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PISA SURVEY ON STUDENTS' FINANCIAL LITERACY IN TRANSYLVANIA[1]

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ABSTRACT

The international student assessment programme PISA (*Programme for International Student Assessment*) was launched at the end of the 1990s by the Organisation for Economic Co-operation and Development (OECD). At the beginning, 15-year-old students' skills were assessed in three areas (applied mathematics, sciences and reading comprehension). However, acknowledging their necessity for everyday life in the 21st century, new competencies such as English language skills, ICT knowledge, environmental sciences and financial culture have also been assessed in some countries since 2012.

The findings of the latest assessment conducted in 81 countries in 2022 were published on 5 December 2023. According to them, Romania is in second-to-last place in the European Union preceding Bulgaria only. The next assessment is due to be conducted in 2025, when the English language skills of Romanian students will also be tested. Financial skills are also expected to be assessed Romania soon.

According to the Romanian curriculum, teaching financial culture became mandatory for 14 to 15-year-old students in the 2021/22 academic year. The PISA assessment may be regarded as feedback on financial culture allowing the assessment of the usefulness of the newly introduced business skills and the general level of education. This study focuses on the question of how students in Transylvania performed in solving finance related tasks at the 2012 and 2018 PISA assessments with particular attention to the students who were the first recipients of institutional business-finance education at primary school level The authors also wanted to study if there are significant differences between the achievement of students in their 8th, 9th and 10th grades, between boys and girls and between students at city and village schools. The study also covers the issue if the number

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of classes actually held had a significant impact on students' performance in solving finance related tasks.

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1 INTRODUCTION THE PISA ASSESSMENT AND ITS IMPACT ON FINANCIAL CULTURE

Prior to 1990, few European countries used national assessment tests to provide feedback on their educational systems. Ten European countries introduced standardized assessments in the 1990s and another ten followed in the early 2000s (Rey, 2010). By 2009 there had only been five educational systems in Europe that conducted no national assessment and at present every country conducts at least two national assessments of public education: one at the end of elementary/primary school (age 14) and the so termed maturity exam at the end of high school (age 18). PISA, however, is a more comprehensive scheme of international assessment of student performance initiated by OECD 24 years ago. The first PISA tests were conducted in 2000, the next one in 2003. Since then, they have been repeated every third year, so altogether eight PISA assessments have taken place so far. The target group consists of 15-year-old students who are near the end of compulsory schooling age in most participating countries; they only have a few more years in public education. At that age, enrolment rate is close to 100% in most OECD countries.

Since PISA is a business organization, the assessments are conducted on orders. The countries ordering them are mostly interested in their students' practical skills that can be used in everyday life. Thus, tests are to check how much students are able to use their reading comprehension skills to understand and interpret everyday texts and how much they can recognize, understand and solve mathematical and science problems when they come across them. The objective is to provide comparable data so that the countries involved can improve their educational policies to prepare their youth for the challenges in industrialized countries (Csapó, 2015).

Since 2012, new competencies have also been included in PISA assessments in some selected countries including English language skills, ICT knowledge, and financial culture as their necessity for getting along in everyday life in the 21st century has been acknowledged.

Education including public education has been significantly transformed in Europe over the past years. On the one hand, the teaching infrastructure has changed (classrooms have been provided with modern ICT devices) and on the other hand, the content and structure of teaching have been developed. Young people in many European countries have mandatory basic IT, psychology, legal and business-finance courses already in primary school (Lannerst, 2023). The PISA programme also assessed students' financial literacy in addition to their digital competencies in the last four assessments.

The tests measure the knowledge of concepts such as family budget, revenues and expenses, savings, loans, forms of money management and enterprising spirit. They do not only measure academic knowledge but assess its application in everyday life.

But what is financial literacy and why does it affect students, too?

Over the last years, many studies have been published on the concept, measurement, and the European and global position of financial culture. The studies were supported by the *Financial Literacy Programme* launched by the Organization for Economic Co-operation and Development (OECD). Researchers wanted to analyse the relationship between economic development in the countries and the financial skills and culture of their people. The research was triggered by the 2008 financial crisis followed by the Corona virus pandemic. Research has found clear and close relationship between the standard of financial culture and economic development (Kovács–Nagy, 2022). Another important connection was also revealed: the rate of wealth and income concentration is typically lower in countries where the indicators measuring financial awareness are better (Batsaijhan–Demertzis, 2018).

There are different levels of financial literacy. According to Csorba (20l20), financial knowledge only covers awareness related to finances, while financial literacy includes interpretation, utilization, and the ability to make financial decisions to the individual's benefit. Vaskövi (2024) identifies the following hierarchical, increasingly more complex categories of financial culture: financial knowledge, financial behaviour, financial culture and financial literacy. Studies have also proved that like other cultures, financial culture can be internalized through socialization; however, school education is an important aspect, so improvement should be reached in that field as it is also a means of achieving the equality of chances.

In the light of this, the European countries have recognized the importance of promoting financial culture. Several programmes and initiatives have been launched recently to use its features to improve economic growth. *"In its 2020 November Report, the European Banking Federation stated that 35 European coun-*

tries take part in the European financial literacy movement in total, and about 125 different initiatives exist to popularise financial education in Europe and to strengthen financial awareness." (Kovács–Pásztor, 2022).

At the beginning of this research, official results of the PISA assessment of financial skills were available from 2012, 2015 and 2018. Twenty countries took part in the 2018 assessment including eleven from Europe (Bulgaria, Estonia, Finland, Italy, Latvia, Lithuania, Poland, Serbia, Slovakia, and Spain). According to the reports, students in Estonia reached the highest average scores followed by Finland and Poland. Researchers have found an interesting connection: the better the economic-social position of a student, the higher the probability of his/her performing better in the area of financial knowledge is (OECD, 2020).

Romania has not taken part in PISA assessments of business-financial culture to date, but it is expected to join them together with other countries (Hungary joined in 2022), so students living in Transylvania must prepare and catch up with the students of other countries in business and finance skills. Thus, one should analyse how the development of financial culture is structured in Romania today.

2 SCHOOL SUBJECT OF BUSINESS-FINANCE EDUCATION IN ROMANIA

In 2006, the European Parliament and the Council published guidelines on the key competencies needed for life-long learning updated in 2018. Eight key competencies were identified in the Guidelines as necessary so that human personalities could be fulfilled and integrated into society (for instance, reading-writing, mathematics, digital, social, entrepreneurial competencies, etc.).

By its accession in 2007, Romania acknowledged the importance of the competencies. At high-school level, the curricula of economics subjects (Entrepreneurship in grade 10, Economics in grade 11 and Applied economics in grade 12) have been competence based since 2004-2006. As the importance of business knowledge increased, teaching those subjects was also introduced in 2017 under the heading of Man and Society. Business-finance education was introduced in grade 8 as part of social education, its actual teaching commenced in the academic year 2021/22. The PISA assessment targets exactly that age group, 15-year-old ones (in grades 8 and 9).

Of the key competencies identified by the EU, the subject business-finance education in grade 8 serves to improve social, citizen and entrepreneurial competencies. By learning basic economic-financial concepts (such as, consumer, goods, services, household, budget, savings, bank, financial institutions, etc.) competencies are expected to be developed such as exercising consumer rights and re-

sponsibilities, drafting personal and monthly budgets, smart selection of savings/credit and payment products based on assessment of benefits and risks, etc.[3].

In addition to the introduction of a new school subject of economic content for primary schools, a National Financial Education Strategy (SNEF[4]) was also drafted in Romania in 2023. Beside mandatory business education in public education, it was identified as an optional subject at universities. The dissemination of business skills by the media and among adults with the help of NGOs has been amplified. Its success is expected to be assessed in 2026. The Strategy refers to research conducted in 2020, which found that Romanian citizens' business skills are the lowest in eastern-central Europe. The objective of plans presented in the Strategy is to achieve change and improvement in this field as soon as possible.

3 RESEARCH METHODOLOGY

At the latest PISA assessment in 2022, the minority Hungarian educational system was assessed separately for the first time in Romania. It was conceived, among others, by Tibor Toró[5], university lecturer at 'Sapientia' Transylvanian Hungarian University, Cluj-Napoca Faculty. The results showed that learners in Hungarian performed better than the majority Romanian students in mathematics, reading comprehension and science tests. That is the reason why this study was conducted among Hungarian students.

A PISA test was simulated for the study to assess the financial skills of Transylvanian students. The study was based on the official PISA finance tasks[6] in 2012 and 2018 and targeted students who had been the first to take part in mandatory business-finance education in the classroom in grade 8.

The PISA finance tests from 2012 and 2018 depicting real life situations can be found in English on the official OECD website. After translating the tasks including both open and closed questions into Hungarian, drafting the relevant tables and placing them in order by level of difficulty, a Google Form was designed for the students to submit their answers. A minor modification was made in the text of the exercises: the fictional currency *zed* was replaced by Romanian RON so that

3 Subject-specific curriculum of Social Education 2017: https://www.ise.ro/wp-content/uploads/2017/01/Educatie-sociala.pdf.

4 SNEF 2023-30- Strategia națională de educație financiară (National Strategy of Financial Education) https://www.edu.ro/sites/default/files/SNEF_proiect_2023.pdf.

5 https://sapientia.ro/hu/hirek/oktatonk-volt-egyik-otletgazdaja-a-pisa-felmeres-kisebbsegi-almintas-ujitasanak.

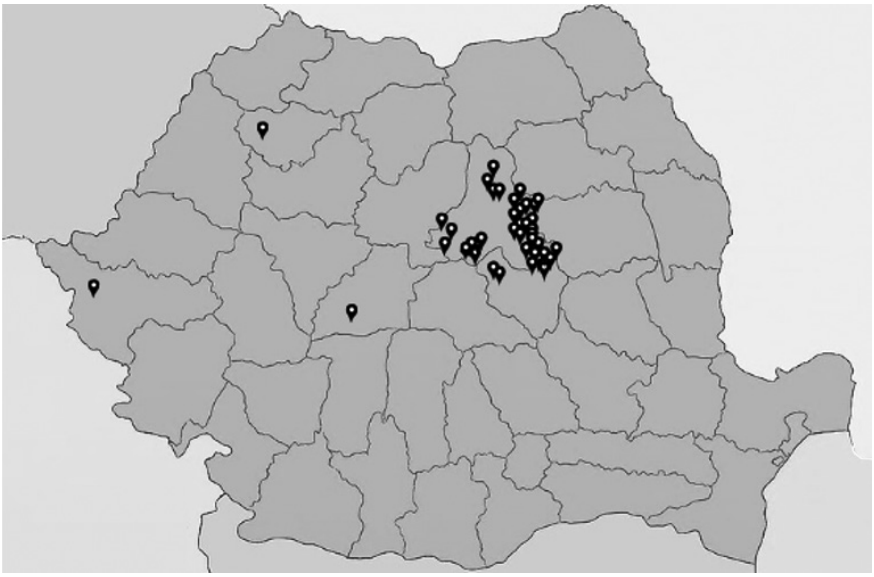
6 Official website of PISA tests: https://www.oecd.org/pisa/test/

participants are not confused with an unknown word. The students took part in the tests in December 2023 in the week preceding the winter break at their business or IT classes. They used digital devices to complete them just as at PISA tests conducted via computers since 2015. They had thirty minutes to solve the tasks. The findings were summarised and evaluated with the help of the Google Form and Microsoft Excel spreadsheet programme. Statistical analyses were made using SPSS *(Statistical Package for the Social Sciences).*

According to the figures of the Statistical Office, the number of 14-year-old students was 225,270, that of 15-year-olds was 218,862, that of 16-year-olds was 219,074 and that of 17-year-olds was 220,763 in Romania in 2024. The age group covers students in grades 8, 9, and 10 who have already attended or are currently attending classes of business-finance education introduced recently. The target group of the survey was 14–16-year-old youth living in Harghita, Covasna and Mures Counties in Transylvania. Their total number was about 50 thousand. The number of students in the age group is 14,365 in Harghita County, 10,023 in Covasna County and 25,275 in Mures County.

Primary and high school teachers participated in conducting the assessment at 'Márton Áron' High School, 'Nagy István' Arts Lycée and 'József Attila' primary school all in the city of Miercurea Ciuc. Data collection was made by students in grades 8, 9 and 10; 306 youths in total who attended more than 40 different primary schools in Transylvania - from Simleu Silvaniei, through Sovata to Ciuc villages. There are altogether 19 classes in the three schools mentioned that were the target group of the study. The average number of students in a class was 25.

Figure 1
Settlements of the primary schools of the participating students



Source: own design, 2024

4 RESEARCH FINDINGS

Firstly, it is clear the different competencies of the participating students (reading comprehension, knowledge of financial-business concepts, ability to make smart economic decisions) are good, their assessment is positive. Since however the school classes of business-finance education have not been regularly held for most of them, according to their statements, the positive result cannot be solely attributed to the content of the new subject; it could be the result of inter-disciplinarity, and competence improvement offered via other classes (e.g., mathematics, history, Hungarian literature, etc.).

You could receive maximum twenty-two points by answering open and closed-type questions correctly. With PISA tests, all tasks are ranked by difficulty. There are five levels altogether to match the following capabilities (OECD, 2020).

– *Level 1* Students can identify basic concepts of finance. They can recognise the difference between wants and needs and can make simple decisions regarding everyday expenses. They understand the purpose of everyday financial documents, e.g., an invoice, and can apply simple, basic compu-

tations (adding, subtracting, or multiplying) related to finances. At this level, PISA does not speak about financial literacy.

- *Level 2* Students can use the information provided to make financial decisions in situations that are directly relevant to them. They can recognise the value of a simple budget or can interpret important features of everyday financial transactions. They can use basic computations including division to answer finance related questions. They can understand the connection between the nature of using certain financial products and the related expenses. You can speak about financial literacy beginning from this level.
- *Level 3* Students can weigh the consequence of their financial decisions and can draft simple financial plans. They can make percentage calculations.
- *Level 4* Students understand less frequent financial concepts. They can manage a bank account and are aware of saving options. They can make financial decisions considering their long-term impact; they understand the general cost requirements of repaying a loan and can solve routine problems occurring in less frequent financial situations.
- *Level 5* Students can find their way in a wide range of finance related terms and concepts. They understand relationships that will be relevant for them in the long run only. They can analyse complex financial products or documents. They can work with high accuracy and can solve other than routine tasks. They understand the financial environment, for instance, income tax.

The above levels more or less correspond to the competencies to be improved via the currently valid business and finance education scheme at schools identified in Romania in 2017 (cf. *Table 1*). However, the general and specific competences in the curriculum for grade 8 do not include high-level individual abilities identified for level five of the PISA tests. Instead, in grade 8 the curriculum focuses on community cooperation and the competence of developing active social and economic behaviour, which are not assessed by PISA at present. The development of higher-level competencies targeting individual financial skills (as at level five in the PISA assessment) appear in school subjects Entrepreneurship for grade 10 and Economics for grade 11.[7]

7 Economics curriculum (2006), Programa scolara pt. cls. 11a liceu (socio-umane.ro)

Table 1
Mapping PISA difficulty levels to Romanian curricula competences

PISA level	Special competence in curriculum for grade 8	Exercises recommended to improve the competence
1st level of difficulty	1.1 Correct use of typical terms used in business and finance	Writing, wording questions, interpretation of press articles
2nd level of difficulty	2.1 What is a well-informed consumer like? Practicing rights and obligations 2.2 Participation in business related project	Simulations, practicing consumer rights, active participation in project work
3rd level of difficulty	3.1 Learn about saving options 3.2 Draft family / personal budget	Discover and compare saving options available for children Practice recording your expenses Draft a budget and discuss it Simulation games for different major expenses
4th level of difficulty	4.1 Draft action plan, start responsible enterprise 4.2 Analyse advantages and risks of loan products	Analyse and draft action plans Analyse bank offers; percentage calculation, payment methods and threats
5th level of difficulty	–	–

Source: own design based on curriculum of social education school subject, 2024

Major research findings:

30.1% of the participants attended grade 8, 17.1% were in grade 9 and 52.6% in grade 10.

Although teaching business-finance skills in one class weekly in grade 8 became mandatory in Romania in the academic year 2021/22, a mere 18% of the students said those classes had been actually held for them every week; 59.2% (mainly in grade 10 for whom the school subject had been introduced first) answered they had not had financial culture as a school subject in grade 8. A higher percentage of students in grade 9 (22 students = 41.5%) answered they had had the classes every week. In other words, although a year later, teaching the new subject started in Transylvania in accordance with the curriculum. Schools might have found it difficult to find teachers with the proper qualification to teach business and finance skills. The laws currently in effect require university bachelor's degree in one of the following fields: law, philosophy, political sciences, history, sociology or economics so that one can teach the subject officially.

Because some classes had not been delivered, many students (43.5%) did not consider the new subject of business and finance useful, 28.1% thought it was mod-

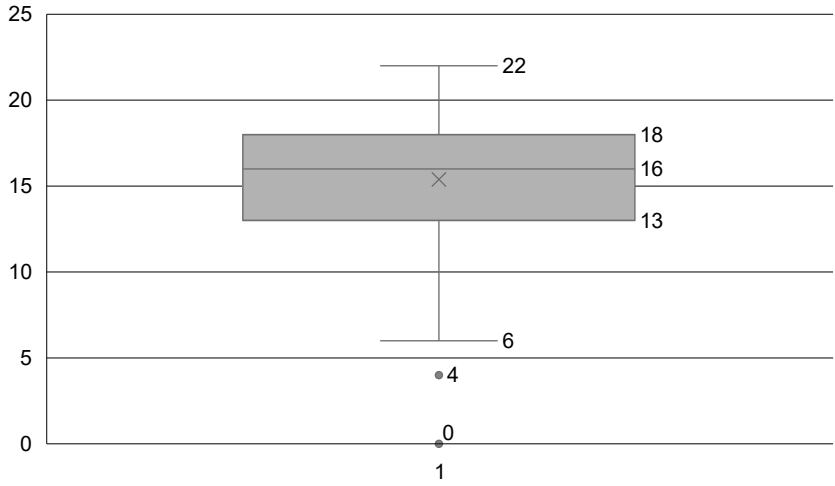
erately useful and only 4.2% thought it was very useful. Only 25% of the students (14 out of 55 students) who said they had had it delivered thought it was more than moderately useful. According to the statistical probe Pearson khí square (χ^2), there is significant relationship between the two variables, i.e., between the frequency of the classes delivered and the consideration of how useful the subject was (χ^2=63,921, df=4, p < 0,05). The value of coefficient gamma, which indicates how close the relationship between two ordinal variables is, was 0.593 in the SPSS statistical programme representing moderately strong relationship.

Most participants found the tasks in the PISA test to be moderately difficult (41.5%), 3.3% found them very easy and 13.1% very difficult. According to the statistical probe Pearson khí square (χ^2), there is significant relationship between judging how difficult the tasks are, and the grade students are in (χ^2 = 39,459, df = 8, p < 0,05). Mostly students attending grades 8 found the tasks to be more than moderately difficult, which is understandable, as business-finance education had not been completed for them by the time of the test. 39% of students in grade 9 and 33% of them in grade 10 thought the tasks were more than moderately difficult. Judging performance and the level of difficulty are also closely related, which has been reiterated by the statistical probe Pearson khí square (χ^2), (χ^2 = 13,47, df = 2, p < 0,05), i.e., those who performed better than average considered the task easier than those who performed below average.

Students' average score was 15.39, median 16, most of them achieved 17 points. Since the value of standard deviation is 3.49 and relative deviation is 22.71, i.e., it is below 30%, you can speak of a representative average score. Broken down by grades, the average of those in grade 8 was the lowest at 13.71; those in grades 9 and 10 performed at similar levels with averages of 15. and 16.3. The relative deviation of the scores is getting lower as we move towards the higher grades, it is 26.36% for those in grade 8, 22.94% for those in grade 9 and 18.64% for those in grade 10. The statistical variance test (ANOVA test) also supported the correlation between the scores achieved and the students' grades (F=18,294, df=2, p<0.05). It can be explained by the fact that those in grade 8 are currently being taught business and finance skills under the present curriculum.

According to the *box diagram*, there are two outstanding values, one student in grade 8 had 0 points (no questions answered), while one in grade 9 had 4 points. Disregarding the outstanding values, the average score is 15.47 with deviance of 3.33. The lowest quartile is 13, the highest is 18, i.e., 75% of the students achieved at least 13 points while most of them achieved at least 18 points.

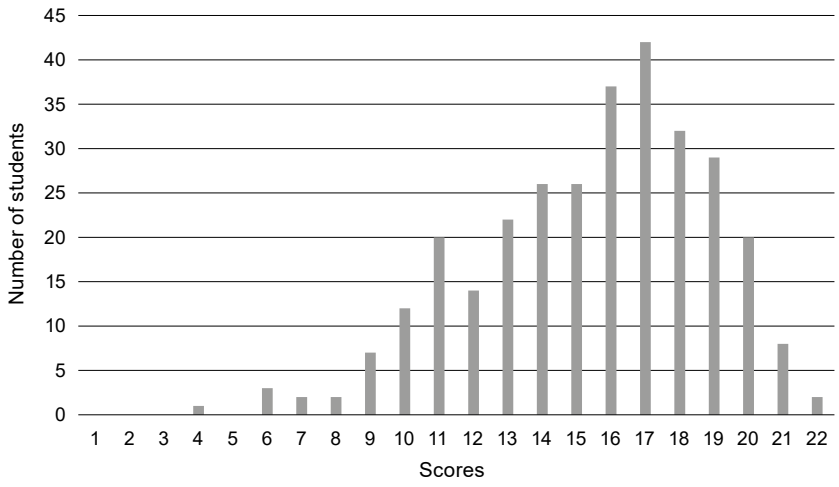
Figure 2
Box diagram on score distribution



Source: own design, 2024

The deviation of the scores is similar to normal deviation with expected value of 15.39 and standard deviation of 3.49, i.e. with variance 12.18 (X~N(15,39, 12,18)). The shape of the block diagram of relative frequencies approximately fits the bell curve. It supports the PISA tests measure knowledge well corresponding to reality.

Figure 3
Findings of PISA assessment of financial literacy in Transylvania in 2022



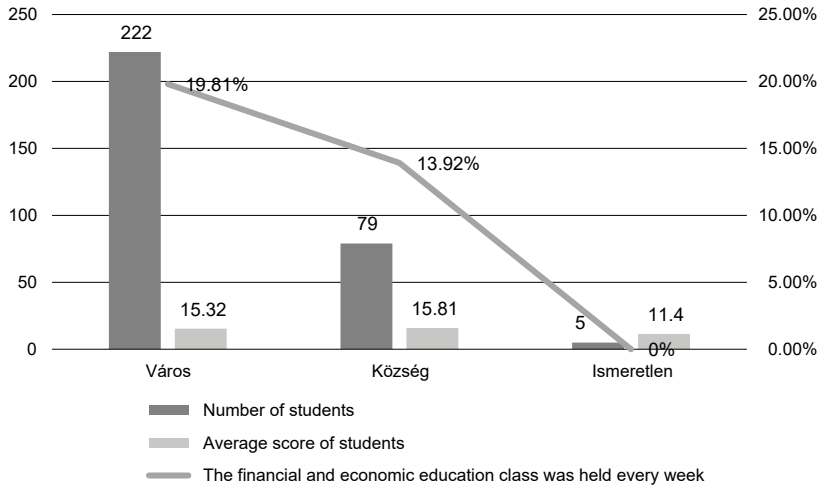
Source: own design, 2024

As for genders, 57.6% of the boys performed above average, while it was slightly lower for girls at 54.1%. It corresponds to results of students taking part in the 2018 financial assessment of PISA broken down by genders, as the boys performed 2 points better on average than the girls. Also in the 2022 assessment, boys scored 9 points higher than girls in science related tasks. At the assessment in Transylvania, in line with the result of the statistical probe Pearson's khí square (χ^2), the students' gender and performance are independent of each other ($p = 0{,}35 > 0{,}05$), so gender in itself does not define good performance.

Looking at the location of the schools, one can say 222 students (72.55%) attended classes in grades 5 to 8 at city schools (Vlahita, Gheorgheni, Odorheiu, Miercurea Ciuc, Borsec, Sovata, Simleu Silvaniei, Balan, Timisoara and Seben) while 79 (25.82) attended village schools and the school of 5 students has not been identified. Students from village schools achieved slightly higher scores with an average of 15.81 while those from city schools scored 15.32 on average. As a whole, there is no significant difference between the scores of city dwellers and villagers, which is also supported by the statistical method of Least Significant Difference (LSD). Comparing partial averages, the value of p was 0.285, i.e., higher than 0.05. This can be due to the fact that village schools were not represented among eighth-grade students, while if you look at 9th and 10th-graders, usually students of the same knowledge level were accepted into the city schools that took part in the assessment. 19.81% of city dweller students said the classes of business-finance skills

had been delivered every week in grade 8, while the ratio is only 13.92% for village schools. It is likely village schools found it more difficult to employ teachers of suitable qualifications for those classes.

Figure 4
Results broken down by school type (city – village)



Source: own design, 2024

There were schools where business-finance classes had not been delivered – according to the students –, still, students scored above average such as 'Domokos Pál' school at Lunca de Sus, 'Bálint Vilmos' elementary school at Tomesti, the vocational school at Corund, 'Báthory István' elementary school at Simleu Silvaniei and 'Fogarassy Mihály' elementary school at Gheorgheni. However, only 1 or 2 students had come from those schools. Of the schools where classes of business-finance education had been delivered every week (based on the reply of at least one student), the students of the following schools had the highest average scores: 'Segítő Mária' High School at Miercurea Ciuc (5 students, average score: 17.6), 'Köllő Miklós' elementary school at Ciuman (4 students, average score: 17.25) and 'Nagy Imre' elementary school at Miercurea Ciuc (24 students, average score: 17.04).

The students who said business-finance education classes had been held sometimes or regularly usually achieved higher scores (15.93) than those who had not had such classes (15.01). The statistical variance analysis (ANOVA test) also supported the connection between the scores achieved and the number of classes

delivered (F=5.160, df=1, p = 0,024 < 0.05). It is obvious then the part played by business-finance education is important, teaching it makes sense in terms of improving skills and competencies.

One of the advantages of PISA tests is the performance of different countries can be compared. However, it could hardly be conducted for the results of this study. It would make sense to compare the performance of Hungarian students in Transylvania with that of those in Hungary. However, Hungary did not take part in the 2012 and 2018 assessments of financial culture used for the selection of the tasks of this study. Hungary did take part in 2022, and the assessment proved that "81.7% of the students have minimum or higher skills in the area of financial literacy that can be socially expected. The average performance of Hungarian students (492 points) does not significantly differ from the average of the participating 14 OECD countries. It is significantly higher, by 17 points, than the average of all 20 participating counties." (Office of Education, 2024, p. 52). All students in the PISA tests are all 15 years old. In this study, however, there were 15-17-year-old students too, i.e., all who had been the first to receive business-finance education at elementary school. The methodology of weighting the scores is not known, which also makes comparison of the findings difficult. On the other hand, it is clear the financial skills of most Hungarian students in Transylvania are at the minimum or higher level expected by society similarly to students in Hungary. This statement is based on the fact that the majority of the students taking part in the tests successfully completed the tasks on the first three difficulty levels identified in the methodology of PISA, which measure the presence of financial skills. However, there were major differences in students' results regarding the tasks of the higher levels that analyse financial decision making resulting in long term consequences *(cf. Annex 2*) It should be noted that the students participating in the study mostly came from high-performing city schools, which may have contributed to the good results.

5 CONCLUSIONS

The findings of the study demonstrate that students in Transylvania performed well in solving the financial tasks presented in an official PISA assessment. They could not only answer multiple-choice questions mostly correctly, but they tried to cope with the descriptive text-making tasks too. Most of them knew how to make an online payment more secure (78.76% correct answers) or could explain how you can become the victim of a donation-related fraud (65.69 correct answers). On the other hand, many of them performed below average in solving more difficult tasks requiring more complex competencies. Only 41.88% could

interpret a diagram of exchange rates, 62.01% analysed different modes of loan repayment correctly. 63.93% recognised the difference between gross and net wages and 67.53% could compare the offers of different financial products correctly. According to statistical analyses conducted with SPSS, there is a significant connection between the grade of the students and how they assess the difficulty of the tasks. 8th-graders found the tasks more difficult than those in higher grades. Their assessment of difficulty was realistic: students who performed well found the tasks easier. There is significant correlation between the delivery of business-finance classes and students' opinion of their usefulness. Also, the delivery of the classes and the scores achieved by the students is strongly related; those who had had business-finance education achieved almost a point higher on average. The results are also strongly related to grades; 8th-graders performed poorer than 9th or 10th-graders. On the other hand, there is no significant correlation between the scores achieved and the location of the schools whether they are in a city or a village. It is explained by the fact that the survey was conducted mostly in city schools of high performance. No significant difference can be found between the scores achieved and students' gender.

Although the subject of business skills has been optionally present in Romanian primary schools since 2010, it only became mandatory in the curriculum of all 8th-graders a few years ago. Launching a new school subject is a major challenge mainly for the teachers involved. In addition, because of the excitement about the so termed ability test in grade 8 most students found it difficult to focus on or take seriously subjects other than those tested (mathematics, mother tongue, Romanian language) This study, on the one hand, underlines that the subject of economic skills does have a place in the curriculum to follow European trends in education and the economy. On the other hand, it is a kind of feedback for the teachers involved about their students' abilities and knowledge level.

At the international PISA tests students are expected to complete a 35-minute questionnaire about their motivation, family background, beliefs, home, school, and learning experience. What is more, principals also reply to questions about the school environment. Analysing and studying such background information can be useful in the case of Transylvanian students as it provides a comprehensive picture on the reasons that can explain the difference between students' performances coming from certain schools or regions.

It would be worth repeating the assessment in a few years' time locally, even if no nationwide PISA tests are conducted. It would make the evolution of the students' performance over time visible. Unfortunately, global PISA assessments since 2000 indicate a declining trend in student scores of reading comprehension and mathematics. As the economy changes at a growing rate, the schoolbooks and other teaching materials presenting it are also expected to be modified in

the coming years. Therefore, assessing students' skills and knowledge regularly, and repeatedly would be useful so that the improvement achieved by teaching the relevant skills could be traced.

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ANNEXES

Annex 1
The Survey - Introductory note to participants

Dear student

PISA assessments are conducted globally every three years by the Organisation for Economic Co-operation and Development (OECD) so that students' performance in different countries can be compared. 15-year-old students take part in it every time.

Lately, students' financial skills are also included in the tests since you may know how important it is in the 21st century that children should learn about money and how to use it, because they will need that knowledge when they grow up.

Now you are given an opportunity to look at and try how you could perform at a PISA test.

You will have to solve eleven tasks. It may seem a lot but, please, have patience and try doing your best. You may need paper and pencil or a calculator to solve one or two of the tasks.

Thank you for helping us in our research. If you want to know how you succeeded, what your score is and how it compares with that of students in other countries, please ask you teacher. He/she will notify me, and you will be answered.

Lots of luck and thank you once more for your help.

Demographic data

Your gender *

○ Boy
○ Girl

Your grade*

○ 8th
○ 9th
○ 10th

County and city of your school *

_____

Your school for grades 5 to 8 *

_____

Did you have business-finance classes in grade 8?*

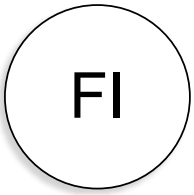
○ Yes, classes were held every week.
○ Yes, but we only had classes irregularly.
○ No

How much do you think the subject financial skills was useful. *

○ 1 It was not
○ 2
○ 3
○ 4
○ 5 It was really useful

Invoice

Sarah received this invoice by e-mail



Funny Items Clothes Shop
Invoice number: 2034

Dated: 28 February

Sarah Péter
29, Unio Str
Miercurea Ciuc
Romania 530192

Funny Items Clothes Shop
9, Miercurea Ciuc Str
Miercurea Ciuc
Romania 530192

Product Code	Description	Quantity	Unit price	Full price (excluding VAT)
T011	T-shirt	3	20	60 RON
J023	Pair of jeans	1	60	60 RON
S002	Scarf	1	10	10 RON

Full amount (excluding VAT): 130 RON
VAT 10%: 13 RON
Delivery: 10 RON
Already paid: 153 RON
Payable: 0 RON

Payable: 153 RON
Due date: 13 March

Why was Sarah sent the invoice?

○ Because Sarah must pay Funny Items Clothes Shop
○ Because Funny Items Clothes Shop must pay Sarah
○ Because Sarah has already paid Funny Items Clothes Shop
○ Because Funny Items Clothes Shop has paid Sarah

Delivery:

How much did Funny Items Clothes Shop charge for delivery?

Mobile phone contract

Alan wants a mobile phone, but he is not old enough to sign the contract.
His mother buys Alan the phone and signs a one-year contract.
Alan promises to pay the monthly invoices for the phone.
6 weeks later Alan's mother discovers the invoice has not been paid.

Mark each statement with "True" or "False"

	TRUE	FALSE
Alan's mother is legally responsible for payment of the invoice		
The mobile phone shop must pay if Alan or his mother fail to do so.		
Nobody needs to settle the invoice if Alan returns the mobile phone to the shop.		

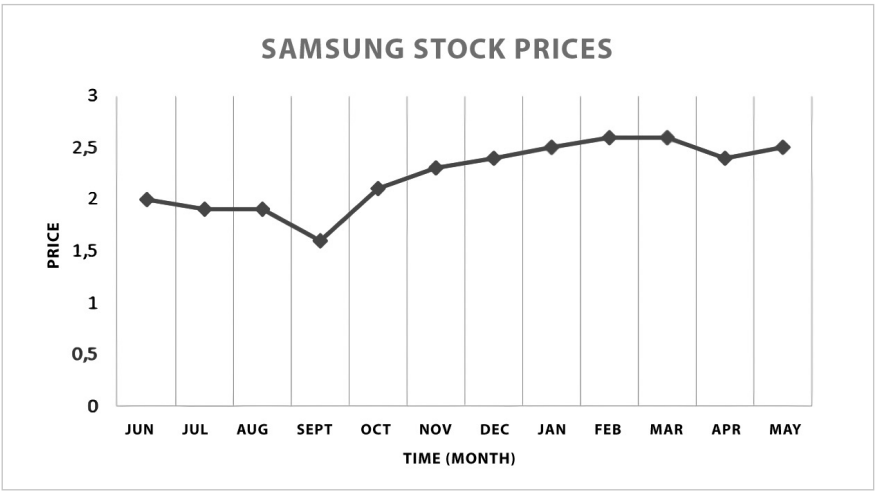
Charity

Ed: Hi, Lilian, have you decided what to do with your birthday money?
Lilian: As a matter of fact, I have already donated most of it to the charity organisation "Holidaying"
Ed: Really? I have never heard about Holidaying.
Lilian: Neither have I, but they called me and asked for money, so I donated some money to them with my bank card.

Explain why Lilian has taken financial risk with this donation?

Shares

This is the graph of the stock price of a Samsung share for 12 months.



Which statement is true for the graph?

	TRUE	FALSE
September was the best month to buy shares.		
The stock price increased by about 50% over the year.		

Car operating costs

Mr David takes out a loan to buy a car for his family. It is a fixed interest rate loan. Loan repayment is one of the costs for Mr David. There are other costs too, such as fuel costs and repair and maintenance costs.
Some costs are going to increase if the family uses the car more often, but others will remain unchanged.
Select "Increases" or "Remains unchanged" for each cost in the Table if the family uses the car more often.

	Increases	Remains unchanged
Havi hiteltörlesztés		
Fuel costs		
Repair and maintenance costs		

Wages

Judy's wages are credited on her bank account every month. This Judy's payment slip for July.

EMPLOYEE PAYMENT SLIP	**Judy Polgar**
Position: Manager	from 1 July till 31 July
Gross amount:	RON 2800
Deductions:	RON 300
Net amount:	RON 2500
Gross amount paid this year till now:	RON 19600

How much money did Judy's employer deposit on her bank account on 31 July?

○ RON 300
○ RON 2500
○ RON 2800
○ RON 19600

Mobile phone service offers

Ben lives in Zedland and has a mobile phone. There are two kinds of mobile service offers in Zedland.

Offer one:

- You pay the invoice at the end of each month.
- The invoice includes the costs of calls made plus a fixed monthly amount.

Offer two:

- You can buy a prepaid unit in advance.
- The unit will work not longer than the end of the month or until it runs out.

What is a potential financial advantage to select the package in offer two?

Ben' decision.

Ben decides to choose offer one. Now, he must select a service provider.
The following Table includes the data of four different service providers offering the first option. All costs in RON.
Ben usually talks for about an hour a day, but he rarely sends text messages.

Which service provider's offer is the best for Ben financially?

	Service provider one	Service provider two	Service provider three	Service provider four
Monthly fee (RON)	20	20	30	30
Call rate (RON)	0.27	0.25	0.30	0.25
Number of free minutes per month	90	90	60	60
Charge for text messages	0.02	0.02	free	0.01
Number of free text messages per month	200	100	unlimited	200

○ Service provider one
○ Service provider two
○ Service provider three
○ Service provider four

Musical equipment

Kate applies to the bank for a loan of RON 2000 to buy musical equipment
Kate can choose whether to repay the loan in two or three years. The annual interest rate is identical in both cases.
The Table shows the conditions of repayment of RON 2000 in two years.

How are the conditions of repayment in two years different from repayment in three years?

Mark each statement with "True" or "False"

repayment period	monthly instalment (RON)	total repayment (RON)	total interest paid (RON)
two years	91.67	2200.08	200.08

	IGAZ	HAMIS
Monthly instalments will be higher for the three-year repayment		
The sum of interests paid will be higher for the three-year repayment.		

Online shopping

Kevin is using his computer at an Internet café. He is visiting an online site offering sports equipment.
He is providing his bank card data to pay for a football.
The security of financial data is important if you do online shopping.

What could Kevin have done to increase security as he was paying online for the football?

Bank statement

Ms Polgar transfers RON 130 to her son's bank account every week.

The banks in Zedland charge you for bank transfers.

Ms Polgar received the following bank statement in November 2011:

ZEDBANK				
Statement for Ms Polgar		**Account type: Current account**		
Month: November 2011		**Account number Z0005689**		
Month	**Transactions**	**Credit**	**Debit**	**Balance**
1 Nov	Opening balance			1780.25
5 Nov	Wages	575.00		2355.25
5 Nov	Transfer		130.00	2225.25

ZEDBANK				
Statement for Ms Polgar		**Account type: Current account**		
Month: November 2011		**Account number Z0005689**		
Month	**Transactions**	**Credit**	**Debit**	**Balance**
5 Nov	Transfer charge		1.50	2223.75
12 Nov	Wages	575.00		2798.75
12 Nov	Transfer		130.00	2668.75
12 Nov	Transfer charge		1.50	2667.25
13 Nov	Cash withdrawal		165.00	2502.25
19 Nov	Wages	575.00		3077.25
19 Nov	Transfer		130.00	2947.25
19 Nov	Transfer charge		1.50	2945.75
26 Nov	Wages	575.00		3520.75
26 Nov	Transfer		130.00	3390.75
26 Nov	Transfer charge		1.50	3389.25
27 Nov	Cash withdrawal		180.00	3209.25
27 Nov	Cash withdrawal (rent)		1200.00	2009.25
30 Nov	Interest	6.10		2015.35

How much did the bank charge Ms Polgar in total in November?

---

3 December

The next transactions took place on 3 December:

Wages of RON 575 were transferred to Ms Polgar's account

Ms Polgar transferred RON 130 to her son's bank account.

Ms Polgar made no more transactions on 3 December

How much was her new balance at closing time on 3 December?

Bank error

David's bank is ZedBank. He received this e-mail:

Dear ZedBank Customer,

An error has occurred on the server of ZedBank and your internet log-in data have been lost.

Thus, you cannot access your bank account.,

Unfortunately, your account is no longer safe.

Please, click on the link below and follow the instructions to recover access.

The system will ask you to provide your internet banking data.

https://Zedbank.com/

Which of the following statements will be good advice for David?

Mark each statement with "Yes" or "No"

	IGEN	NEM
He should reply to the internet message and provide his internet banking data		
He should contact his bank and enquire about the e-mail message.		
If the link is identical to that of his bank's website, he should click on it and follow the instructions.		

Difficulty of the test

How difficult did you find the tasks? *

○ 1 They were quite easy
○ 2
○ 3
○ 4
○ 5 They were really difficult

Annex 2
Levels of difficulty of the tasks, scores received and ratio of good solutions

Task	Level of difficulty	Score	Ratio of good solutions
Delivery:	Level 1-2	2	80.72%
Mobile phone contract	Level 2	3	67.97%
Charity	Level 2	1	65.69%
Shares	Level 3	2	42.16%
Car operating costs	Level 3	3	78.43%
Mobile phone service offers	Level 3	2	31.05%
Wages	Level 4	1	64.38%
Musical equipment	Level 4	2	64.42%
Online shopping	Level 4	1	78.76%
Bank statement	Level 4-5	2	8.82%
Bank error	Level 5	3	33.66%