III. 3 Vacuum cleaner I	47.75%	49.04%	46.42%	54.40%	50.37%
III. 4 Vacuum cleaner II	25.67%	27.14%	20.44%	30.85%	25.19%
IV. 1 Drawing	47.58%	42.34%	45.90%	56.87%	58.52%
IV. 2 Commentary	27.25%	31.96%	25.17%	40.84%	42.22%
IV. 3 Recycling	41.82%	45.02%	42.27%	55.73%	51.48%



IV. 4 Graph	51.73%	56.26%	48.07%	59.69%	59.26%
V. 1 Chat	47.57%	50.05%	51.22%	57.53%	53.33%
V. 2 Instagram	62.79%	63.76%	43.17%	70.60%	62.22%
V. 3 Exhibition	60.56%	56.00%	53.03%	68.40%	62.59%
V. 4 Cloud	62.86%	65.74%	55.48%	72.85%	72.22%

Table 5 Percentage of success in each test item

The following graph shows the success rate of pupils in the test for primary school aged 7-16 years.

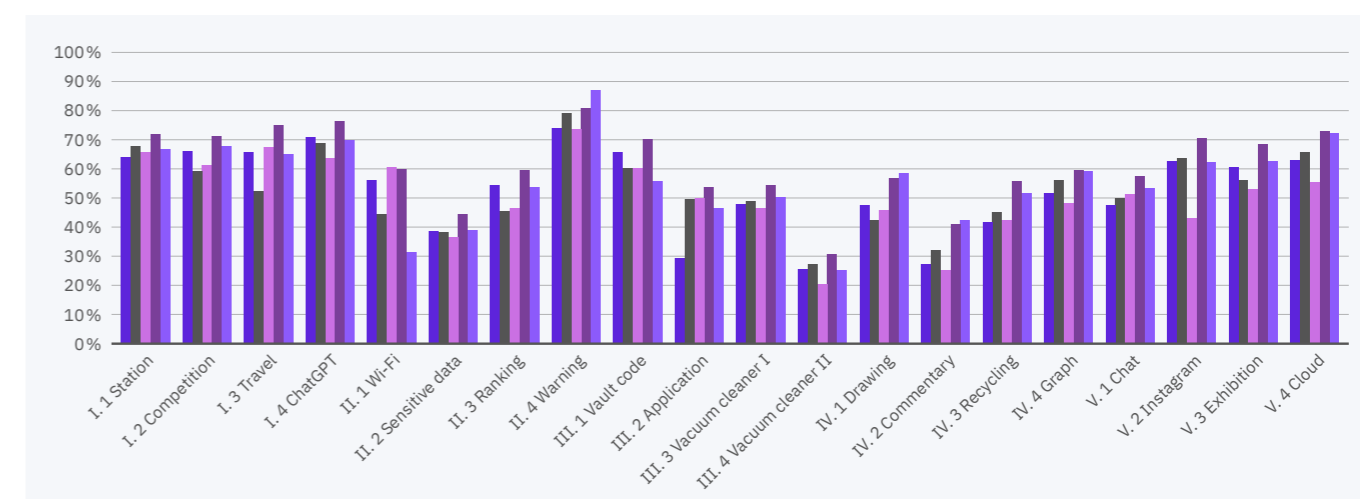


Chart 14 Performance in individual test items

Pupils had the lowest success rate in the Vacuum Cleaner II task (Category: Complex tasks). On the contrary, pupils had the highest success rate in the Warning task (Category: Security). There were also significant differences between countries in the success rates of individual tasks. The maximum difference between countries in individual tasks was approximately 28 percentage points – in the Wi-Fi task (Category: Security). Compared to the other countries, Ukrainian pupils had the lowest success rate in this task; Hungarian pupils had the lowest success rate in the Travel task, Czech pupils in the Application task, and Polish pupils in the Instagram task.

F. Sensitivity in individual categories

Task sensitivity is the ability to divide pupils into good and weak. Task sensitivity is the difference in the average percentage success rate of the overall most-successful fifth and least-successful fifth of test takers. We consider a task that has a sensitivity above 30 percent to have good sensitivity – that is, it distributes the tested sample of students well.

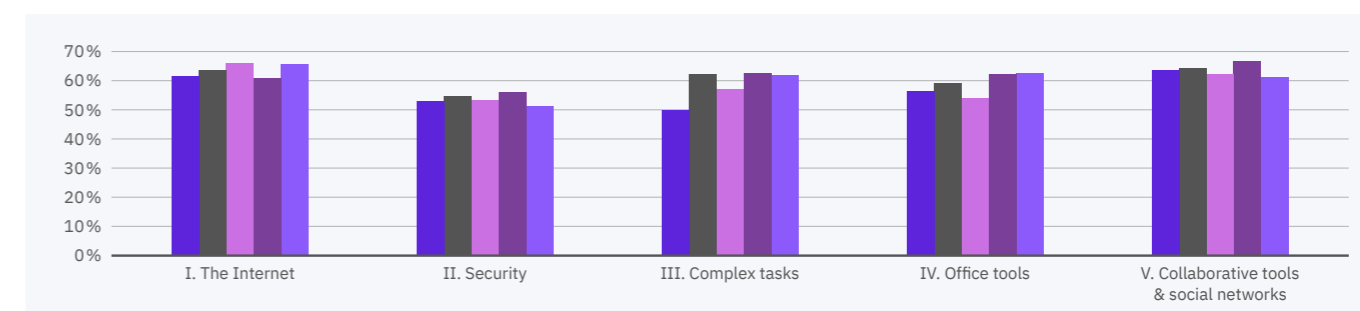


Chart 15 Sensitivity in individual categories of the test for primary schools

Each of the categories divided the test sample very well. Overall, the sensitivity in each category was roughly the same. The Security category had the lowest sensitivity. The categories' sensitivities across the countries were about the same. The largest differences in sensitivity were in the category of Complex Tasks. This category was the least divisive for students in the Czech Republic, compared to other countries, although the sensitivity was good.

G. Sensitivity of individual test tasks

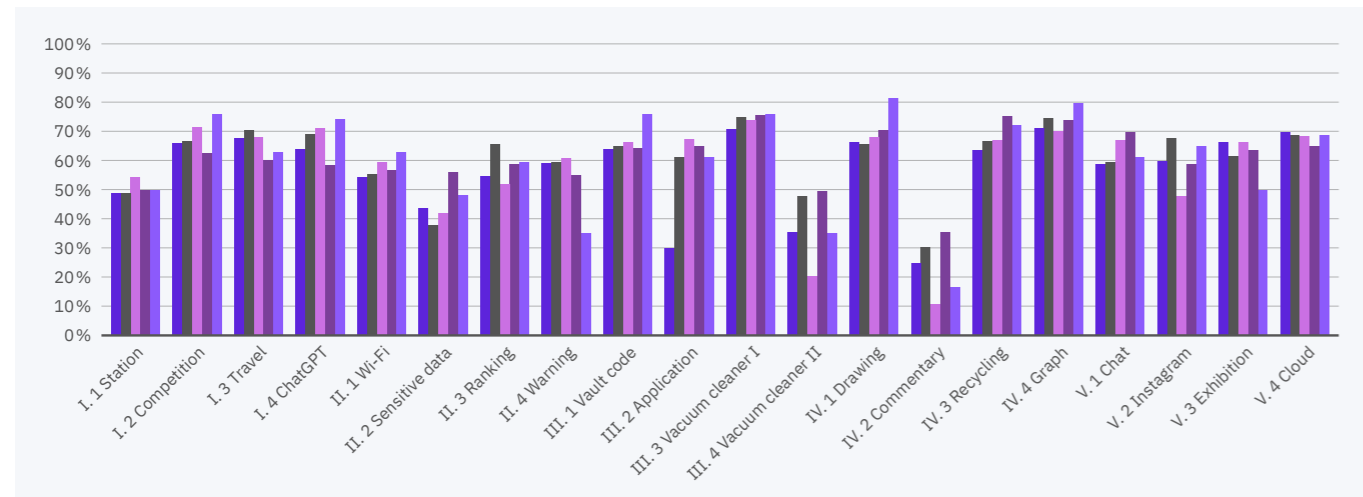


Chart 16 Sensitivity in individual tasks of the test for primary schools

There are more pronounced differences in the sensitivity of individual tasks (compared to the categories). The lowest sensitivity was for the Commentary task (Category: Office Tools). The highest sensitivities were for the Vacuum Cleaner I (Category: Complex Tasks) and Graph (Category: Office Tools) tasks. In most cases, a task's lower sensitivity in a given country is due to, among other things, a lower success rate on the task.

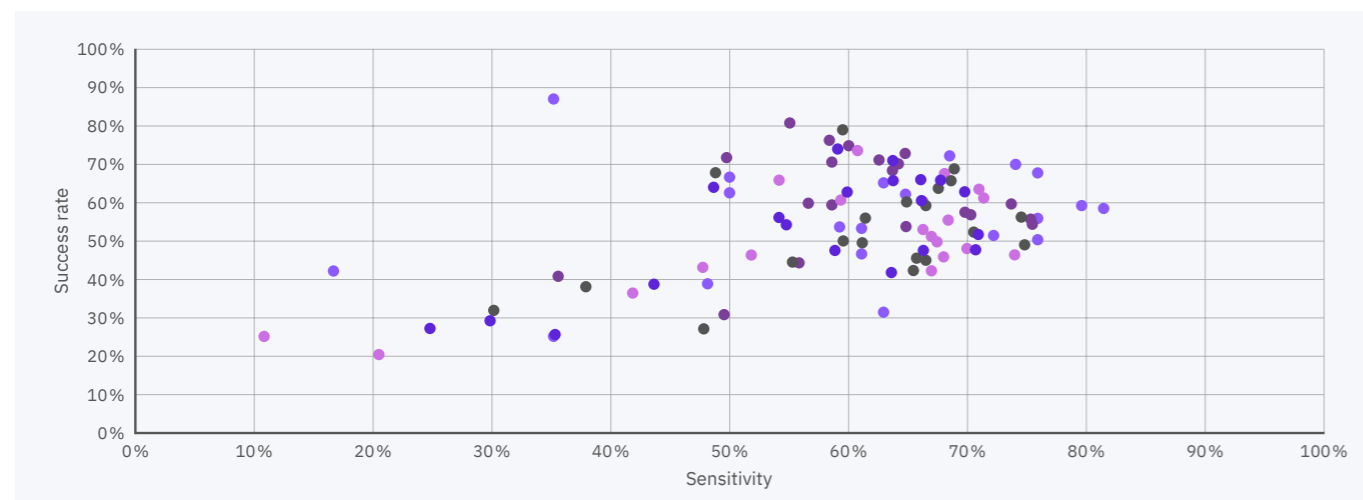


Chart 17 Achievement and sensitivity of individual tasks of the test for primary schools

Two tasks had low sensitivity for pupils in Poland, one task for pupils in the Czech Republic, and one task for pupils in Ukraine. The other tasks had good sensitivity and thus distributed the test sample well.



H. Examples of some of the tasks in the test for primary schools

Task with the highest success rate

II. Security and computer systems – Warning

Success rate: CZ: 74.01% | HU: 79.01% | PL: 73.60%

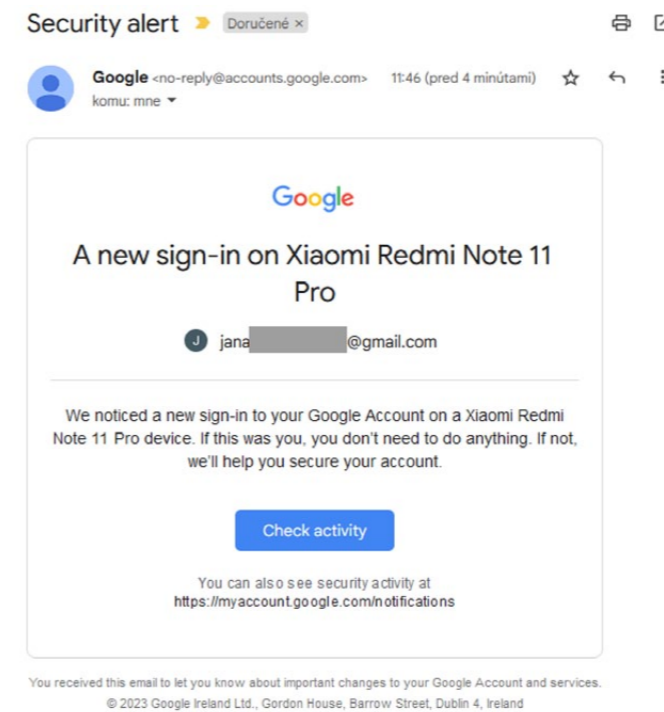
SK: 80.79% | UA: 87.04%

Sensitivity: CZ: 59.10% | HU: 59.52% | PL: 60.77%

SK: 55.07% | UA: 35.19%

Task assignment:

Jana forgot her cell phone at home and doesn't remember her parents' phone numbers. Knowing that her parents were supposed to call her in the afternoon and pick her up in town, her friend Ema lent her her phone. Jana logged into her Google account on Ema's phone and sent an email to her parents (without saving her password on Ema's phone). When Jana got home that evening, she found the following email on her phone:



What does this email mean?

- a) It's a security alert from Google that someone has logged into your account from a different device than usual. If the alert lists the same type of device as Ema's, and the alert came at a time when she was logging into Ema's phone, she doesn't need to be concerned and may ignore the alert.
- b) It's a security alert from Google that someone has logged into her account from another device and entered a new access

password. Jana should change her account password as soon as possible.

c) This is a fraudulent email called a phishing email that is attempting to get Jana's Google account password. Jana should not click on any links or buttons in it.

d) It is a fraudulent email. By logging into her Google account on Ema's phone, an attacker has accessed her Google account and is now trying to get more confidential information from her.

Task with the highest sensitivity

III. Complex tasks – Vacuum cleaner I

Success rate: CZ: 47.75% | HU: 49.04% | PL: 46.42%

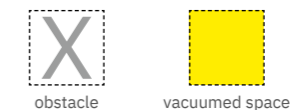
SK: 54.40% | UA: 50.37%

Sensitivity: CZ: 70.71% | HU: 74.83% | PL: 73.99%

SK: 75.48% | UA: 75.93%

Task assignment:

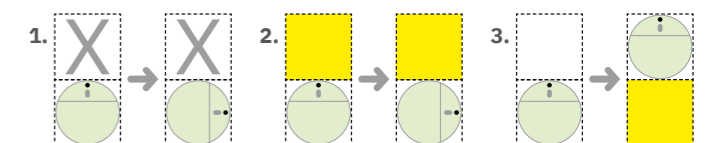
Laura and Roman have a robotic vacuum cleaner which they can program by graphically specifying rules of movement. They have created a map of their room and marked all of the obstacles (shown as a box filled with an X). So that they don't have to define the walls of the room, they just mark obstacles around its perimeter. After a space has been vacuumed, it is marked in yellow on the map.



The vacuum cleaner can be turned in the following directions (north, east, south, west).



Laura and Roman set the rules in the vacuum cleaner's settings as follows (it doesn't matter which way the vacuum is facing for the rules; they work the same in all four directions):



The vacuum cleaner can apply multiple rules to a single space since each rule it follows puts it in a new situation. However, if it has to spin more than four times on one space and cannot get to another space, it will stop and quit. In addition, if the vacuum cleaner is unable to follow any rule, it will stop where it is and quit.

They placed the vacuum cleaner on space **B11**, turned it to face north, and turned it on so that it would start working according to the set rules.

	A	B	C	D	E	F	G	H	I	J	K	L
1	X	X	X	X	X	X	X	X	X	X	X	X
2	X				X	X	X				X	X
3	X					X					X	X
4	X	X	X								X	X
5	X	X	X								X	X
6	X	X	X								X	X
7	X	X	X								X	X
8	X	X	X								X	X
9	X										X	X
10	X											X
11	X											X
12	X	X	X	X	X	X	X	X	X	X	X	X

Where will the vacuum cleaner first use Rule No. 1?

- a) B11 b) C9 c) K11 d) B9

Id. School performance in the test for primary schools in the Czech Republic

The test for primary schools is designed for ninth graders and graduates of primary school. This means that it contained tasks that pupils finishing primary school and graduates of primary school should be able to solve (i.e. optimally for the age group of 14- to 16-year-olds). In the following evaluation, we present the evaluation for the primary target group (aged 14 to 16). Pupils at this age may be in primary school, eight-year grammar schools, or even in the first year of secondary school. Of course, if a pupil is in the first year of secondary school, we cannot interpret the resulting achievement as a credit to that secondary school. However, in cases where a secondary school shows a good pass rate for its first-year pupils, we can appreciate that the school has selected good primary school graduates and motivated them to participate in the testing. Such a school was involved in their education for less than an academic year, but obviously the previous school was more involved in their success.

896 schools with students aged 14 to 16 participated in the testing for primary schools in the Czech Republic. Of these, the number of schools with at least 10 pupils aged 14 to 16 was 578. Of these schools, the table below shows the ranking of the most successful schools, including the school's percentile (above 90%), the school's average pass rate, the average age of pupils tested, and the number of pupils tested.

Ranking	School	school percentile	average success rate	average age	number of pupils
1	Gymnázium Tišnov, příspěvková organizace, Na Hrádku 20, Tišnov, CZ	100.00%	88.00%	14.00	10
2	Gymnázium J. S. Machara, Brandýs nad Labem-Stará Boleslav, Královická 668, Královická 668/23, Brandýs nad Labem-Stará Boleslav, CZ	99.80%	82.43%	14.76	37
3	Gymnázium Velké Meziříčí, Sokolovská 235/27, Velké Meziříčí, CZ	99.60%	82.14%	14.25	28
4	Gymnázium Jana Pivečky a Střední odborná škola Slavičín, Školní 822, Slavičín, CZ	99.40%	81.52%	14.26	23
5	Gymnázium Oty Pavla, Praha 5, Loučanská 520, Loučanská 520/1, Praha 5, CZ	99.30%	80.45%	14.91	11
6	První české gymnázium v Karlových Varech, příspěvková organizace, Národní 445/25, Karlovy Vary, CZ	99.10%	79.38%	15.28	32
7	Gymnázium J. V. Jirsíka, České Budějovice, Fráni Šrámka 23, Fráni Šrámka 1193/23, České Budějovice, CZ	98.90%	78.56%	14.51	59
8	PORG – gymnázium a základní škola, o.p.s., Lindnerova 517/3, Praha 8, CZ	98.70%	78.50%	14.83	40
9	Gymnázium Josefa Kainara, Hlučín, příspěvková organizace, Dr. Ed. Beneše 586/7, Hlučín, CZ	98.60%	78.33%	14.85	27
10	Wichterlovo gymnázium, Ostrava-Poruba, příspěvková organizace, Čs. exilu 669/16, Ostrava, CZ	98.40%	77.75%	14.82	129
11	Gymnázium, Krnov, příspěvková organizace, Smetanův okruh 19/2, Krnov, CZ	98.20%	77.50%	14.17	18
12	Gymnázium, České Budějovice, Česká 64, Česká 142/64, České Budějovice, CZ	98.00%	76.91%	14.89	55
13	Gymnázium, Teplice, Čs. dobrovolců 11, příspěvková organizace, Čs. dobrovolců 530/11, Teplice, CZ	97.90%	76.85%	15.11	27
14	Gymnázium, Kladno, nám.Edvarda Beneše 1573, nám Edvarda Beneše 1573, Kladno, CZ	97.70%	76.32%	14.12	34
15	Gymnázium Rožnov pod Radhoštěm, Koryčanské Paseky 1725, Rožnov pod Radhoštěm, CZ	97.50%	76.11%	14.22	18
16	Gymnázium, Uničov, Gymnazijní 257, Gymnazijní 257, Uničov, CZ	97.40%	75.94%	14.47	32
17	Gymnázium, Dobruška, Pulická 779, Pulická 779, Dobruška, CZ	97.20%	75.56%	14.58	36
18	Gymnázium, Česká Lípa, Žitavská 2969, příspěvková organizace, Žitavská 2969, Česká Lípa, CZ	97.00%	75.43%	14.14	35
19	Gymnázium Ludka Píka, Plzeň, Opavská 21, Opavská 823/21, Plzeň, CZ	96.80%	75.26%	14.11	19
20	Gymnázium, Soběslav, Dr. Edvarda Beneše 449/II, tř. Dr. Edvarda Beneše 449/20, Soběslav, CZ	96.70%	75.15%	14.09	34
21	Gymnázium a Střední odborná škola pedagogická, Čáslav, Masarykova 248, Masarykova 248/24, Čáslav, CZ	96.50%	74.58%	15.17	12
22	Střední průmyslová škola stavební, Hradec Králové, Pospíšilova tř. 787, Pospíšilova 787/11, Hradec Králové, CZ	96.30%	73.75%	15.19	16
23	Jiráskovo gymnázium, Náchod, Řezníčkova 451, Řezníčkova 451, Náchod, CZ	96.10%	73.68%	14.49	72
24	Základní škola Square s.r.o., Svatoslavova 333/6, Praha 4, CZ	96.00%	73.46%	14.46	13
25	Základní škola, Staré Město, okres Uherské Hradiště, příspěvková organizace, Komenského 1720, Staré Město, CZ	95.80%	73.26%	14.78	23

26	Gymnázium Ostrov, příspěvková organizace, Studentská 1205, Ostrov, CZ	95.60%	73.14%	14.49	51
27	Gymnázium a Střední odborná škola dr. Václava Šmejkal, Ústí nad Labem, příspěvková organizace, Stavbařů 2857/5, Ústí nad Labem, CZ	95.40%	72.96%	14.81	54
28	Gymnázium Františka Živného, Bohumín, Jana Palacha 794, příspěvková organizace, Jana Palacha 794, Bohumín, CZ	95.30%	72.92%	14.00	12
29	Základní škola a Mateřská škola Nýřany, příspěvková organizace, Školní 901, Nýřany, CZ	95.10%	72.83%	14.26	23
30	Základní škola a gymnázium Navis, V Dolích 444, Světlá, CZ	94.90%	72.78%	14.28	18
31	Vyšší odborná škola ekonomických studií, Gymnázium, Střední průmyslová škola potravinářských technologií a Střední odborná škola přírodovědná a veterinární, Praha 2, Podskalská 10, Podskalská 365/10, Praha 2, CZ	94.80%	72.50%	15.29	14
32	Gymnázium T. G. Masaryka, Litvínov, Studentská 640, příspěvková organizace, Studentská 640, Litvínov, CZ	94.60%	72.36%	14.22	36
33	Gymnázium Karla Sladkovského, Praha 3, Sladkovského náměstí 8, Sladkovského náměstí 900/8, Praha 3, CZ	94.40%	72.31%	14.35	26
34	Městské víceleté gymnázium Klobouky u Brna, příspěvková organizace, Vínařská 719/29, Klobouky u Brna, CZ	94.20%	71.67%	14.39	18
35	Gymnázium, Mladá Boleslav, Palackého 191/1, Palackého 191/1, Mladá Boleslav, CZ	94.10%	71.54%	15.81	26
36	Gymnázium, Kolín III, Žižkova 162, Žižkova 162, Kolín, CZ	93.90%	70.33%	15.23	30
37	Gymnázium a Střední odborná škola ekonomická, Sedlčany, Nádražní 90, Nádražní 90, Sedlčany, CZ	93.70%	70.00%	15.38	21
38	Základní škola Duhovka, s.r.o., Nad Kajetánkou 134/9, Praha 6, CZ	93.50%	69.58%	14.50	12
39	OPEN GATE – gymnázium a základní škola, s.r.o., Na Návsi 5, Babice, CZ	93.40%	69.57%	14.65	23
40	Střední odborná škola a Gymnázium Staré Město, Velehradská 1527, Staré Město, CZ	93.20%	69.55%	15.27	77
41	Gymnázium Jaroslava Žáka, Jaroměř, Lužická 423, Jaroměř, CZ	93.00%	69.47%	15.74	19
42	Odborná střední škola podnikání a mediální tvorby Kolín s.r.o., U Křižovatky 262, Kolín, CZ	92.80%	69.41%	15.33	51
43	Základní škola Ilji Hurníka Opava, Ochranova 6 – příspěvková organizace, Ochranova 1244/6, Opava, CZ	92.70%	69.21%	14.37	19
44	TRIVIS Střední škola veřejnoprávní Brno, s.r.o., Dukelská třída 467/65, Brno, CZ	92.50%	69.19%	15.74	31
45	CÍRKEVNÍ GYMNÁZIUM NĚMECKÉHO ŘÁDU, Nešverova 693/1, Olomouc, CZ	92.30%	69.05%	14.05	21
46	Karlínská obchodní akademie, Kollárova 271/5, Praha 8, CZ	92.20%	68.90%	15.54	228
47	Gymnázium, Střední pedagogická škola, Obchodní akademie a Jazyková škola s právem státní jazykové zkoušky Znojmo, příspěvková organizace, Pontassievská 350/3, Znojmo, CZ	92.00%	68.81%	14.45	42
48	Základní škola a mateřská škola Ostrava-Výškovice, Šeříková 33, příspěvková organizace, Šeříková 682/33, Ostrava, CZ	91.80%	68.78%	14.59	49
49	Gymnázium Františka Křižíka a základní škola, s.r.o., Sokolovská 1165/54, Plzeň, CZ	91.60%	68.75%	14.25	20
50	Základní škola a Mateřská škola Červený vrch, Praha 6, Alžírská 26, Alžírská 680/26, Praha 6, CZ	91.50%	68.63%	14.82	51

51	Gymnázium a obchodní akademie Mariánské Lázně, příspěvková organizace, Ruská 355/7, Mariánské Lázně, CZ	91.30%	68.63%	14.30	40
52	Základní škola, Praha 4, Jílovská 1100, Jílovská 1100/16, Praha 4, CZ	91.10%	68.57%	15.29	14
53	Gymnázium a Jazyková škola s právem státní jazykové zkoušky Zlín, nám. T. G. Masaryka 2734, Zlín, CZ	90.90%	68.57%	14.57	21
54	Gymnázium a Střední odborná škola, Frýdek-Místek, Cihelní 410, příspěvková organizace, Cihelní 410, Frýdek-Místek, CZ	90.80%	68.28%	14.28	29
55	Základní škola T. G. Masaryka Poděbrady, Školní 556, okres Nymburk, Školní 556/1, Poděbrady, CZ	90.60%	68.28%	14.36	58
56	Gymnázium, základní škola a mateřská škola Hello s.r.o., Čs. exilu 491/23, Ostrava, CZ	90.40%	68.24%	14.12	17
57	Základní škola a Gymnázium Vodňany, Alešova 50, Vodňany, CZ	90.20%	68.05%	14.37	41
58	Základní škola Kuřim, Tyršova 1255, okres Brno-venkov, příspěvková organizace, Tyršova 1255/56, Kuřim, CZ	90.10%	67.97%	14.24	59

Table 6 Top-performing schools (pupils aged 14 to 16) in the Czech Republic

Ie. School performance in the test for primary schools in Hungary

72 schools with students aged 14 to 16 participated in the testing for primary schools in Hungary. Of these, the number of schools with at least 10 pupils aged 14 to 16 was 23. Of these schools, the table below shows the ranking of the 10 most successful schools, including the school's percentile, the school's average pass rate, the average age of pupils tested, and the number of pupils tested.

Ranking	School	school percentile	average success rate	average age	number of pupils
1	Kalocsai Fényi Gyula Általános Iskola, Jókai Mór utca 1., Kalocsa, HU	100.00%	78.46%	14.31	13
2	Prohászka Ottokár Katolikus Gimnázium, Széchenyi utca 141., Budakeszi, HU	95.40%	69.64%	14.07	14
3	Szent Gellért Katolikus Általános Iskola és Óvoda, Csontos Károly utca 2., Kiskunmajsa, HU	90.90%	69.55%	14.18	11
4	Lévay József Református Gimnázium és Diákotthon, Kálvin J. utca 2., Miskolc, HU	86.30%	65.29%	14.63	35
5	Budapesti Egyetemi Katolikus Gimnázium és Kollégium, Szabó Ilonka utca 2-4., Budapest I. kerület, HU	81.80%	58.33%	15.19	42
6	Lauder Javne Zsidó Közösségi Óvoda, Általános Iskola, Gimnázium és Zenei Alapfokú Művészeti Iskola, Budakeszi út 48., Budapest XII. kerület, HU	77.20%	58.29%	14.00	35
7	Gödöllői Hajós Alfréd Általános Iskola, Légszesz utca 10., Gödöllő, HU	72.70%	54.69%	14.06	16
8	Vilček Gyula Általános Iskola, Liget utca 38., Kismaros, HU	68.10%	54.17%	14.00	12
9	Fényi Gyula Jezsuita Gimnázium, Kollégium és Óvoda, Fényi Gyula tér 2-12., Miskolc, HU	63.60%	53.96%	14.22	91
10	Debreceni Ady Endre Gimnázium, Liszt Ferenc utca 1., Debrecen, HU	59.00%	53.50%	14.02	50

Table 7 Top-performing schools (pupils aged 14 to 16) in Hungary

If. School performance in the test for primary schools in Poland

320 schools with students aged 14 to 16 participated in the testing for primary schools in Poland. Of these, the number of schools with at least 10 pupils aged 14 to 16 was 68. Of these schools, the table below shows the ranking of the most successful schools, including the school's percentile (above 70%), the school's average pass rate, the average age of pupils tested, and the number of pupils tested.

Ranking	School	school percentile	average success rate	average age	number of pupils
1	SZKOŁA PODSTAWOWA W MYŚLAKOWICACH, ul. Sutkowskiego 1, Mystakowice, PL	100.00%	70.67%	14.13	15
2	SZKOŁA PODSTAWOWA IM. POLSKICH OLIMPIJCZYKÓW W DRZEWICY, ul. Szkolna 18, Drzewica, PL	98.50%	68.18%	14.00	11
3	SZKOŁA PODSTAWOWA NR 1 IM. HENRYKA SIENKIEWICZA W SŁUPSKU, ul. Witolda Lutostawskiego 23, Słupsk, PL	97.00%	67.78%	14.11	18
4	SZKOŁA PODSTAWOWA NR 46 IM. JANA KIEPURY W SOSNOWCU, ul. Gwiazdna 2, Sosnowiec, PL	95.50%	66.73%	14.27	52
5	SZKOŁA PODSTAWOWA NR 18 IM. FRANCISZKA II RAKOCZEGO W ELBLĄGU, ul. Węgrowa 1, Elbląg, PL	94.00%	65.83%	14.25	12
6	PUBLICZNA SZKOŁA PODSTAWOWA NR 6 Z ODDZIAŁAMI INTEGRACYJNYMI IM. ORŁA BIAŁEGO W RADOMIU, ul. Adama Rapackiego 24, Radom, PL	92.50%	65.19%	14.29	52
7	SZKOŁA PODSTAWOWA NR 5 IM. SZARYCH SZEREGÓW, ul. Tadeusza Kościuszki 21, Bielsk Podlaski, PL	91.00%	62.73%	14.27	11
8	SPOŁECZNA SZKOŁA PODSTAWOWA Z ODDZIAŁAMI DWUJĘZYCZNYMI IM. JERZEGO KUKUCZKI W RYBNIKU, ul. św. Józefa 30, Rybnik, PL	89.50%	61.82%	14.09	11
9	SZKOŁA PODSTAWOWA IM. KSIĘDZA JANA TWARDOWSKIEGO W CHWALISZEWIE, ul. Ostrowska 39, Chwaliszew, PL	88.00%	60.77%	14.00	13
10	SZKOŁA PODSTAWOWA IM. JANA PAWŁA II W DĘBINKACH, 12, Dębinki, PL	86.50%	60.45%	14.45	11
11	SZKOŁA PODSTAWOWA NR 2, ul. Aleja Armii Krajowej 81, Wotomin, PL	85.00%	60.24%	14.05	21
12	SZKOŁA PODSTAWOWA NR 362 IM. PROF. TADEUSZA KOTARBIŃSKIEGO, ul. gen. Waleriana Czumy 8, Warszawa-Bemowo, PL	83.50%	59.52%	14.19	21
13	ZESPÓŁ SZKOLNO-PRZEDSZKOLNY SZKOŁA PODSTAWOWA IM. POWSTAŃCÓW STYCZNIOWYCH W BARANOWIE, ul. Szkolna 2, Baranów, PL	82.00%	59.50%	14.10	10
14	PUBLICZNA SZKOŁA PODSTAWOWA W ŚWIĘTEJ KATARZYNIE IM. STEFANA KARDYNAŁA WYSZYŃSKIEGO PRYMASA TYSIĄCLECIA, ul. Główna 94, Święta Katarzyna, PL	80.50%	58.19%	14.24	58
15	SZKOŁA PODSTAWOWA W SZUMOWIE, ul. Szkolna 14, Szumowo, PL	79.10%	56.94%	14.06	18
16	SZKOŁA PODSTAWOWA IM. 11 LISTOPADA 1918 ROKU W DOMANICACH KOLONII, 18, Domanice-Kolonia, PL	77.60%	56.76%	14.29	17
17	SZKOŁA PODSTAWOWA NR 33 IM. TRADYCJI HERBU WROCŁAWIA, ul. Kolistka 17, Wrocław-Fabryczna, PL	76.10%	56.25%	14.40	20
18	SZKOŁA PODSTAWOWA NR 29 IM. JANA KOCHANOWSKIEGO, ul. Przędzalniana 70, Łódź-Widzew, PL	74.60%	56.00%	14.20	15

19	SZKOŁA PODSTAWOWA IM. PŁK. STANISŁAWA SIENKIEWICZA W MILEJOWIE, ul. Szkolna 12, Milejów, PL	73.10%	56.00%	14.50	10
20	SZKOŁA PODSTAWOWA W JAWTACH WIELKICH, 6, Jawty Wielkie, PL	71.60%	55.00%	14.70	10
21	SZKOŁA PODSTAWOWA NR 1 IM. WOJSKA POLSKIEGO, ul. Sienkiewicza 3, Świecie, PL	70.10%	54.35%	14.20	93

Table 8 Top-performing schools (pupils aged 14 to 16) in Poland

Additionally, the primary school No. 6 in Słupsk managed to involve the largest number of participants in Poland among primary schools. The primary school No. 1 in Słupsk achieved the highest average score from primary schools with at least 100 participants regardless of age.

Ig. School performance in the test for primary schools in Slovakia

684 schools participated in the testing for primary schools in Slovakia. Of these, the number of schools with pupils aged 14 to 16 was 553. Of these, 203 schools had at least 10 respondents aged 14 to 16. Of these schools, the table below shows the ranking of the most successful schools, including the school's percentile (above 85%), the school's average pass rate, the average age of pupils tested, and the number of pupils tested. The table shows mainly eight-year grammar and secondary schools, with more primary schools in the lower (undisclosed) ranks in this comparison.

Ranking	School	school percentile	average success rate	average age	number of pupils
1	Gymnázium, Alejová 1, Košice-Juh, SK	100.00%	90.60%	14.40	25
2	Gymnázium Leonarda Stöckela, Jiráskova 12, Bardejov, SK	99.50%	87.53%	15.55	160
3	Gymnázium sv. Uršule ako organizačná zložka Spojenej školy sv. Uršule, Nedbalova 4, Bratislava-Staré Mesto, SK	99.00%	86.71%	14.66	38
4	1. súkromné gymnázium v Bratislave, Bajkalská 20, Bratislava-Ružinov, SK	98.50%	85.49%	14.33	51
5	Základná škola Zoltána Kodálya s vyučovacím jazykom maďarským – Kodály Zoltán Alapiskola, Švermova 8, Galanta, SK	98.00%	85.00%	14.18	45
6	Gymnázium Angely Merici, Hviezdoslavova 10, Trnava, SK	97.50%	83.75%	14.83	24
7	Gymnázium Karola Štúra, Nám. slobody 5, Modra, SK	97.00%	83.42%	14.16	19
8	Gymnázium Svätej Rodiny, ako organizačná zložka Spojenej školy Svätej Rodiny, Gercenova 10, Bratislava-Petržalka, SK	96.50%	83.10%	14.07	29
9	Gymnázium Vojtecha Mihálik, Kostolná 119/8, Sereď, SK	96.00%	82.67%	14.80	15
10	Gymnázium sv. Tomáša Akvinského, Zbrojničná 3, Košice-Staré Mesto, SK	95.50%	82.14%	14.14	21
11	Gymnázium Andreja Kmeťa, Kolpašská 1738/9, Banská Štiavnica, SK	95.00%	82.05%	15.10	61
12	Spojená škola, Dominika Tatarku 4666/7, Poprad, SK	94.50%	81.86%	15.30	70
13	Gymnázium, Senecká 2, Pezinok, SK	94.00%	81.53%	14.43	49
14	Gymnázium Andreja Vrábľa, Mierová 5, Levice, SK	93.50%	81.19%	14.14	21
15	Základná škola s materskou školou Milana Hodžu, Škarniclova 1, Bratislava-Staré Mesto, SK	93.00%	80.00%	14.13	52

16	Spojená škola, Pankúchova 6, Bratislava-Petržalka, SK	92.50%	79.74%	15.26	19
17	Gymnázium, Varšavská cesta 1, Žilina, SK	92.00%	79.20%	14.30	81
18	Gymnázium Federica Garcíu Lorcu, Hronská 3, Bratislava-Podunajské Biskupice, SK	91.50%	77.83%	14.17	23
19	Gymnázium M. R. Štefánika, Slnečná 2, Šamorín, SK	91.00%	77.50%	14.00	16
20	Gymnázium, Kukučínova 4239/1, Poprad, SK	90.50%	77.13%	14.70	40
21	Gymnázium, Opatovská cesta 7, Košice-Vyšné Opátske, SK	90.00%	77.08%	14.50	12
22	Stredná priemyselná škola elektrotechnická, Plzenská 1, Prešov, SK	89.60%	77.00%	15.33	15
23	Gymnázium, Bilíkova 24, Bratislava-Dúbravka, SK	89.10%	75.35%	14.61	57
24	Súkromná základná škola, Gorkého 4, Skalica, SK	88.60%	75.28%	14.56	18
25	Základná škola s materskou školou sv. Uršule ako organizačná zložka Spojenej školy sv. Uršule, Nedbalova 4, Bratislava-Staré Mesto, SK	88.10%	75.17%	14.59	29
26	Piaristická spojená škola sv. Jozefa Kalazanského, Piaristická 6, Nitra, SK	87.60%	74.80%	14.75	99
27	Súkromná základná škola, Kysucká 14, Senec, SK	87.10%	74.72%	14.44	18
28	Gymnázium, Školská 234/8, Považská Bystrica, SK	86.60%	74.45%	15.68	100
29	Základná škola s materskou školou, Pod Vinbargom 1, Bardejov, SK	86.10%	73.82%	14.24	17
30	Gymnázium Jozefa Miloslava Hurbana, 17. novembra 1296, Čadca, SK	85.60%	73.53%	14.38	34

Table 9 Top-performing schools (pupils aged 14 to 16) in the Slovak Republic

In order to have a better idea of the success rate of just primary schools, we also present the ranking of the most successful primary schools (omitting eight-year grammar schools) in the 14-16 age group. We did not find most of the schools in the previous tables because they did not have an overall ranking percentile above 85%.

Ranking	School	average success rate	average age	number of pupils
1	Základná škola Zoltána Kodálya s vyučovacím jazykom maďarským – Kodály Zoltán Alapiskola, Švermova 8, Galanta, SK	85.00%	14.18	45
2	Základná škola s materskou školou Milana Hodžu, Škarniclova 1, Bratislava-Staré Mesto, SK	80.00%	14.13	52
3	Súkromná základná škola, Gorkého 4, Skalica, SK	75.28%	14.56	18
4	Základná škola s materskou školou sv. Uršule ako organizačná zložka Spojenej školy sv. Uršule, Nedbalova 4, Bratislava-Staré Mesto, SK	75.17%	14.59	29
5	Súkromná základná škola, Kysucká 14, Senec, SK	74.72%	14.44	18
6	Základná škola s materskou školou, Pod Vinbargom 1, Bardejov, SK	73.82%	14.24	17
7	Základná škola s materskou školou, Starojánska ulica 11/11, Liptovský Ján, SK	72.73%	15.00	11
8	Základná škola s materskou školou, Dostojevského ul. 2616/25, Poprad, SK	72.17%	14.27	30
9	Základná škola, ako organizačná zložka Spojenej školy sv. Vincenta de Paul, Bachova 4, Bratislava-Ružinov, SK	71.79%	14.00	14
10	Základná škola s materskou školou, Vývojová 228, Bratislava-Rusovce, SK	70.96%	14.77	26
11	Základná škola, Krosnianska 4, Košice-Dargovských hrdinov, SK	68.94%	14.41	90

12	Základná škola, 144, Lehota, SK	68.75%	14.38	16
13	Základná škola s materskou školou Karola Kuffnera ako organizačná zložka Spojenej školy, Školská 1087, Sládkovičovo, SK	68.50%	14.50	10
14	Základná škola, Rajčianska 3, Bratislava-Vrakuňa, SK	68.37%	14.46	83
15	Základná škola Slovenského národného povstania, Ostredková 14, Bratislava-Ružinov, SK	68.25%	14.15	40

Table 10 Top-performing primary schools – pupils aged 14 to 16, excluding eight-year grammar schools and secondary schools in the Slovak Republic

IIa. Teacher performance in the test for primary schools in the Slovak Republic

The test for primary schools was taken by 425 respondents who indicated that they were teachers. The average success rate of teachers in the test for primary schools was 71.91%.

Region	2023		2022	
	average success rate of teachers	number of teachers tested	average success rate of teachers	number of teachers tested
Bratislavský	79.10%	39	64.90%	49
Prešovský	76.27%	55	65.81%	124
Nitriansky	74.79%	47	64.83%	120
Banskobystrický	73.33%	27	63.48%	102
Trenčiansky	72.50%	24	70.09%	55
Žilinský	72.12%	106	75.26%	39
Trnavský	70.57%	35	65.24%	62
Košický	64.46%	92	65.93%	86

Table 11 Teacher performance on the test for primary schools by region

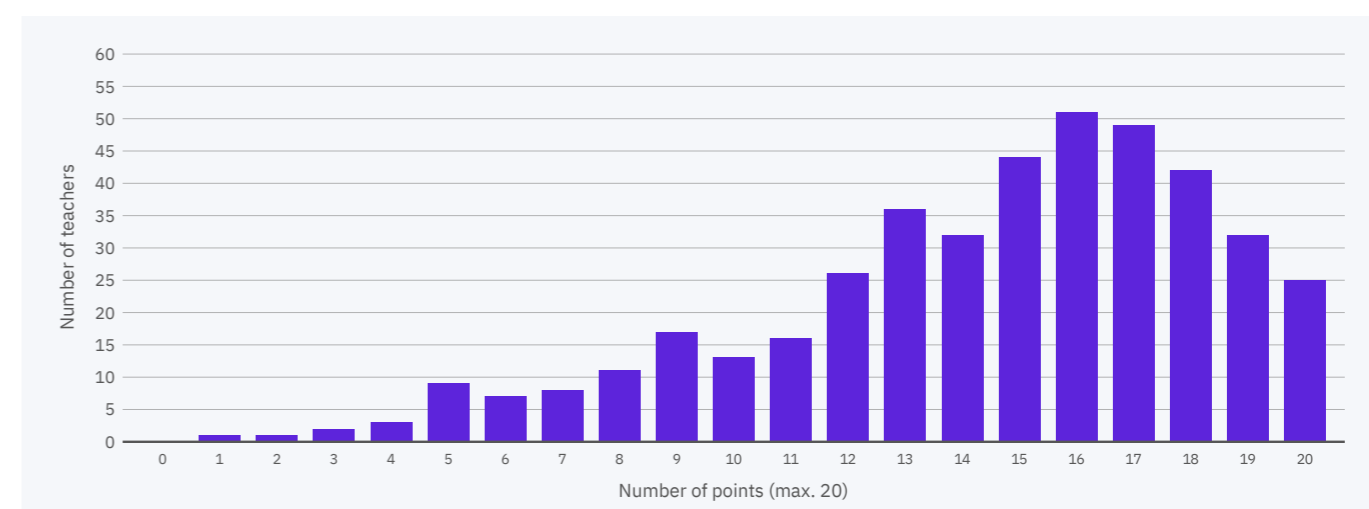


Chart 18 Teacher results in the test for primary schools

I Ib. Interpretation of results and test recommendations for primary schools

Each year the test developers aim to create a test that can distinguish respondents with good knowledge and skills from respondents with poor knowledge and skills. A test that distinguishes well between respondents should have a success rate of approximately 50 to 60%. The test items are not pre-piloted, which means that estimating their parameters is very difficult. The test's success rate in SK for the primary age group of 14 to 16 is 61.51% (last year 58.72%), which means that it is slightly above the required range. The success rate in CZ – 54.96%, HU – 50.42%, PL – 49.93%. Ukrainian pupils had a success rate of 56.04% in the age group of 7 to 16 (there was a low number of pupils tested in the primary group). The success rate in the test in CZ increased by 2.79 percentage points compared to last year, which is at the level of statistical error.

The test discriminated very well between respondents' scores. The overall sensitivity (discriminatory power of the test) was around 60% in each country, which is very good. Sensitivity is also enhanced by a good mix of tasks with appropriate difficulty. The test did not contain very easy or very difficult items (which is difficult to estimate without piloting the items).

The **Internet** category tends to have the **best results** in the long term, and that was again the case this year. Last year, exceptionally, the best results were in the Security and Computer Systems category. The second-most successful category was Collaborative Tools and Social Networks (except for Poland, where it was Security and Computer Systems).

In the Internet category, pupils from the Slovak Republic achieved the best results in the country comparison. Hungary's pupils scored significantly lower than the other countries in the task about finding a travel connection. Pupils from the Czech Republic, Slovakia, Ukraine, and Hungary performed best in the task about searching for a video and the information it contained. Polish pupils performed best in the search for a travel connection. Overall, pupils were good at searching for information. They are better at searching for simpler information than for information that is in a structured form where comparison or evaluation is needed.

The **Security and Computer Systems** category was the second- or third-most successful category in each country.

Pupils averaged around 55%. In this category the task with the highest success rate in the test was Warning. Pupils from Ukraine achieved the best result in this task. Pupils have a relatively good understanding of what the safety warnings they commonly encounter mean. They have some gaps in their recognition of how to properly protect sensitive data. They do not know how to evaluate well whether a procedure will only cover sensitive data visually or make it completely inaccessible. They may also have less understanding of the principles and contexts in which information is stored in a structure. Pupils from Hungary and Ukraine are less aware of the pitfalls of using publicly available Wi-Fi networks. In contrast, pupils from Poland are the most aware of these risks. This year again confirms that **pupils are able to react appropriately to basic security situations in the field of IT security.**

In the **Complex Tasks** category, the average success rate per country ranges between 42-49%. It contained three tasks of an algorithmic character. Compared to the other categories, the countries scored the second-lowest in this category (except Slovakia). The Slovak Republic had the weakest results in this category (compared to the other categories), although it differed from the next category (Office Tools) by only 0.3 percentage points. Pupils in all tested countries have more significant deficiencies in solving complex problems of an algorithmic character. Pupils from the Slovak Republic solved the problems in this category best. Pupils from the Czech Republic had significantly more difficulties in evaluating the features of an installed application on a mobile phone. Compared to the other countries, their success rate in the Application task was about 20 percentage points lower.

The Vacuum Cleaner II task had the lowest success rate in all the countries tested. The success rate in the task was approximately in the range of 20-30% (SK – 30.85% and PL – 20.44%).

Pupils are deficient in solving problems with higher cognitive demand where it is necessary to solve the problem at a complex level (also algorithmic problems). When solving, they prefer answers resulting from a quick decision. They are less willing to investigate the properties of the system in more detail, to doubt the correctness of the result, and then to verify the quickly offered answers.

The **Office Tools** category was one of the categories with the lowest success rate, or displayed a very similar success rate to the second-least successful category. In the country comparison, the highest success rate was achieved by pupils from Ukraine and the lowest by pupils from Poland. The difference in their achievement is 12.5 percentage points. The lowest success rate here was for the Commentary task, which reached only 25.17% in Poland. The question for further investigation remains whether the Polish pupils' result in the Commentary task is somehow related to their weaker results in the Collaborative Tools category. In the comparison of countries, pupils from Ukraine answered best in the Drawing and Commentary tasks, and pupils from the Slovak Republic in the other two tasks. Pupils performed best on the Graph task. They are relatively good at understanding a graph and finding the relevant data source. However, this does not mean that they cannot improve in this area. Pupils have deficiencies in the use of collaboration tools in office software. This is not evident from the data, but observations from practice show that pupils often prefer the inefficient "manual" processing of data or processes to the use of a particular tool. For example, in the Vault Code task, pupils laboriously searched for the required information instead of using the Search and Replace tool efficiently.

The question remains whether we focus only on getting to the right result, or whether we also look at different ways of getting there and whether we can compare the effectiveness of the solutions offered.

In the category of **Collaborative Tools and Social Networks**, all countries except Poland had the second-highest success rate (compared to other categories). In the country comparison, students in Poland had the lowest success rate in this category (the difference with the best performing country is 13 percentage points). The lower success rate of pupils from Poland was particularly evident in the Instagram and Cloud tasks. Polish pupils were less able to use collaboration tools. Overall, pupils were able to use collaboration and sharing tools to look up information on social networks. They were also able to use tools for communication and understand the information displayed by the tool.

III. Evaluation of the test for respondents over 15 years of age

IIIa. Basic overview

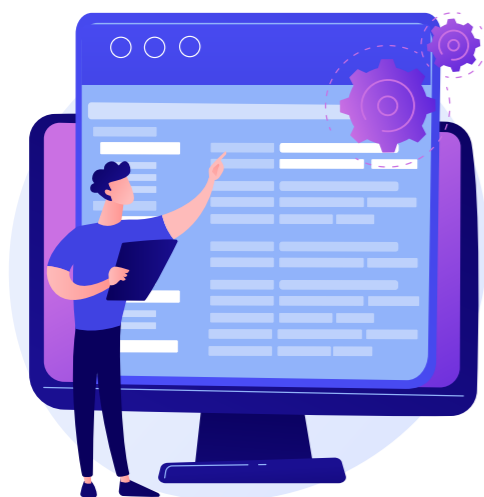
	CZ	HU	PL	SK	UA
Total number of respondents who completed the test	37,405	4,913	9,533	30,060	249
Average success rate (all)	49.57%	47.20%	46.67%	57.17%	51.24%
Average student success rate	47.89%	46.39%	45.02%	55.70%	51.24%
Average teacher success rate	63.61%	64.53%	60.12%	64.64%	–
Average employee success rate	62.77%*	–	–	64.39%	–
Sensitivity of the test	54.84%	55.24%	57.19%	58.73%	56.27%
Test reliability (Cronbach's alpha)	0.80	0.80	0.82	0.84	0.82

Table 12 Basic psychometric parameters of IT Fitness Test 2023 for respondents over 15 years of age

* – data was evaluated from a small sample of respondents

IIIb. General data on respondents

As the test was published on a publicly accessible portal, anyone who filled in the required data could take part. **The total number of respondents to the test was 97,808.** This evaluation excludes respondents who were under the age of 15 or used an obviously false profile, and also excludes respondents whose sessions expired (began the test but did not submit it within the time limit). In the following sections, we offer an evaluation based on the data from 82,160 respondents according to different criteria.



A. Overview of respondents by age

Although the test was designed primarily for high school and university students, respondents included both younger and older age groups. Their representation is shown in the next graph.

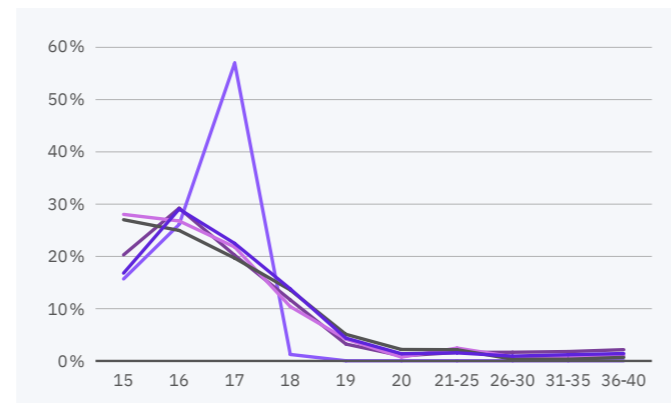


Chart 19 Breakdown of respondents by age group

As can be seen from the graph, the strongest age group was made up of respondents aged 15-18, which corresponds to high school students. In Poland and Hungary, 15-year-old students were the most represented and then participation decreased with increasing age. The Czech Republic and Slovakia had the highest representation of 16-year-olds. For Ukrainian students, 17-year-olds were the most represented.

B. Representation of respondents by gender

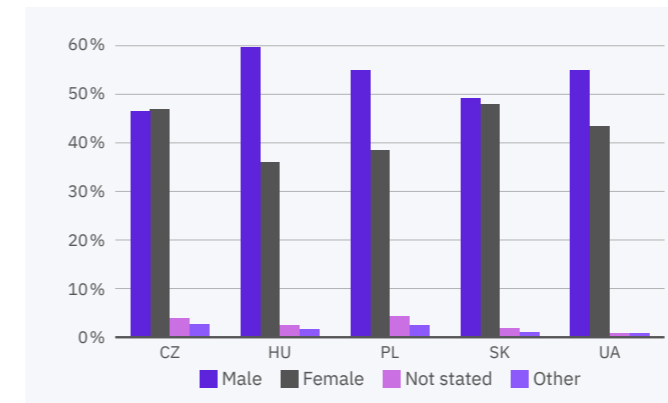


Chart 20 Representation of respondents by gender

The Czech Republic and Slovakia have almost equal representation by men and women in the test. In contrast, students from Hungary, Poland, and Ukraine are significantly over-represented by males. In Hungary, the difference in male representation is the highest – up to almost 24 percentage points.

IIIc. Evaluation of the test part of the test for respondents over 15 years of age

A. Raw score of the entire test

The raw score shows how many respondents achieved each total score.

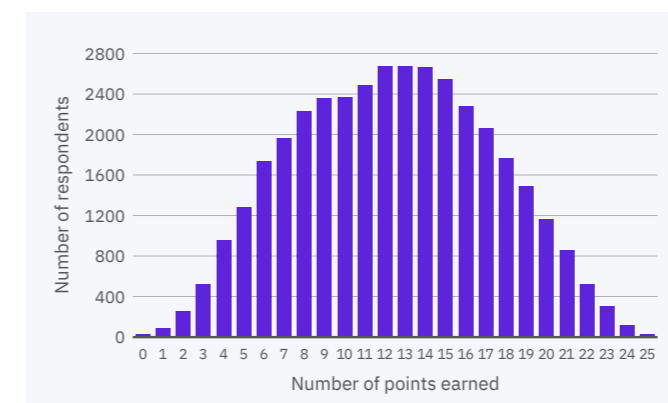


Chart 21 CZ – Distribution of respondents' raw scores

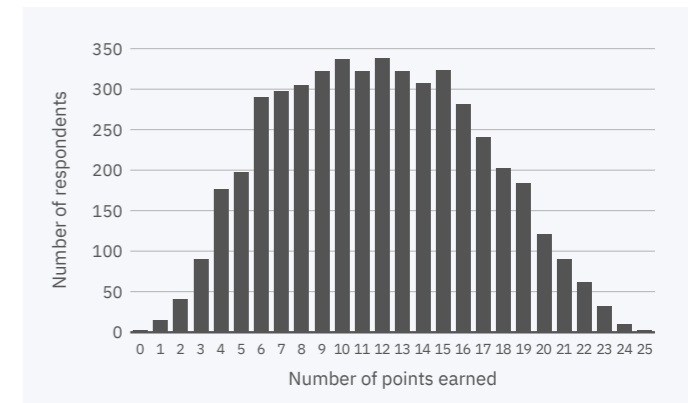


Chart 22 HU – Distribution of respondents' raw scores

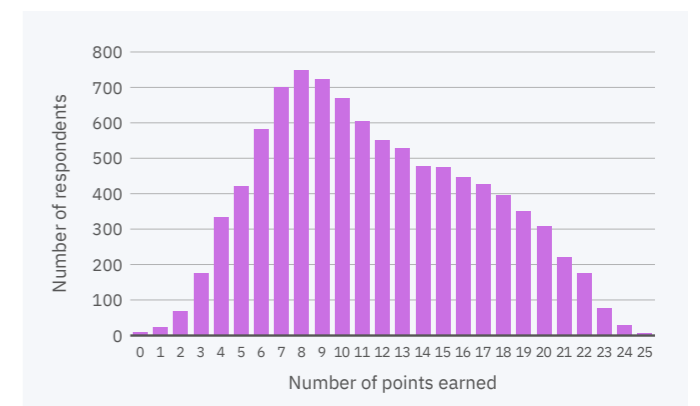


Chart 23 PL – Distribution of respondents' raw scores

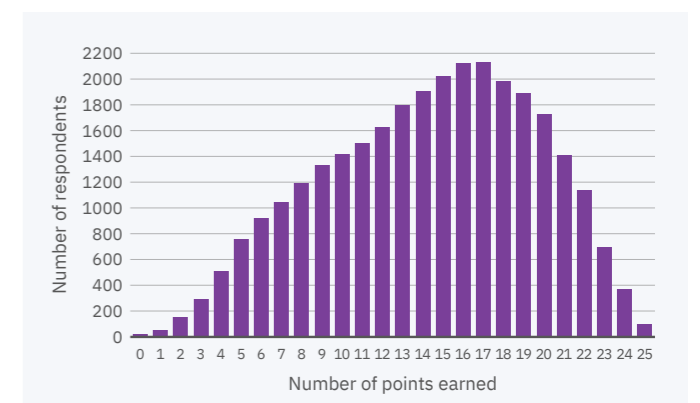


Chart 24 SK – Distribution of respondents' raw scores

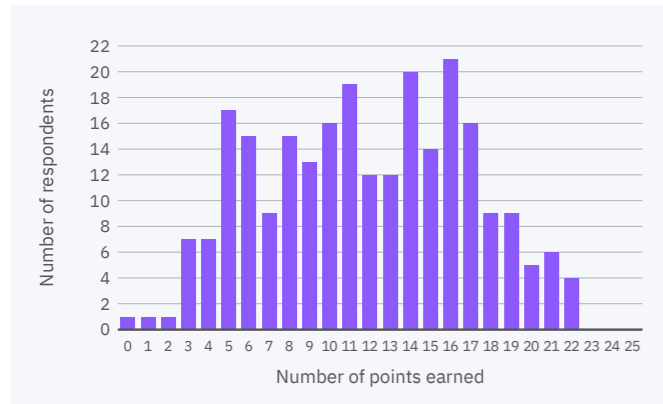


Chart 25 UA – Distribution of respondents' raw scores

Comparing the distribution of raw scores, we see differences between the countries. In Slovakia the peak of the distribution curve is shifted more to the right, which means that respondents had higher test scores. In the Czech Republic and Hungary, it is approximately in the middle. In Poland the peak of the curve is shifted to the left. For Ukrainian pupils the number of respondents is small.

B. Success rate of respondents by age group

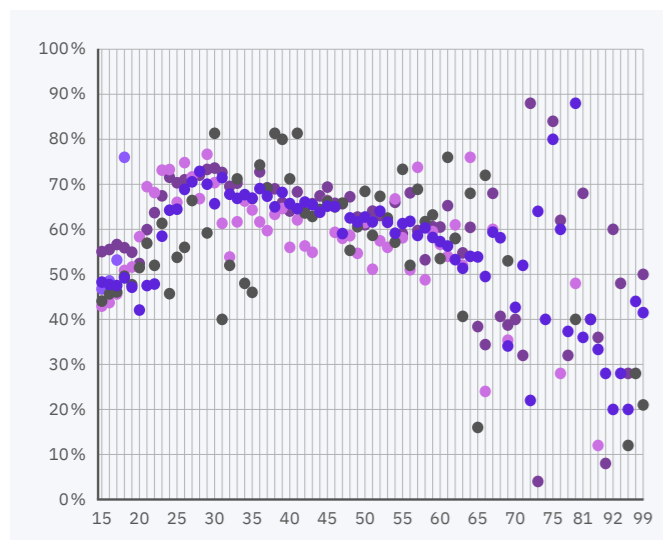


Chart 26 Respondents' performance on the test by age

The number of respondents over the age of 20 is small in each age category, so no relevant conclusions can be drawn from the data. The majority of respondents are under 20 years of age.

C. Respondent success rate by region

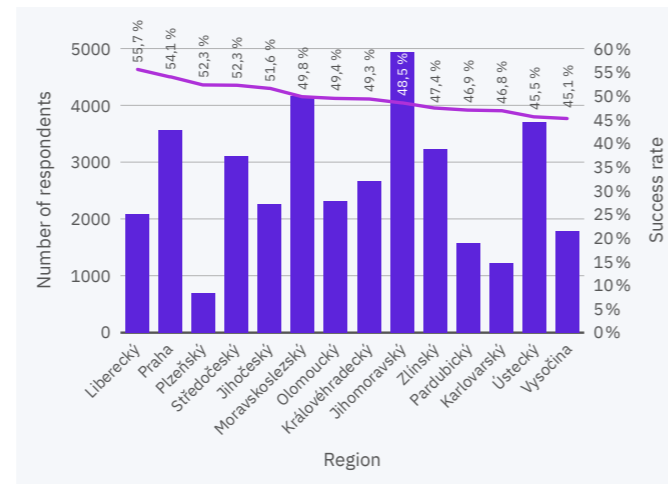


Chart 27 CZ – Representation of test respondents by region and their success rate

The highest success rate was achieved by respondents in the Liberec Region – 55.7% and the lowest in the Vysočina Region – 45.1%. The differences in success rates are significant, reaching approximately 10 percentage points. Respondents from the Jihomoravský Region had the highest representation in the testing. The Plzeň Region has the lowest representation. It can be seen from the graph that the success rate in a region does not depend on the number of respondents.

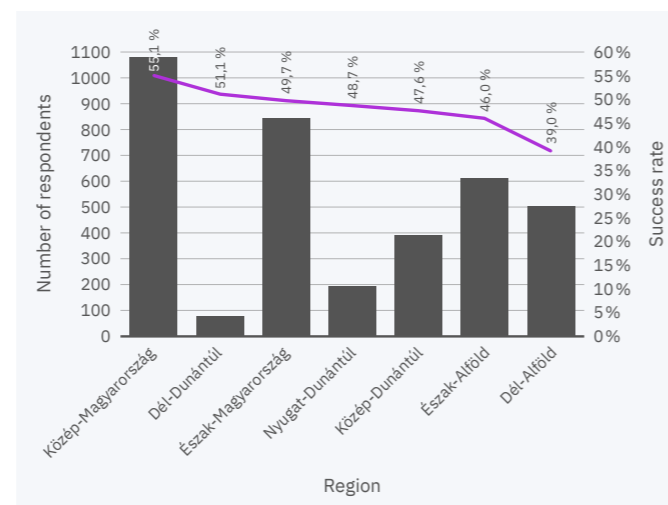


Chart 28 HU – Representation of test respondents by region and their success rate

The highest success rate was achieved by respondents in Közép-Magyarország (central Hungary) – 55.1%. In the region of Dél-Alföld (south-eastern Hungary), the success rate was the lowest

– 39.0%. It should be noted that in some regions there was a very small sample of respondents tested. The differences in success rates are even more pronounced than in the Czech Republic, amounting to about 16 percentage points. Respondents from Közép-Magyarország had the highest representation in the testing. The region of Dél-Dunántúl had the lowest representation.

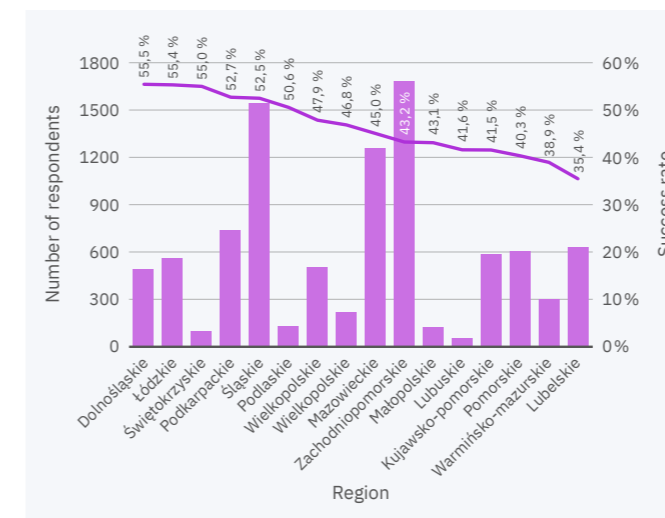


Chart 29 PL – Representation of test respondents by region and their success rate

In Poland, the highest success rate was achieved by students from the province of DOLNOŚLĄSKIE – 55.5%. The lowest success rate was in the province of LUBELSKIE – 35.4%. The difference is very significant – up to 20 percentage points. It should be noted that in some provinces there was a very small sample of tested respondents. ZACHODNIOPOMORSKIE Voivodeship had the highest number of respondents.

D. Success rates in individual test categories

The test was divided into five thematic categories. Each category contained five test items. The following table shows the average success rate in each category:

Category	CZ	HU	PL	SK	UA
I. The Internet	58.66%	53.56%	55.28%	68.84%	59.76%
II. Security and Computer Systems	52.56%	49.71%	51.08%	56.48%	51.33%
III. Complex Tasks	44.36%	41.03%	39.62%	52.67%	47.79%
IV. Office Tools	37.15%	35.83%	36.03%	42.15%	39.36%
V. Collaborative Tools and Social Networks	55.13%	55.86%	51.34%	65.69%	57.99%

Table 13 Success rate in each test category

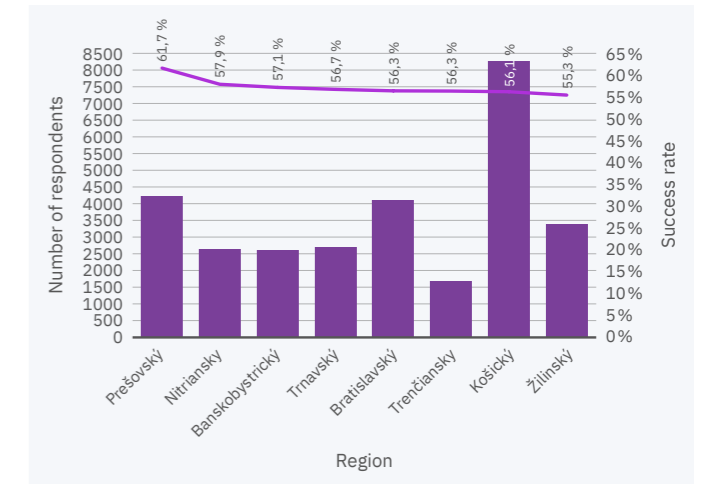


Chart 30 SK – Representation of test respondents by region and their success rate

Respondents from the Košice Region had the highest representation in the testing, just like last year. The lowest representation this year is again from the Trenčín Region, although it is not the smallest region in terms of population. The highest success rate was achieved by respondents in the Prešov Region – 61.7% and the lowest in the Žilina Region – 55.3%. Compared to the other countries, the Slovak Republic has the smallest regional differences in success rates – approximately 6 percentage points.

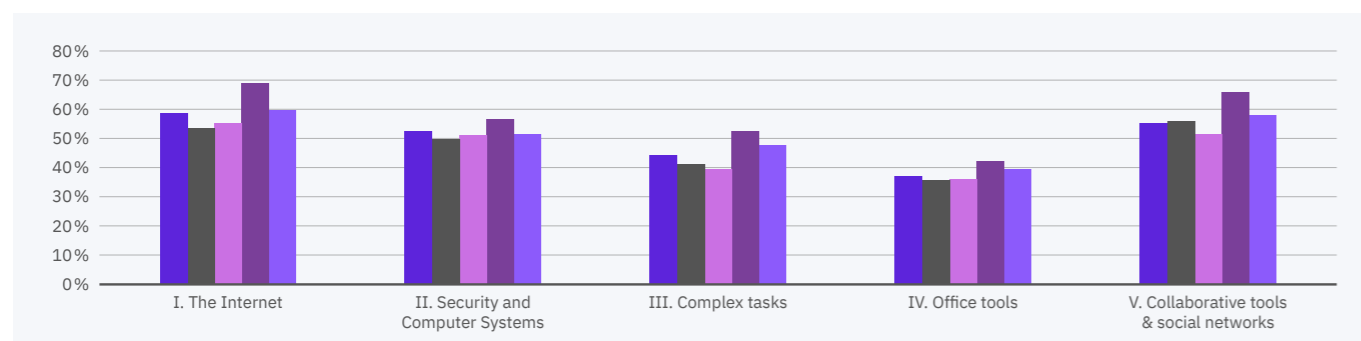


Chart 31 Success rate in each test category

The highest success rates are in the Internet category, while respondents' lowest success rates are in the Office Tools and Complex Tasks categories. Students from the Slovak Republic had the highest success rates in all categories.

The maximum differences (highest and lowest scores) in the countries' performance in each category of the test are at 15 percentage points. The smallest differences between countries are in the Security category. The highest differences between the countries are in the Internet and the Collaborative Tools and Social Networks categories.

E. Success rates for individual test tasks

Another parameter that we were interested in when evaluating the test results was the success rate of the individual test tasks.

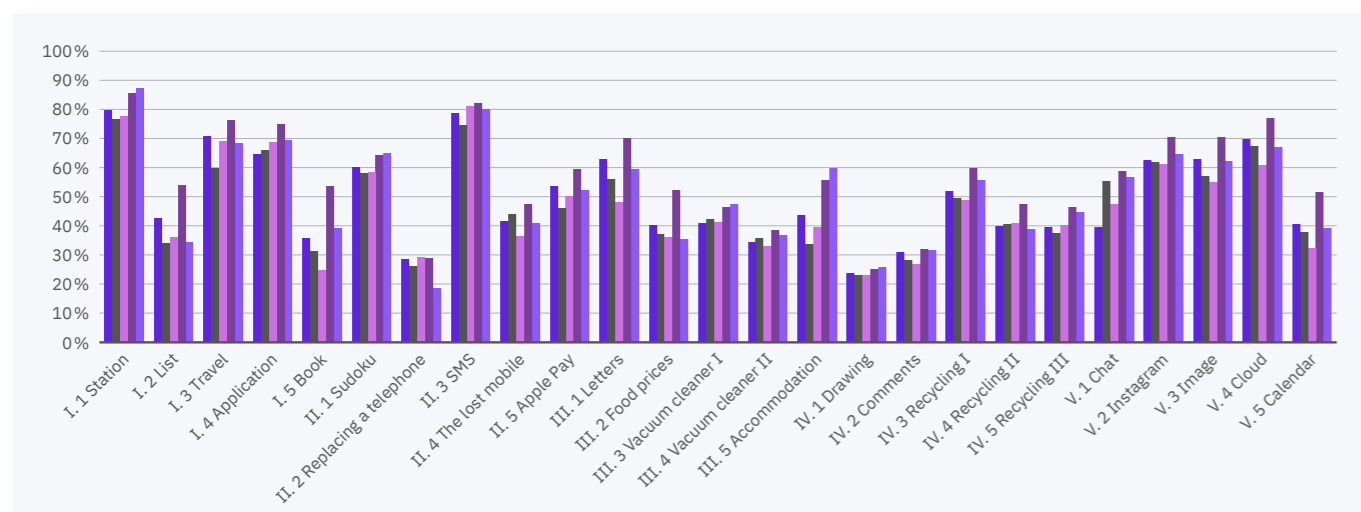


Chart 32 Performance in individual test items

In the table below, the average success rate for all four variants of the test is shown.

Task	CZ	HU	PL	SK	UA
I. 1 Station	79.66%	76.49%	77.61%	85.47%	87.15%
I. 2 List	42.66%	33.93%	36.14%	53.93%	34.54%
I. 3 Travel	70.74%	59.92%	69.19%	76.24%	68.27%
I. 4 Application	64.49%	65.99%	68.80%	75.07%	69.48%
I. 5 Book	35.76%	31.47%	24.66%	53.48%	39.36%
II. 1 Sudoku	60.21%	58.21%	58.27%	64.31%	65.06%
II. 2 Replacing a telephone	28.47%	26.13%	29.22%	28.98%	18.47%
II. 3 SMS	78.70%	74.44%	81.18%	82.10%	79.92%
II. 4 The lost mobile	41.66%	43.86%	36.47%	47.58%	40.96%
II. 5 Apple Pay	53.74%	45.92%	50.23%	59.40%	52.21%
III. 1 Letters	62.74%	55.95%	48.22%	70.17%	59.44%
III. 2 Food prices	40.24%	37.15%	36.27%	52.40%	35.34%
III. 3 Vacuum cleaner I	40.81%	42.44%	41.12%	46.55%	47.39%
III. 4 Vacuum cleaner II	34.36%	35.80%	32.98%	38.66%	36.95%
III. 5 Accommodation	43.67%	33.83%	39.55%	55.57%	59.84%
IV. 1 Drawing	23.60%	23.20%	22.96%	25.02%	25.70%
IV. 2 Comments	31.00%	28.09%	26.84%	31.95%	31.73%
IV. 3 Recycling I	51.77%	49.58%	48.91%	59.92%	55.82%
IV. 4 Recycling II	39.83%	40.63%	41.07%	47.42%	38.96%
IV. 5 Recycling III	39.57%	37.63%	40.38%	46.42%	44.58%
V. 1 Chat	39.50%	55.32%	47.37%	58.89%	56.63%
V. 2 Instagram	62.66%	61.88%	61.01%	70.52%	64.66%
V. 3 Image	63.05%	56.95%	55.01%	70.30%	62.25%
V. 4 Cloud	69.83%	67.27%	60.85%	77.05%	67.07%
V. 5 Calendar	40.60%	37.88%	32.46%	51.71%	39.36%

Table 14 Percentage of success in each test item

Students had the lowest success rate in the Drawing task (Category: Office Tools). Students had the highest success rate in the Station task (Category: Internet). There were also significant differences between countries in the success rates of individual tasks. The maximum difference between countries in individual tasks was approximately 28 percentage points – in the Book task (Category: Internet). Compared to the other countries, Polish students had the lowest success rate in this task. The best results in the tasks were mostly achieved by Slovak students and in some tasks also by students from Ukraine. In about one-fifth of the tasks, students from Slovakia performed significantly better than students from the other countries.

F. Sensitivity in individual categories

Category	CZ	HU	PL	SK	UA
I. The Internet	54.29%	54.05%	51.19%	55.20%	55.38%
II. Security and Computer Systems	52.17%	51.74%	51.50%	53.58%	43.04%
III. Complex Tasks	57.43%	55.61%	57.97%	64.48%	59.62%
IV. Office Tools	47.68%	46.94%	54.04%	53.87%	54.90%
V. Collaborative Tools and Social Networks	62.66%	67.81%	71.28%	66.54%	68.41%

Table 15 Sensitivity in individual categories of the test for respondents over 15 years of age

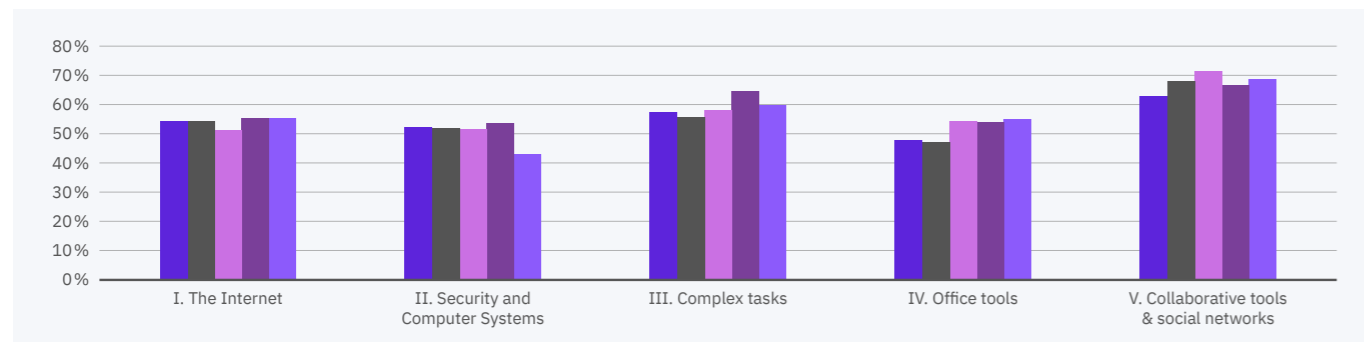


Chart 33 Sensitivity in individual categories of the test for respondents over 15 years of age

Sensitivity in all categories was good to very good. Each of the categories distributed the tested group very well. There are only minor differences in sensitivity comparisons between the countries. The highest sensitivity was in the Collaborative Tools and Social Networks category. No category had a significantly lower sensitivity compared to the others. The lowest, though still-good sensitivity is for the Security category for Ukrainian students.

G. Sensitivity of individual test tasks

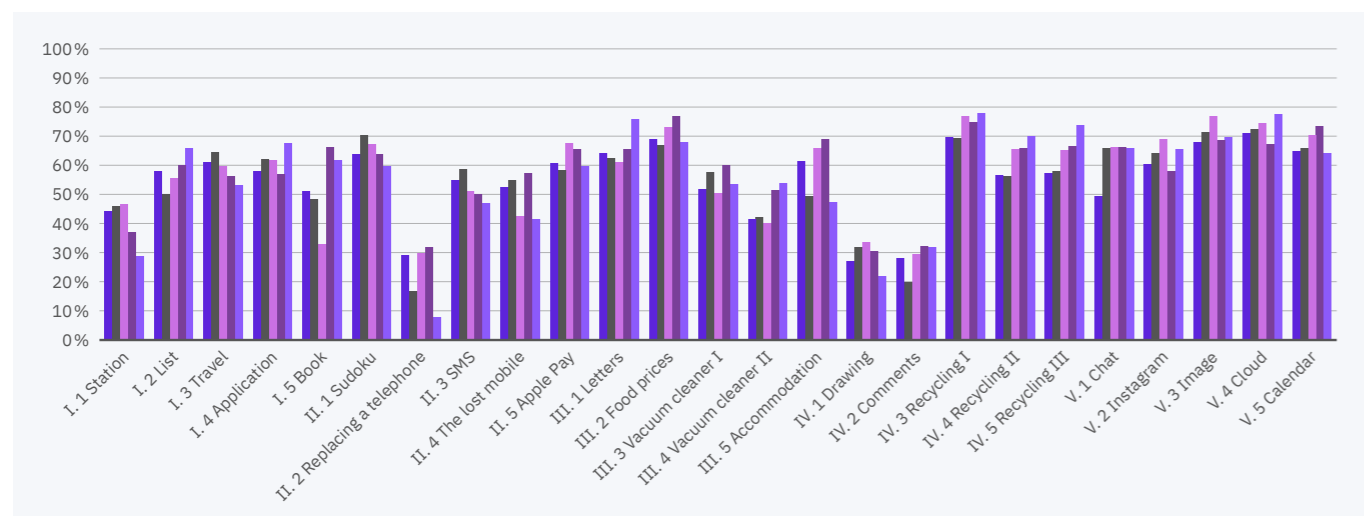


Chart 34 Sensitivity in individual tasks of the test for respondents over 15 years of age



The graph shows the sensitivity of the individual test items (all four variants together). Except for three tasks, the test tasks have very good sensitivity. Even in the three tasks with weaker sensitivity (Replacing a telephone, Drawing, Comments), their sensitivity is good in some countries. In the country comparison, individual tasks show higher differences in sensitivity than just individual categories.

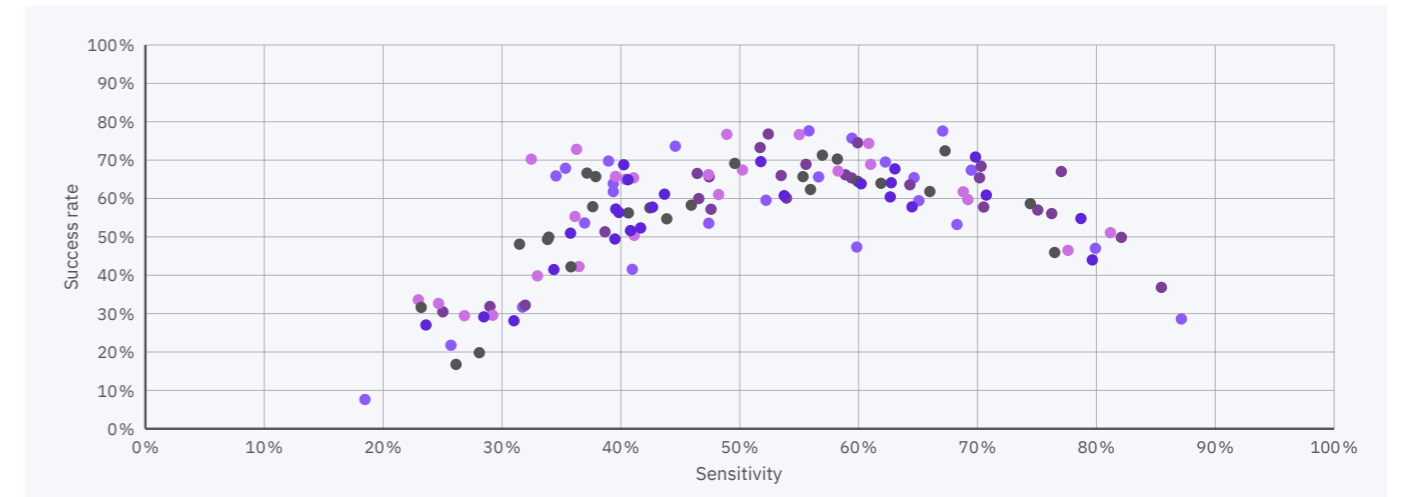


Chart 35 Achievement and sensitivity of individual test items for respondents over 15 years of age

Two tasks had low sensitivity in CZ, SK, and UA, three tasks in HU, and four tasks in PL. The other tasks had good sensitivity and thus distributed the test respondents well.

H. Examples of some of the tasks in the test for respondents over 15 years of age

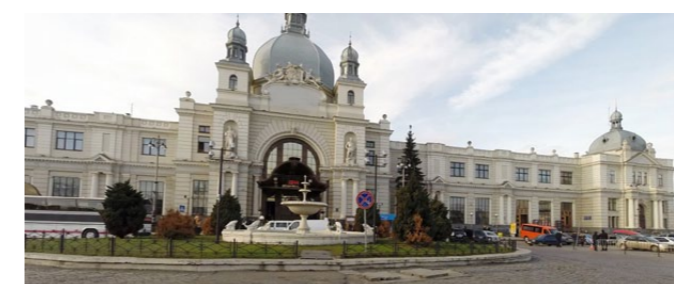
Task with the highest success rate – I. Internet – Station

Success rate: CZ: 79.76% | HU: 76.49% | PL: 77.61% | SK: 85.47% | UA: 87.15%

Sensitivity: CZ: 43.99% | HU: 45.93% | PL: 46.48% | SK: 36.84% | UA: 28.61%

Task assignment:

In which city is this train station located?



- a) Lviv (Ukraine)
- b) Prešov (Slovakia)
- c) Lublin (Poland)
- d) Debrecen (Hungary)

Task with one of the highest sensitivities – IV. Office tools – Recycling I

Success rate: CZ: 51.77% | HU: 49.58% | PL: 48.91% | SK: 59.92% | UA: 55.82%

Sensitivity: CZ: 69.61% | HU: 69.15% | PL: 76.71% | SK: 74.52% | UA: 77.63%

Task assignment:

This table (table_2.xlsx or table_2.ods) contains data on waste recycling in some EU countries. Each row contains a record for one country, one year, one waste category and its recycling rate, i.e. what percentage of packaging waste of that category was recycled in that year and in that country. (source: Eurostat)

The table's rows have been sorted randomly.

What is the smallest recycling rate in the data rows for Czechia?

- a) 7,5 b) 25,7 c) 27,6 d) 29,3

Task with one of the highest sensitivities – V. Social networks and collaborative tools – Cloud

Success rate: CZ: 69.83% | HU: 67.27% | PL: 60.85% | SK: 77.05% | UA: 67.07%

Sensitivity: CZ: 70.81% | HU: 72.40% | PL: 74.34% | SK: 67.03% | UA: 77.59%

Task assignment:

Jack created a shared folder called 2023, located at the following address:

<https://1drv.ms/u/s!AtnHL0u5m06LgTgRKNG0NQ5ZdAwR?e=UJnz6B>

He created more folders in it and saved some files there as well. In the photos folder, he created more folders and saved photos in them as well. Which folder contains five photos?

- a) trips b) holidays c) summer d) landscape

IIIId. School performance in the test for respondents over 15 years of age in the Czech Republic

In the Czech Republic, **students from 534 schools took part in the test for respondents aged 15 and over**. Of these, 316 were schools with at least 10 students aged 15 and over. From these schools, we report in the table below the ranking of the highest performing schools (including colleges), including the school's percentile (above 90%) and the average age of the students tested.

Ranking	School	school percentile	average success rate	average age	number of students
1	Purkyňovo gymnázium, Strážnice, Masarykova 379, příspěvková organizace, Masarykova 379, Strážnice, CZ	100.00%	77.45%	17.91	11
2	Masarykova univerzita, Žerotínovo nám. 617/9, Brno, CZ	99.60%	77.09%	24.00	11
3	Střední průmyslová škola elektrotechniky a informatiky, Ostrava, příspěvková organizace, Kratochvílova 1490/7, Ostrava, CZ	99.30%	75.60%	17.60	10
4	Gymnázium, Praha 8, U Libeňského zámku 1, U libeňského zámku 1/2, Praha 8, CZ	99.00%	73.80%	18.15	20
5	Gymnázium, Jablonec nad Nisou, U Balvanu 16, příspěvková organizace, U Balvanu 764/16, Jablonec nad Nisou, CZ	98.70%	73.00%	17.75	16

6	Lauderova mateřská škola, základní škola a gymnázium při Židovské obci v Praze, Belgická 67/25, Praha 2, CZ	98.40%	72.75%	16.06	16
7	Slovanské gymnázium, Olomouc, tř. Jiřího z Poděbrad 13, Jiřího z Poděbrad 936/13, Olomouc, CZ	98.00%	71.11%	16.48	27
8	Gymnázium Děčín, příspěvková organizace, Komenského nám. 340/4, Děčín, CZ	97.70%	70.00%	17.17	12
9	Střední škola technická a ekonomická Brno, Olomoucká, příspěvková organizace, Olomoucká 1140/61, Brno, CZ	97.40%	69.59%	16.97	113
10	Gymnázium, Praha 6, Arabská 14, Arabská 682/14, Praha 6, CZ	97.10%	69.12%	16.26	43
11	Gymnázium Jaroslava Heyrovského, Praha 5, Mezi Školami 2475, Mezi Školami 2475/29, Praha 5, CZ	96.80%	68.08%	16.44	48
12	Obchodní akademie, Praha 10, Heroldovy sady 1, Heroldovy sady 362/1, Praha 10, CZ	96.50%	67.82%	17.18	22
13	Wichterlovo gymnázium, Ostrava-Poruba, příspěvková organizace, Čs. exilu 669/16, Ostrava, CZ	96.10%	67.30%	16.47	216
14	Gymnázium J. V. Jirsíka, České Budějovice, Fráni Šrámka 23, Fráni Šrámka 1193/23, České Budějovice, CZ	95.80%	67.01%	16.64	282
15	Obchodní akademie Dušní, Dušní 1083/7, Praha 1, CZ	95.50%	66.64%	17.84	50
16	Gymnázium Uherské Hradiště, Velehradská třída 218, Uherské Hradiště, CZ	95.20%	65.96%	16.30	163
17	Gymnázium, Kolín III, Žižkova 162, Žižkova 162, Kolín, CZ	94.90%	65.73%	17.15	74
18	Jiráskovo gymnázium, Náchod, Řezníčkova 451, Řezníčkova 451, Náchod, CZ	94.60%	65.02%	16.01	137
19	Vyšší odborná škola pedagogická a sociální, Střední odborná škola pedagogická a Gymnázium, Praha 6, Evropská 33, Evropská 330/33, Praha 6, CZ	94.20%	64.86%	15.75	28
20	Gymnázium Karla Sladkovského, Praha 3, Sladkovského náměstí 8, Sladkovského náměstí 900/8, Praha 3, CZ	93.90%	64.44%	15.28	99
21	Gymnázium, Krnov, příspěvková organizace, Smetanův okruh 19/2, Krnov, CZ	93.60%	64.43%	16.36	28
22	Gymnázium, Šternberk, Horní náměstí 5, Horní náměstí 167/5, Šternberk, CZ	93.30%	63.42%	16.32	62
23	Gymnázium, Česká Lípa, Žitavská 2969, příspěvková organizace, Žitavská 2969, Česká Lípa, CZ	93.00%	62.98%	15.90	157
24	Gymnázium a Jazyková škola s právem státní jazykové zkoušky Zlín, nám. T. G. Masaryka 2734, Zlín, CZ	92.60%	62.91%	18.83	110
25	Gymnázium Velké Meziříčí, Sokolovská 235/27, Velké Meziříčí, CZ	92.30%	62.85%	16.13	52
26	Gymnázium a Obchodní akademie Pelhřimov, Jirsíkova 244, Pelhřimov, CZ	92.00%	62.77%	15.92	13
27	Gymnázium Žďár nad Sázavou, Neumannova 1693/2, Žďár nad Sázavou, CZ	91.70%	62.56%	17.16	25
28	Gymnázium Rožnov pod Radhoštěm, Koryčanské Paseky 1725, Rožnov pod Radhoštěm, CZ	91.40%	62.37%	16.23	125
29	Gymnázium J. S. Machara, Brandýs nad Labem-Stará Boleslav, Královická 668, Královická 668/23, Brandýs nad Labem-Stará Boleslav, CZ	91.10%	62.17%	17.52	83
30	Gymnázium Chotěboř, Jiráskova 637, Chotěboř, CZ	90.70%	62.03%	15.66	67
31	Gymnázium, Kladno, nám. Edvarda Beneše 1573, nám. Edvarda Beneše 1573, Kladno, CZ	90.40%	61.79%	16.55	199
32	Klvaňovo gymnázium a střední zdravotnická škola Kyjov, příspěvková organizace, třída Komenského 549/23, Kyjov, CZ	90.10%	61.68%	16.70	124

Table 16 Top-performing schools (pupils aged 15+) in the Czech Republic

IIIe. School performance in the test for respondents over 15 years of age in Hungary

In Hungary, **students from 123 schools took part in the test for respondents aged 15 and over**. Of these, 73 were schools with at least 10 students aged 15 and over. From these schools, we report in the table below the ranking of the highest performing schools (including colleges), including the school's percentile (above 80%) and the average age of the students tested.

Ranking	School	school percentile	average success rate	average age	number of students
1	Budapesti Műszaki SZC Bolyai János Műszaki Technikum és Kollégium, Váci út 21., Budapest XIII. kerület (1134), HU	100.00%	73.50%	16.88	16
2	Berzsenyi Dániel Gimnázium, Kárpát utca 49-53., Budapest XIII. kerület, HU	98.60%	70.43%	16.61	46
3	Lónyay Menyhért Baptista Technikum és Szakképző Iskola, Kossuth Lajos út 9. C ép, Vásárosnamény, HU	97.20%	66.76%	16.72	29
4	Váci SZC Boronkay György Műszaki Technikum és Gimnázium, Németh László út 4-6., Vác, HU	95.80%	66.41%	16.63	146
5	Széchenyi István Római Katolikus Technikum és Gimnázium, Bajcsy-Zsilinszky út 6., Hatvan, HU	94.40%	64.87%	17.74	23
6	Vak Bottyán János Katolikus Műszaki és Közgazdasági Technikum, Gimnázium és Kollégium, Than Károly utca 1., Gyöngyös, HU	93.00%	61.54%	15.54	13
7	Sashegyi Arany János Általános Iskola és Gimnázium, Meredek utca 1., Budapest XII. kerület, HU	91.60%	60.63%	16.58	96
8	Kiskunhalasi SZC Kiskőrösi Wattay Technikum és Kollégium, Árpád utca 20., Kiskőrös (6200), HU	90.20%	59.53%	18.53	17
9	Révai Miklós Gimnázium és Kollégium, Jókai út 21., Győr, HU	88.80%	59.47%	15.20	15
10	Budapest II. Kerületi II. Rákóczi Ferenc Gimnázium, Keleti Károly utca 37., Budapest II. kerület, HU	87.50%	59.18%	16.82	44
11	Székesfehérvári SZC Széchenyi István Műszaki Technikum, Budai út 45., Székesfehérvár, HU	86.10%	57.65%	16.59	46
12	Szent Margit Gimnázium, Villányi út 5-7., Budapest XI. kerület, HU	84.70%	57.39%	15.96	23
13	Kiskunfélegyházi Szent Benedek PG Két Tanítási Nyelvű Technikum és Kollégium, Kossuth utca 24., Kiskunfélegyháza (6100), HU	83.30%	56.71%	17.64	28
14	Budapesti Egyetemi Katolikus Gimnázium és Kollégium, Szabó Ilonka utca 2-4., Budapest I. kerület, HU	81.90%	54.93%	19.67	15
15	Baranya Megyei SZC Simonyi Károly Technikum és Szakképző Iskola, Malomvölgyi út 1/b., Pécs (7636), HU	80.50%	53.89%	19.00	19

Table 17 Top-performing schools (pupils aged 15+) in Hungary

Additionally, special thanks goes to the schools listed below that managed to involve the biggest number of students (in both the test for primary schools and the test for respondents over 15 years of age).

Ranking	School	Number of respondents
1	Lévay József Református Gimnázium és Diákotthon	738
2	Debreceni Ady Endre Gimnázium	449
3	Fényi Gyula Jezsuita Gimnázium, Kollégium és Óvoda	439
4	Lauder Javne Zsidó Közösségi Óvoda, Általános Iskola, Gimnázium és Zenei Alapfokú Művészeti Iskola	395
5	Bajai SZC Túrr István Technikum	287
6	Magyarországi Németek Általános Művelődési Központja	248
7	Békéscsabai SZC Trefort Ágoston Technikum, Szakképző Iskola és Kollégium	232
8	Bálint Márton Általános Iskola és Középiskola	211
9	Budapesti Műszaki SZC Újpesti Két Tanítási Nyelvű Műszaki Technikum	204
10	Békéscsabai SZC Nemes Tihamér Technikum és Kollégium	194
11	Vas Megyei SZC Sárvári Tinódi Gimnázium	173
12	SZÁMALK - Szalézi Technikum és Szakgimnázium	172
13	Kőrösi Csoma Sándor Két Tanítási Nyelvű Baptista Gimnázium	169
14	Péter András Gimnázium és Kollégium	167
15	Zafféry Károly Szalézi Középiskola	164
16	Izbégi Általános Iskola	155
17	Berzsenyi Dániel Gimnázium	153
18	Váci SZC Boronkay György Műszaki Technikum és Gimnázium	150
19	Biatorbágyi Innovatív Technikum és Gimnázium	133
20	Prohászka Ottokár Katolikus Gimnázium	118

Table 18 Schools with most respondents in Hungary

III f. School performance in the test for respondents over 15 years of age in Poland

In Poland, **students from 361 schools took part in the test for respondents aged 15 and over**. Of these, 141 were schools with at least 10 students aged 15 and over. From these schools, we report in the table below the ranking of the highest performing schools (including colleges), including the school's percentile (above 85%) and the average age of the students tested.

Ranking	School	school percentile	average success rate	average age	number of students
1	CXXII LICEUM OGÓLNOKSZTAŁCĄCE IM. IGNACEGO DOMEYKI, ul. Leopolda Staffa 3/5, Warszawa-Bielany, PL	100.00%	77.50%	16.56	16
2	LICEUM OGÓLNOKSZTAŁCĄCE NR IX IM. JULIUSZA SŁOWACKIEGO, ul. ks. Piotra Skargi 31, Wrocław-Stare Miasto, PL	99.20%	76.00%	17.31	13

3	TECHNIKUM NR 18, ul. Armii Krajowej 84, Katowice, PL	98.50%	74.15%	17.23	13
4	TECHNIKUM NR 17, ul. Sokolska 26, Katowice, PL	97.80%	71.67%	19.08	12
5	ŚLĄSKIE TECHNICZNE ZAKŁADY NAUKOWE, ul. Sokolska 26, Katowice, PL	97.10%	70.10%	18.75	139
6	I LICEUM OGÓLNOKSZTAŁCĄCE IM. STEFANA CZARNIECKIEGO W CHEŁMIE, ul. Stefana Czarnieckiego 8, Chetm, PL	96.40%	69.71%	16.79	14
7	TECHNIKUM MECHANICZNO-ELEKTRYCZNE IM. NIKOLI TESLI, ul. Stefana Batorego 37, Chorzów, PL	95.70%	67.49%	17.34	70
8	TECHNIKUM NR 1 W LESZNI, ul. Księcia Józefa Poniatowskiego 2, Leszno, PL	95.00%	64.36%	17.45	11
9	TECHNIKUM W ZESPOLE SZKÓŁ ELEKTRONICZNYCH IM. OBROŃCÓW POCZTY POLSKIEJ, ul. Grunwaldzka 64a, Jelenia Góra, PL	94.20%	63.80%	16.90	59
10	I LICEUM OGÓLNOKSZTAŁCĄCE IM. JULIUSZA SŁOWACKIEGO W PRZEMYŚLU, ul. Juliusza Słowackiego 21, Przemyśl, PL	93.50%	63.69%	16.50	117
11	ZESPÓŁ SZKÓŁ ELEKTRONICZNYCH I INFORMATYCZNYCH W SOSNOWCU, ul. Jagiellońska 13, Sosnowiec, PL	92.80%	63.31%	17.06	35
12	III LICEUM OGÓLNOKSZTAŁCĄCE IM. MIKOŁAJA KOPERNIKA, ul. Henryka Jordana 4, Wałbrzych, PL	92.10%	63.20%	16.93	15
13	III LICEUM OGÓLNOKSZTAŁCĄCE IM. JANA PAWŁA II, ul. Oświęcimska 90, Ruda Śląska, PL	91.40%	62.12%	16.00	49
14	CENTRUM KSZTAŁCENIA ZAWODOWEGO I USTAWICZNEGO W JAWORZNI, ul. Promienna 65, Jaworzno, PL	90.70%	62.00%	15.67	12
15	CENTRUM KSZTAŁCENIA ZAWODOWEGO I USTAWICZNEGO NR 1 W PRZEMYŚLU, ul. Aleksandra Dworskiego 99, Przemyśl, PL	90.00%	61.80%	17.80	20
16	I LICEUM OGÓLNOKSZTAŁCĄCE IM. STANISŁAWA DUBOIS W KOSZALINIE, ul. Komisji Edukacji Narodowej 1, Koszalin, PL	89.20%	61.40%	16.20	86
17	TECHNIKUM NR 9 W ZESPOLE SZKÓŁ POLITECHNICZNYCH IM. KOMISJI EDUKACJI NARODOWEJ, ul. Aleje Politechniki 38, Łódź-Górna, PL	88.50%	61.17%	15.74	106
18	ZESPÓŁ SZKÓŁ NR 1 W PIEKARACH ŚLĄSKICH, ul. Marii Curie-Skłodowskiej 49, Piekary Śląskie, PL	87.80%	61.09%	17.82	11
19	ZESPÓŁ SZKÓŁ TECHNICZNYCH I OGÓLNOKSZTAŁCĄCYCH NR 2, ul. Mikołowska 131, Katowice, PL	87.10%	60.86%	15.89	65
20	ZESPÓŁ SZKÓŁ TECHNICZNYCH IM. EUGENIUSZA KWIATKOWSKIEGO, ul. Adama Matuszczaka 7, Rzeszów, PL	86.40%	60.82%	15.88	122
21	ZESPÓŁ SZKÓŁ EKONOMICZNYCH IM. GEN. STEFANA ROWECKIEGO "GROTA" W OPOLU, ul. Tadeusza Kościuszki 43, Opole, PL	85.70%	60.55%	15.79	29
22	ZESPÓŁ SZKÓŁ NR 2 W PABIANICACH IM. PROF. JANUSZA GROSZKOWSKIEGO, ul. św. Jana 27, Pabianice, PL	85.00%	60.28%	16.92	199

Table 19 Top-performing schools (pupils aged 15+) in Poland

Additionally Technikum Łączności I Multimediów Cyfrowych, Szczecin managed to involve the largest number of participants in Poland. Śląskie Techniczne Zakłady Naukowe, Katowice achieved the highest average score from high schools with at least 100 participants.

IIIg. School performance in the test for respondents over 15 years of age in Slovakia

In Slovakia, **students from 621 schools took part in the test for respondents aged 15 and over**. Of these, 290 were schools with at least 10 students aged 15 and over. From these schools, we report in the table below the ranking of the highest performing schools (including colleges), including the school's percentile (above 90%) and the average age of the students tested.

Ranking	School	school percentile	average success rate	average age	number of students
1	Spojená škola s vyučovacím jazykom maďarským, Lichnerova 71, Senec, SK	100.00%	95.54%	16.6	26
2	Súkromná stredná športová škola ELBA, Smetanova 2, Prešov, SK	99.60%	82.93%	16.0	90
3	Súkromná stredná odborná škola, Ul. 29. augusta 4812, Poprad, SK	99.30%	80.49%	16.4	173
4	Gymnázium arm. gen. Ludvíka Svobodu, Komenského 4, Humenné, SK	98.90%	80.48%	17.4	33
5	Gymnázium Leonarda Stöckela, Jiráskova 12, Bardejov, SK	98.60%	79.45%	16.8	88
6	Univerzita Komenského v Bratislave, Fakulta matematiky, fyziky a informatiky, Mlynská dolina F1, Bratislava, SK	98.20%	79.00%	18.2	12
7	1. súkromné gymnázium v Bratislave, Bajkalská 20, Bratislava-Ružinov, SK	97.90%	78.29%	15.5	98
8	Gymnázium Ladislava Novomeského, Tomášikova 2, Bratislava-Ružinov, SK	97.50%	76.70%	17.7	23
9	Gymnázium sv. Uršule ako organizačná zložka Spojenej školy sv. Uršule, Nedbalova 4, Bratislava-Staré Mesto, SK	97.20%	76.54%	16.4	59
10	Stredná priemyselná škola elektrotechnická, Plzenská 1, Prešov, SK	96.80%	74.68%	16.7	489
11	Gymnázium Karola Štúra, Nám. slobody 5, Modra, SK	96.50%	74.38%	16.2	32
12	Gymnázium Angely Merici, Hviezdoslavova 10, Trnava, SK	96.10%	74.00%	16.2	128
13	Gymnázium Antona Bernoláka, Ul. Mieru 307/23, Námestovo, SK	95.80%	73.49%	16.3	83
14	Gymnázium, Komenského 32, Trebišov, SK	95.50%	72.80%	17.6	25
15	Gymnázium, Alejová 1, Košice-Juh, SK	95.10%	72.75%	16.4	96
16	Gymnázium Pavla Horova, Masarykova 1, Michalovce, SK	94.80%	72.47%	16.5	206
17	Gymnázium Pavla Országha Hviezdoslava, Hviezdoslavova 20, Kežmarok, SK	94.40%	72.33%	16.8	171
18	Stredná odborná škola obchodu a služieb, Rožňavská Baňa 211, Rožňava, SK	94.10%	72.24%	17.6	17
19	Univerzita Komenského v Bratislave, Fakulta managementu, Odbojárov 10, P. O. Box 95, Bratislava, SK	93.70%	72.00%	24.7	10
20	Gymnázium, Grösslingová 18, Bratislava-Staré Mesto, SK	93.40%	71.76%	16.7	33
21	Gymnázium, Kukučínova 4239/1, Poprad, SK	93.00%	71.42%	16.1	222
22	Gymnázium Jána Hollého, Na hlinách 7279/30, Trnava, SK	92.70%	71.20%	16.5	10
23	Gymnázium Andreja Vrábla, Mierová 5, Levice, SK	92.30%	70.88%	16.3	378
24	Gymnázium Antona Bernoláka, Lichnerova 69, Senec, SK	92.00%	70.67%	16.3	18
25	Gymnázium sv. Moniky, Tarasa Ševčenka 1, Prešov, SK	91.60%	70.35%	16.5	340
26	Stredná priemyselná škola elektrotechnická, Komenského 44, Košice-Sever, SK	91.30%	70.30%	15.9	638

27	Stredná odborná škola strojnícka, Partizánska cesta 76, Bánovce nad Bebravou, SK	91.00%	69.86%	16.4	28
28	Spojená škola sv. Jána Bosca, Trenčianska 66/28, Nová Dubnica, SK	90.60%	69.66%	16.8	77
29	Spojená škola, Dominika Tatarku 4666/7, Poprad, SK	90.30%	69.51%	16.8	114

Table 20 Top-performing schools (pupils aged 15+) in the Slovak Republic

IIIh. Teacher performance in the test for respondents over 15 years of age

country	average teacher success rate	number of teachers tested	average age
CZ	63.61%	3,576	45
HU	64.53%	219	45
PL	60.12%	364	44
SK	64.64%	2,540	45

Table 21 Teacher results by country

Teachers from the Czech and Slovak Republics were the most involved in the teacher testing (as regards the test for secondary schools). Of these countries, it is already a sample size for which the breakdown of results by region may be of interest. Therefore, in the following tables we present more detailed results for these two countries.

Czech Republic

The test for secondary schools in the Czech Republic was taken by 3,576 respondents who indicated that they were teachers. The average success rate of teachers in the test for secondary schools was 63.61%.

Region	average teacher success rate	number of teachers tested	average age
Jihočeský	63.99%	276	44
Jihomoravský	64.88%	268	45
Karlovarský	57.93%	290	47
Královéhradecký	63.21%	239	45
Liberecký	60.27%	103	46
Moravskoslezský	65.55%	452	45
Olomoucký	65.98%	263	44
Pardubický	63.79%	229	45
Plzeňský	65.39%	155	44
Praha	63.43%	351	45
Středočeský	65.27%	433	44
Ústecký	60.03%	273	46

Vysočina	61.66%	157	46
Zlínský	68.69%	87	44

Table 22 CZ – Teacher performance on the test for respondents over 15 years of age by region

The lowest success rate was achieved by teachers in the Karlovarský Region. The highest success rate was achieved by teachers from the Zlínský region.

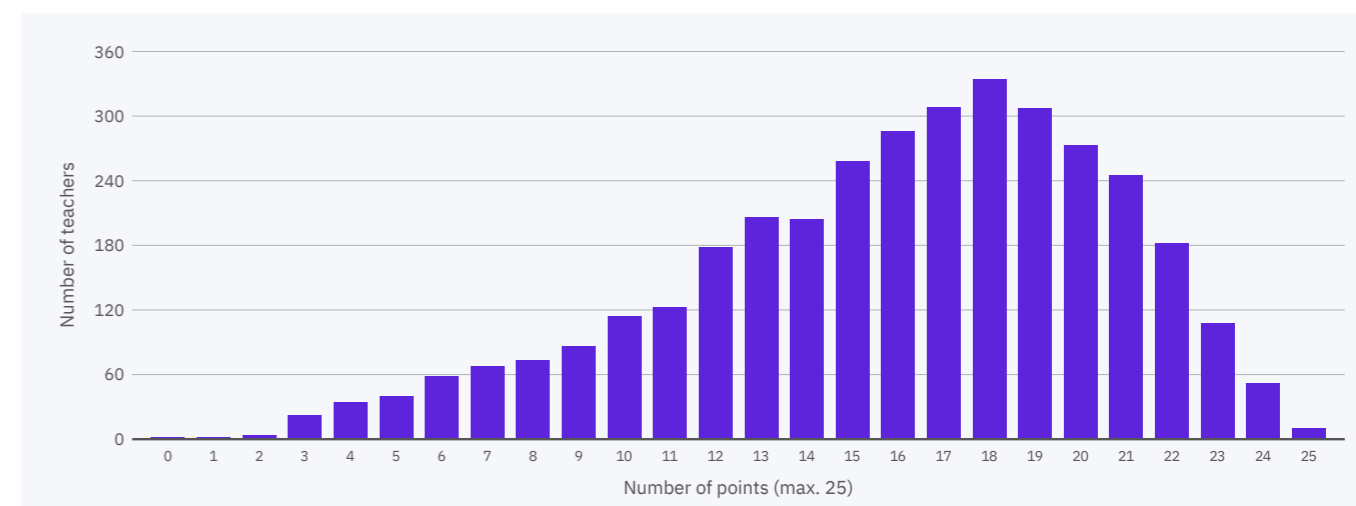


Chart 36 CZ – Teacher results in the test for respondent over 15 years of age

Slovak Republic

The test for secondary schools was taken by 2,540 respondents in the Slovak Republic who indicated that they were teachers. The average pass rate for teachers in the secondary-school test was 64.64% (57.39% last year).

Region	2023			2022		
	average teacher success rate	number of teachers tested	average age	average teacher success rate	number of teachers tested	average age
Banskobystrický	64.70%	313	45	58.26%	302	44
Bratislavský	60.59%	319	45	56.69%	157	45
Košický	65.17%	826	45	54.84%	1097	46
Nitriansky	62.88%	222	46	59.46%	194	44
Prešovský	63.93%	330	45	61.36%	312	43
Trenčiansky	71.89%	113	45	65.56%	100	45
Trnavský	66.92%	100	42	56.74%	189	43
Žilinský	65.96%	317	43	58.87%	198	44

Table 23 SK – Teacher performance on the test for primary schools by region

Overall, the teacher success rate in the Slovak Republic increased slightly compared to last year. Teachers in the Bratislava Region have the lowest success rate. The year-on-year improvement in individual regions is in the range of two to ten percentage points. The highest year-on-year increase in the teacher success rate is in the Košice and Trnava Regions.

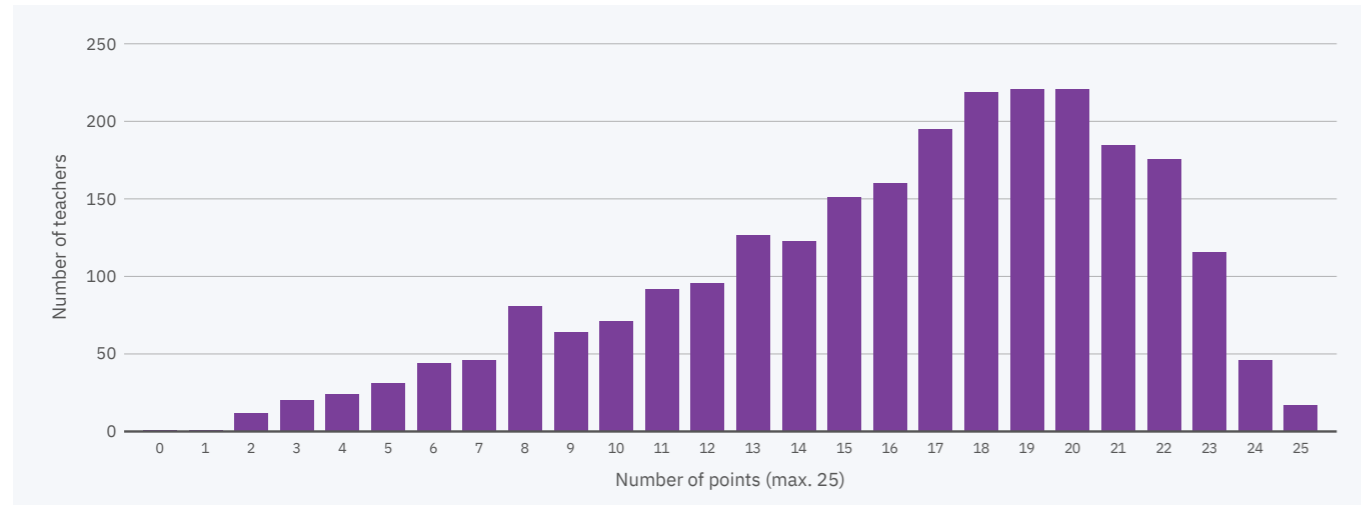


Chart 37 SK – Teacher results in the test for respondent over 15 years of age



IIIi. Interpretation of results and test recommendations for respondents over 15 years of age

Each year the test developers aim to create a test that can distinguish between respondents with good knowledge and skills from respondents with poor knowledge and skills. A test that discriminates well between respondents should have a success rate of approximately 50 to 60%. The test items are not pre-piloted, which means that estimating their parameters is very difficult.

The pass rate for all respondents aged 15 years and above in SK is 57.17% (61.51% last year), which is within the required range. The other pass rates were: CZ – 49.57%, HU – 47.20%, PL – 46.67%. Ukrainian pupils had a success rate of 51.24%. The success rate in the test in the Slovak Republic decreased by 4.34 percentage points compared to last year. However, no firm conclusions can be drawn from this decrease. In a comparison of countries, respondents in Slovakia performed better.

The test discriminated very well between respondents' scores. The overall sensitivity (discriminatory power of the test) was around 55% across the countries, which is very good. The sensitivity was also enhanced by a good mix of tasks of appropriate difficulty.

The best results were in the **Internet** category. This category has the highest long-term success rate. The exception was respondents from Hungary, who had the highest success rate in the Collaborative Tools and Social Networks category.

Students are very good at searching on the Internet, finding a travel connection and its parameters, looking up an app and finding out basic information about it, or identifying a location on a map from a photo. Students' success rate decreases when they need to make comparisons between the information they have found, critically evaluate it, and make clear statements. Respondents also have less experience in following up information in a specific document. This is where the large differences between the countries became apparent, with a difference of approximately 28 percentage points in the best and worst performance in the Book task.

In the country comparison for the tasks in the Internet category, the best results were achieved by students from the

Slovak Republic and in one task by students from Ukraine. In three tasks in this category, students from Hungary had the lowest success rate, in one task students from the Czech Republic, and in one task students from Poland had the lowest success rate. The differences in the success rates of the countries in the tasks in the Internet category were not negligible.

The **Security and Computer Systems** category was the third most-successful category in all the countries. Here, the average country success rates were more evenly balanced with each other. Students were good at identifying a fraudulent message and knew how to respond to it. Deficiencies were found in the area of securely removing data from an unused device. Students were less successful in situations they had not encountered and which are less frequently talked about in society. Although they are given background information or instructions on the situation, they are less able to understand the text and cannot draw the correct conclusions from it.

In the **Complex Tasks** category, the tasks focused on problem solving and algorithmic thinking, complex skills when coding information, finding information in an interactive graph and evaluating it, and discovering the controls and settings of a program/process/animation. This category had the second-lowest results. The best performers were students from SK and UA. Students from Hungary and Poland scored about 10 percentage points lower compared to Slovakia. In decoding information according to the above algorithm, students from Slovakia and the Czech Republic did best; on the contrary, students from Poland did the least well. Students from the Slovak Republic did significantly better in evaluating information from an interactive graph (the food prices task). Students also performed worse in the algorithmic task where it was necessary to understand the rules of a program (the robot vacuum cleaner) and then decide on the outcome of the process and also identify the critical situation. Here, students from the Slovak Republic and Ukraine performed slightly better. In the task where it was necessary to look up the properties of a certain accommodation provider and decide on the truth of some information according to a given source, students also had weaker results. Here there were significant differences between the countries: while students from SK achieved

almost 56% and students from UA almost 60%, the success rate was only about 34% in Hungary and about 40% in Poland.

There is a tendency for less acceptance of the defined rules in the problem and it is cognitively more comfortable for the test taker to solve the problem in the context of their own ideas.

We see great room for improving skills in complex problem solving. It is necessary to include tasks of this nature in the teaching process.

In the **Office Tools** category, the success rate in SK was 42.15%, an increase of more than 7 percentage points compared to the previous year. And the success rate in the other countries in this category was even lower. **Despite the improvement, knowledge and skills in office tools have long been weak and insufficient, e.g. for employers' requirements.** Despite the poor results, sensitivity in this category was very good. This means that here too we have very skilled respondents and, conversely, respondents who have significant gaps in their knowledge of the subject. Students have gaps in their skills and knowledge about working in vector graphics; they do not know how to use multi-person collaboration tools in office software. They are relatively good at using simple tools to work with data in a spreadsheet. They have deficiencies when evaluating data in a spreadsheet and filtering it. Observation of practice during test solving shows that students are willing to reach a result by more laborious and incompetent solutions. They do not think about the efficiency and reliability of a solution, they do not know how to use efficient tools, and they lack the ability to question the correctness of their solution method and look for a method that leads to less error. It is questionable whether they are guided to do this in the classroom or whether the school system is just focusing on getting results.

In the **Collaborative Tools and Social Networks** category, the success rate of respondents in the Slovak Republic was 65.69%, which is an increase of about 11 percentage points compared to last year. **Based on testing the same skills compared to last year, we see a slight improvement in this category in Slovakia.** Overall, we see that Slovak respondents are well versed in this category. They have experience with

social networks, they can find and identify basic information, as well as interpret it. They also know how to verify the required information. Basic knowledge and working with collaboration tools are also at a good level. Interestingly, it was the tasks in this category that best divided the sample of test takers.

In the country comparison of the individual tasks in this category, there are significant differences (somewhere around 15 percentage points). Students from the Czech Republic had the most difficulty in the task where it was necessary to understand the communication of users in a chat. Students from Hungary and Poland had deficiencies in the task with the shared calendar and finding the necessary information in it. Overall, in the shared calendar task, students from all countries had deficiencies, and the skills for working in teams and planning activities are considered key by many employers.

What would we recommend to teachers?

Overall, students appear to perform well in activities they encounter more frequently and perform better on tasks with lower cognitive demand, where reading comprehension and the use of critical thinking are not required. Their knowledge from the school system is more at a formal and theoretical level, with little ability to link and apply it to practice.

Many students have gaps in the skills and competences they need for further study and progression, as well as in the skills required by employers.

The differences in success rates between the different categories are very large; students have significant deficiencies in working with office tools, in evaluating data in a table, filtering it, nor do they know how to use tools for collaboration with several people in office software.

There is a need to focus on linking knowledge from multiple fields, on linking theoretical knowledge with practical skills and with experience, and a need to encounter a variety of new problems in different contexts. It is appropriate to give students tasks and projects in which they have to carry out activities that also require higher cognitive operations, e.g. to analyse, evaluate, and create.

IV. Conclusions and recommendations

Our goal is to create tests that have an average pass rate between 50% and 60% and that discriminate well between respondents with good knowledge and skills and respondents with poor knowledge and skills. The success rates for both tests in the Slovak Republic were within the optimal range, or in some target groups just above the required range. As for the success rates in countries where there is no tradition of multi-year testing, the results are near the lower end of the optimal success interval. Both tests had excellent discriminatory power in all the countries tested. The tasks in the **Collaborative Tools and Social Networks** category were the most divisive for the sample tested.

There are also significant differences between countries, many of which we have highlighted in this report. It is appropriate to reflect on these differences at the country level and to speculate on or investigate their causes in more detail.

We cannot draw firm conclusions based on a comparison of the success rates of two different years (grades) at school, as several factors influence the change. One important factor is the change in the set of examinees. The comparison of year-on-year results in the Slovak Republic shows a very slight improvement overall, but it cannot be assessed as an overall trend.

The **Internet** category tends to have **the best results** in the long term. The **Security and Computer Systems** category was the second- or third-most successful category in each country.

Students have a relatively good understanding of what the safety warnings they commonly encounter mean. They have gaps in recognising how to properly protect sensitive data. They do not know how to evaluate well whether a procedure will only visually obscure sensitive data or make it completely inaccessible. They may also have less understanding of the principles and contexts in which information is stored in a structure.

Deficiencies were in the area of secure removal of data from unused equipment. They are less successful in situations they have not encountered and which are less talked about in society. Despite being given background information or instructions on a situation, they are less able to understand a text and draw the right conclusions from it.

In all tested countries, they have significant deficiencies in solving complex problems of an algorithmic character. In the **Complex Tasks** category, the best performers were students from Slovakia and Ukraine. **We see great room for improvement in skills for solving complex problems. It is necessary to include tasks of such a character in the teaching process.**

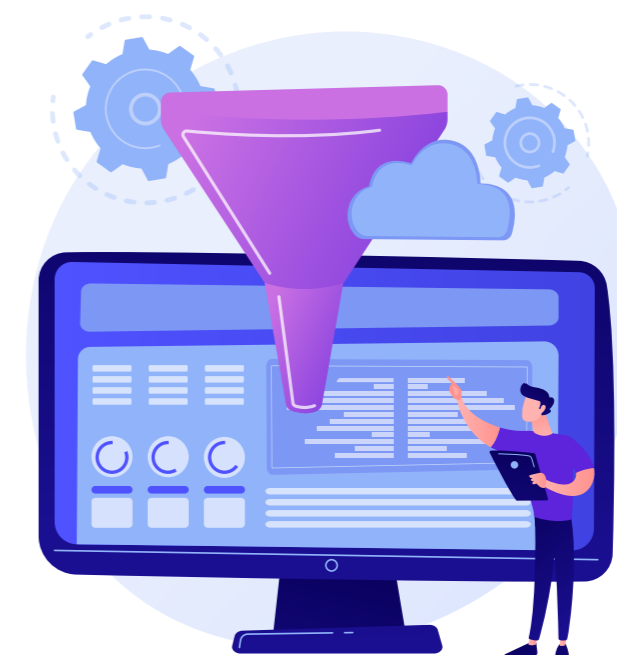
Students have gaps in their knowledge of the use of collaboration tools in office software. They are willing to work their way to a more laborious and incompetent solution. They do not think about the efficiency and reliability of a solution, they do not know how to use efficient tools, and they lack the ability to question the correctness of a particular approach to a solution and look for another method that leads to less error.

Overall, students appear to perform well in activities they encounter more frequently and perform better on tasks with lower cognitive demand, where reading comprehension and the use of critical thinking are not required. Their knowledge from the school system is more at a formal and theoretical level, with little ability to link and apply it to practice.

Pupils are deficient in solving tasks with higher cognitive demand, where it is necessary to solve a problem at a complex level (also algorithmic tasks). In solving, they prefer answers resulting from a quick decision. They are less willing to investigate the properties of a system in more detail, to doubt the correctness of a result, and then to verify the quickly offered answers.

The question remains whether we should focus only on getting to the right result in education, or whether we should also consider different means of reaching a result, whether we discuss ways of coming up with a solution, and whether we can compare the effectiveness of the ways of arriving at a solution.

Many students have gaps in the skills and competences they need for further study and progression, as well as in the skills required by employers.



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