

## **Exploring the Quality of Pupils' Financial Literacy**

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### **Abstract:**

**Introduction:** Education is an important tool for improving many aspects of life, including socio-economic status or well-being. The paper is aimed at monitoring the financial literacy of pupils in Eastern Slovakia.

**Methods:** The contribution will contain the results of the survey. We analyse in detail the theoretical definition of financial literacy, strategy and measures of the state administration bodies in the field of improving financial literacy of more than 2000 pupils.

**Results:** The result of the research paper is an analysis of the achieved data and their characteristics.

**Discussion:** This part of the research paper deals with the areas of financial literacy of pupils in Slovakia. Education is an important tool for improving many aspects of life, including socio-economic status or well-being.

**Limitations:** Participants of the electronic questionnaire participated in the answers according to the activities and projects prepared by a particular elementary school.

**Conclusion:** Higher life expectancy, pension reforms, the availability of a more comprehensive range of financial products and services mean that the ability to make well-informed financial decisions is increasingly considered an important life skill. If a school fails at certain points during a child's study, it is assumed that this will have a negative long-term impact on the child's life in the future, as ending a school without sufficient qualifications can lead to difficulties in ensuring equal participation in the financial, civil and social aspects of modern society.

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Education is an important tool for improving many aspects of life, including socio-economic status or well-being.

**Key words:** financial literacy, research, elementary school, money, PISA, quality of education.

## **Introduction**

The education system, which is a subsystem of every modern social system, should always be objectively and reliably monitored by a number of tools developed to do so. The reasons are obvious. Indeed, if certain resources are invested in the development of such a system, whether public or private, we always want to be able to verify as accurately as possible how effective their use is. This means whether predefined intentions or goals are achieved. We must monitor whether the goals defined by the education system are achieved at the required quality. The presented study is devoted to the issue of financial literacy of primary school pupils in Eastern Slovakia. The issue of financial literacy among pupils and secondary schools has been monitored over several years. The best-known assessment is PISA. Most recently, it was conducted in the first half of 2018. Financial literacy is not only studied in primary and secondary school pupils, but it is measured despite the population's demographics, whether it is retirees, young people under 30, or the mentioned students and pupils.

## **1 Theoretical background of the study**

Authors from different countries of the world have devoted themselves to the problem of financial literacy. However, opinions on this subject are similar in many ways. Financial literacy is by Balaban (2011) defined inconsistently, often happens that different entities that deal with it, have different definitions. There is no uniform approach to financial literacy in the Anglo-American area either. In the United States, the term "financial literacy" is well-known, while in the UK we are more likely to encounter "financial capability", so it is possible to name it - financial competence. Financial competencies are closely linked to financial literacy, however, they should not be used as interchangeable terms. Roulet's (2009) definition of financial literacy refers in particular to knowledge. Financial Competence refers to the ability to adequately apply this knowledge and skills in real situations. Financial literacy refers mainly to knowledge. He refers to financial competencies as being able to use this acquired knowledge adequately in real situations. Financial literacy is a narrower term that emphasizes objective knowledge of specific topics related to money, economy or financial affairs (Policy Research Initiative, 2004). PISA defines financial literacy as knowledge and understanding of financial concepts and risks, the ability, motivation and self-confidence of the individual to use the knowledge gained in order to implement effective decisions in different situations relating to finances, with the

aim of improving the financial situation of the individual and society, thereby enabling them to engage in economic life (National Report PISA, 2015). Financial literacy is, according to Mahdzan, et al. (2013) a key skill and knowledge the individuals need to survive in a modern society. Orton (2007) understands financial literacy as the ability to read, analyze, manage and communicate about personal financial conditions that affect material well-being. It includes the ability to make appropriate financial decisions, discuss money and financial issues without (or in spite of) inconvenience, plans for the future, and responsibly respond to life events that affect daily financial decisions. Financial literacy can also be seen as an individual's ability to understand the financial product, to appreciate financial risk through its capabilities, knowledge and trust in information-based decision-making. It includes identifying sources of financial advice and effective measures to improve the individual's financial well-being (James, 2009). By financial literacy, we can understand a set of skills and knowledge that enable individuals to make appropriate financial decisions. To financial literacy, which provides these skills and knowledge is in the literature devoted a considerable amount of attention (Kcharchenko, 2011, Hasajová, 2017).

Krechovská (2015) characterizes financial literacy as the ability to secure personal income, ability to make expenditure decisions, understand the consequences of a personal decision on current and future income as well as labor market orientation. Kozina et al. (2015) defines financial literacy as a component of human capital used in financial activities to increase the financial well-being of the individual. The importance of financial literacy is therefore important for individuals and society because of their implications for wealth creation and financial prosperity (Van Rooji et al., 2012). According to the National Financial Education Strategy (Czech Republic, 2010), the concept of financial literacy is divided into groups:

1. Money literacy, which is the competence necessary to manage cash and cashless money and transactions with them and management tools designed for this purpose (e.g. current account, payment instruments).
2. Price literacy is the competence needed to understand price mechanisms and inflation.
3. Budget literacy is the competence necessary to manage a personal/family budget (for example, the ability to manage the budget, set financial targets and decide on the allocation of financial resources) and also includes the ability to manage different life situations from a financial point of view. Budget literacy also includes two specialized components:
  - financial asset management (e.g. deposits, investments and insurance),
  - the management of financial liabilities (e.g. loans or leasing).

Several studies have addressed the impact of the environment on the level of children's financial literacy. Agnew et al. (2015) noted that the timing of the first financial discussion of household individuals affects their future financial

literacy. Sohn et al. (2012) note that family communication on financial matters is decreasing with age, but mutual communication increases with age. This means that parental impact on children's financial literacy is increasing at a slower pace, while the influence of peers is growing. Gradually, as a child will grow up, he will be exposed to several socializing agents. Children will learn about managing money by interacting with these "agents." Duflo et al. (2002) found that peers play an important role in the decision-making of individuals, e.g. on pension savings. We can perceive a strong influence of peers in gambling, betting in young people (Shim et al., 2010). The impact of educational programs on financial literacy was assessed by Agmair et al. (2018). Research shows that financial education programs in schools can improve financial knowledge and attitude towards children's financial decisions. Experiential learning is an appropriate method for teaching financial literacy at primary and secondary schools. At the universities, emphasis should be placed on specific case studies from students' practical life events. Zhu et al. (2018) also made a measurement of financial literacy of Chinese children in Hong Kong through the coefficient Financial Fitness for Life.

The results of the study specify the critical role of parents, offer specific entry points for policy makers and educators and at the same time they give parents advice that has a positive impact on the development of financial literacy among adolescents. Hazudin et al. (2018) focused in his study on the interconnection of mathematical and financial literacy. Knowing how to use logic and mathematics creates the basis for good analytical thinking and decision-making skills. This can have a significant impact on the relative long-term sustainability of an individual's life. The result of the study is the assessment of the significant impact of mathematical literacy on financial literacy by comparing the results of university students. The author Koutníková (2017) focuses on the connection between economics and student education. Mareš (2017) also researches financial literacy in schools.

Financial literacy in Eastern Slovakia was dealt with by Vavrec (2014). He focused on the level of financial education of the population, providing financial education and forms and ways of learning. The results yielded curious findings, respondents indicated that financial education is considered as very important or important to almost 87% of respondents. Only 5% consider it unnecessary.

Survey respondents in 58% consider their financial education to be very good, respectively rather good, 40% of respondents consider their knowledge to be inadequate or insufficient, whereas 2% of respondents were indifferent, so they could not estimate their skills in this field. 45% of respondents would welcome the introduction of financial education to schools, and 20% of respondents would prefer to participate in training and financial courses. A total of 85% of respondents support education in this area.

## **2 Research**

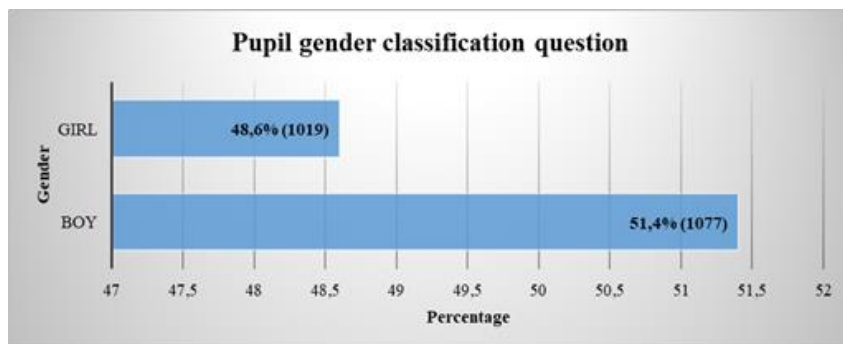
The aim of the paper is to evaluate the financial performance of pupils at primary schools in Eastern Slovakia in the area of financial literacy. As financial literacy is a fairly broad term, it contains several subcategories, such as financial markets, insurance, savings, financial derivatives and commodities; this research was directed only to one of these subcategories. The focus was primarily on the area of money, the perception of their value, and the ability to logically address questions about the common European currency. Research questions are: How do primary school pupils master the basic questions about money? Can they properly understand the question and then logically assess the causal implications using mathematical literacy? How pupils perceived to use the euro common currency within the European Union? As a result of these sub-questions, the answer to the underlying and fundamental question will be: “Do primary school pupils in Eastern Slovakia have knowledge of financial literacy issues?”

An electronic questionnaire entitled “Financial literacy” - the perception of money and its values by pupils of elementary schools in Eastern Slovakia was sent to all primary schools in Eastern Slovakia which had an e-mail address entered in the database of elementary schools led by Ministry of Education in the Slovak Republic. The school selection criterion was the number of pupils over 100. The questionnaire was intended for lower secondary pupils (5th to 9th year). Overall, 402 interviews were conducted with primary schools in the Prešov and Košice regions. After processing the results, we can conclude that 74 elementary schools participated in the completion of the electronic questionnaire.

A total of 2,863 questionnaire visits are registered 2,096 questionnaires were filled in by pupils from the Prešov and Košice self-governing regions. 290 questionnaires were unfinished and 477 only displayed. We can conclude that the overall success rate of the questionnaire is 73.2%.

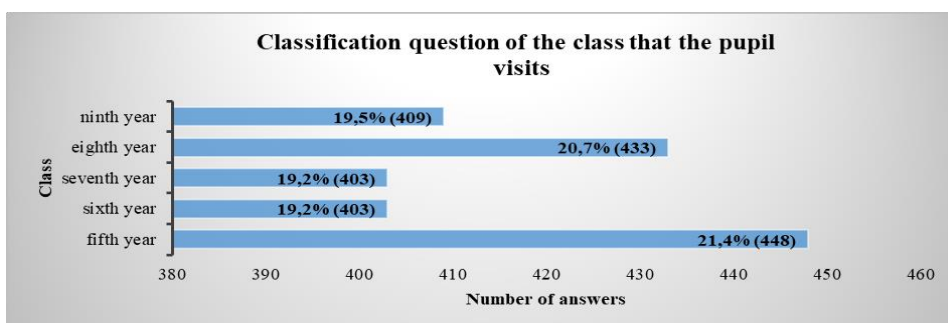
Using Survio and Excel tools, we have reached the results that are part of the next chapter.

In this section we will focus on the assessment itself individual questions we will focus the evaluation of the responses with an emphasis on analyzing the results. The first set of questions in the questionnaire survey were classification questions. These were related to the gender, the year of attendance, and the elementary school district of the pupil. The questionnaire was completed by 2,096 pupils, of which 51.4% were boys and 48.6% were girls. We can say that the representation of boys and girls was about the same. For more information, see Figure 1.



*Figure 1.* Classification question of pupils' gender (Source: own processing).

The next classification question concerned the representation of the pupils themselves. Based on the dataset and the participation of the pupils involved, we see a balanced representation of pupils from the fifth to the ninth year of primary school.



*Figure 2.* Classification question - year of elementary school attended by the pupil (Source: own processing).

As for the representation of pupils by region, the largest number is represented by the district of Michalovce 17.3% with the number of completed questionnaires 363. The Michalovce district is followed by the Spišská Nová Ves district with 11.3%, Trebišov district with 9.9%, Vranov nad Topľou district with 9.3%, Kežmarok district, where 8.2% of pupils participated. Representations also include the districts of Bardejov, Humenné, Poprad, Prešov, Sabinov, Snina, Stará Ľubovňa, Košice I. to Košice IV., Košice surroundings and Rožňava district. The survey did not involve pupils from the districts of Stropkov, Svidník, Levoča, Medzilaborce, Gelnica and Sobrance.

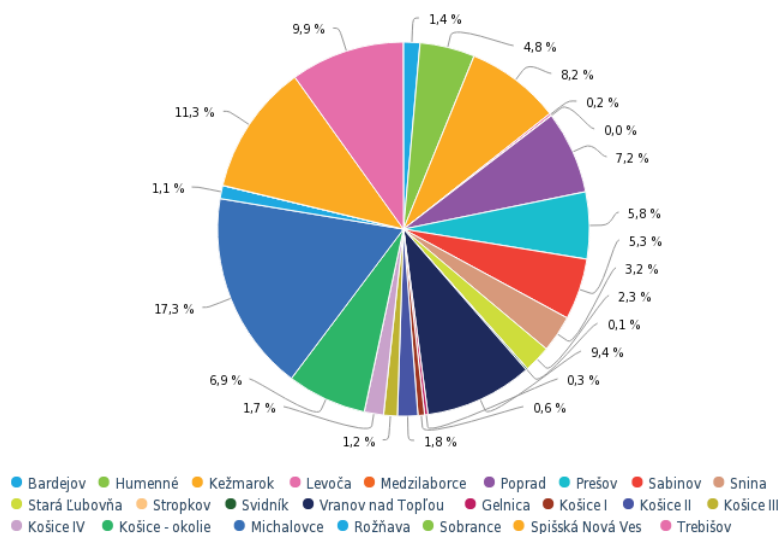


Figure 3. Regional representation of pupils (Source: own processing).

As mentioned in the previous section, 74 primary schools from the Prešov and Košice self-governing regions were involved.

The following question was the perception of learning, respectively discussing financial literacy at primary school attended by the pupil. The question was thus focused on the perception of the presence of a financial literacy theme at school. 73.2% of students said that the issue of financial literacy has been paid attention to their school. However, 26.8% of pupils do not remember any lecture, workshop or other activity that focuses on financial literacy.

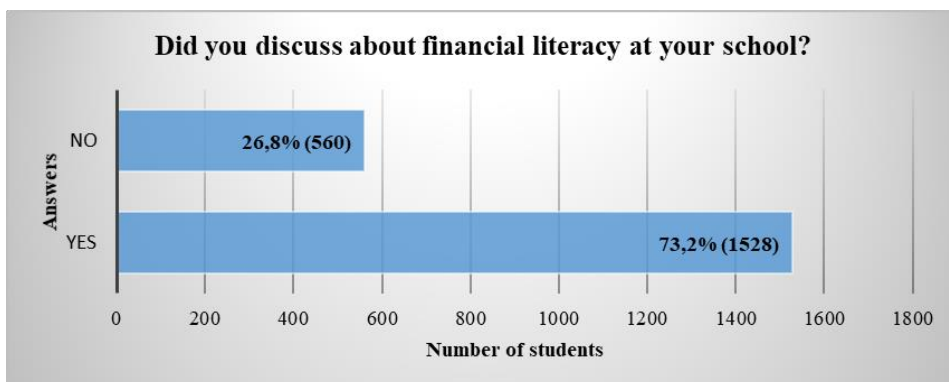
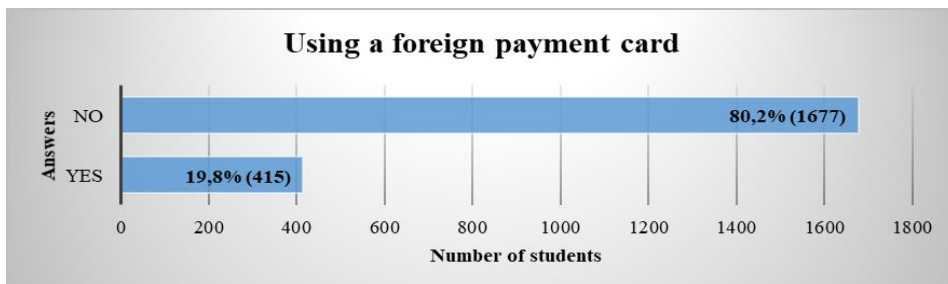


Figure 4. Discussion about financial literacy at school (Source: own processing).

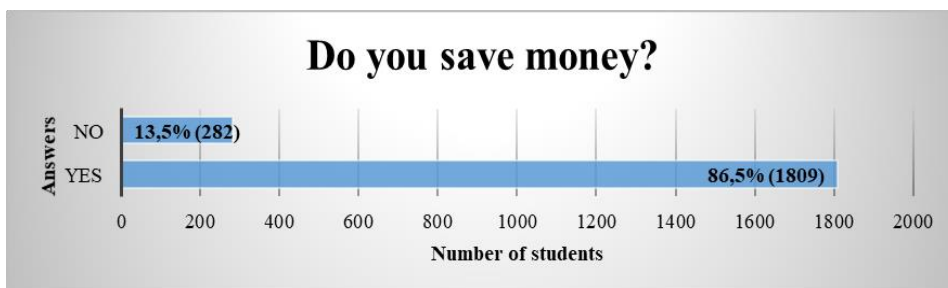
Using a credit card of another member of the household, parents or siblings, was part of the next issue. As a result, only 20% of pupils can normally use another

household member's payment card and more than 80% of pupils do not use this option.



*Figure 5. Using a payment card by another household member (Source: own processing).*

Saving your own money – another issue where 86.5% of students said they were saving money. 13.5% of pupils do not save money.



*Figure 6. Saving money (Source: own processing).*

Another task for the pupils was to properly rank the nominal values of money from the highest to the lowest. This question was evaluated by means of the weights (significance) that the pupils identified for each response. It should be noted that the pupils should sort the options as follows: 400 EUR, 250 EUR, 200 EUR, 100 EUR, and it should be noted that these values are arranged differently in the questionnaire. Instructions were as follows: Peter started saving for a new bike two years ago. When he broke the piggy bank, he made pits according to the value of money. Your task is to sort the value of Peter's money from highest to lowest.



Table 1

*Determining the Sequence – nominal value*

<u>Answer</u>	<u>Importance</u>
4 pcs of 100 euros	2.6
50 pcs of 5 euros	2
100 pcs of 2 euros	1.7
10 pcs of 10 euros	1

Source: own processing

Importance should be listed as follows: for first answer 4, for second 3, for third 2, and for last 1. It was a simple task where it was necessary to multiply the number of banknotes and coins by their nominal value and then rank them from the highest to the lowest. Based on the results, it can be stated that the pupils have correctly stated that 10 pieces of 10 € will have the lowest nominal value. The problem occurred with other possibilities, where several students determine the wrong option.

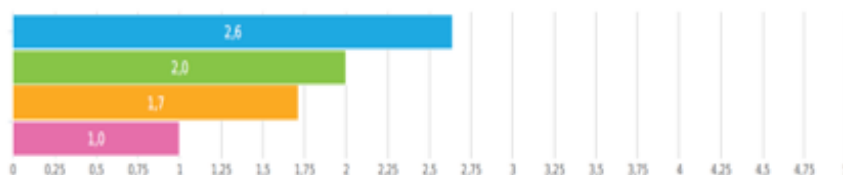


Figure 7. Determining the sequence - nominal value (Source: own processing).

Many of the students involved made incorrect mathematical adjustments, which led to incorrect results. In the case of 65% of pupils, the answer correctly determined 100 EUR, 66% of pupils determined 50 EUR, 85% of pupils correctly determined the value of 2 EUR.

The next question in the questionnaire was as follows: Anna's cousin Jakub came from Prague for the holidays. Anna decided to show him the reverse side of Slovak euro coins, she asked her mother to give her all the coins she has in her wallet. Can you help Alice choose Slovak euro coins? Pupils had a choice of coins in the following order: Estonian twenty cents, Slovak koruna, Czech crown, Polish zloty, Slovak five eurocent, Finnish euro, Slovak fifty eurocent, Hungarian forint and Slovak two euro coin. Students could set any number of options on this issue. The results are shown graphically.

Table 2

*Results of question about Slovak Euro coins*

<u>Answer</u>	<u>Number of Answers</u>	<u>Share</u>
Option 1	82	3,90%
Option 2	226	10,80%
Option 3	180	8,60%
Option 4	28	1,30%
Option 5	1810	86,80%
Option 6	377	18,10%
Option 7	1843	88,40%
Option 8	45	2,20%
Option 9	1991	95,50%

Source: own processing

Pupils did not have the problem of correctly identifying Slovak euro coins, which are in option 5 - 86.8% success rate, option 7 - 88.4% success rate, and options 9 - 95.5% success rate.

As a catch, we set the option 2 Slovak crown, but despite the fact that pupils can only remember the use of this coin, 10.8% of pupils identified it as a Slovak euro coin.



Figure 8. Share of responses about Euro coins (Source: own processing).

Likewise, the students were mistaken for the Finnish euro, which has the same size and color, but another graphical representation, but 18.1% of the pupils also marked this coin as Slovak. Pupils also marked the Czech crown (8.6%) as Slovak euro coins, which they can meet at the time of their visit to the Czech Republic.

The following question related to the issue of the benefits of euro payments in European Union countries. The vast majority of pupils (more than 95%) stated the advantage of paying the common currency, no need to change money when visiting another Member State, the possibility to compare prices in stores at home and abroad.

Interesting answers were selected:

*"I think that continuing to use the euro is better - prices are easy to compare. Even though I do not remember the time when Slovaks lived only with crowns, if we had paid and earned crowns so far, we would have been better off."*

*"We don't have to turn money into a bank. We can pay by card. We don't have to recalculate money to another country's rate. We can compare prices in stores."*

*"The European Union is helping states that are in monetary union, giving them money – even that is an advantage."*

The next question was to create a variety of payment options at the store. The question was as follows: Please provide at least 3 options for the Novotna family to pay 15 euros in the shop. The problem is that they only have 5 euro, 2 euro and 1 euro coins in their wallet.

The pupils understood this question and more than 83% of the pupils mastered this question and correctly determined the payment options for the Novotna family. In some cases, pupils also voluntarily set another option for payment with the help of banknotes and coins.

The pupils also answered the question:

*Class 6.B from Vranov nad Topľou decided to end the school year with a joint trip in the High Tatras. There are 32 pupils in the classroom, but 12 of them do not attend the trip. What will be the total budget of pupils wishing to go on a trip if each pupil pays 20 euros?*

It is clear that the sum of 400 euros should be the right answer. 81.73% of pupils answered correctly this question correctly, which means 1,610 correct answers. 486 pupils responded incorrectly, accounting for a percentage of 18.27 incorrect answers. The mistakes in the answers were mainly in the misunderstanding of the text. Pupils often mentioned only the number of children participating in the trip, not the total amount. Therefore, they simplified the task to subtract the total number of pupils from the non-participating ones and did not calculate the overall budget. They simplified the task by simply subtracting the total number of pupils from those who did not attend the trip and thus not calculating the overall budget. There were often number 240 in the answers, so pupils calculated the budget of the non-participating pupils. Again, it was a misunderstanding of the given question; the pupils did not read the question with understanding. There were also rare cases where pupils used a wrong mathematical operation - instead of using a product they used a sum.

The last question, was aimed at solving the set situation and oriented (again as a previous question) to the correct understanding and calculation of the amount. Alice was engaged in helping elderly people out of their town by selling

magazine. Alice remains 50% of her sales price, while the magazine sells for 3.40 euros. How will Alice help old people by selling magazines? The correct answer is 5.10 euros.

43.36% of pupils responded incorrectly and 56.64% of pupils stated the correct answer. On this issue, however, there is a noticeably lower percentage success rate. In the question it was necessary to divide the amount for one magazine into half and then multiply by three. As we can see from the results of the questionnaire survey, the pupils of the East Slovak region had problems with this operation. Compared to the previous question, the success rate fell by more than 25%. The four most common errors were repeated in the question:

1. *Pupils put 3.4 € in their answers without multiplying the amount by three magazines.*
2. *Frequently occurring response to the amount of € 10.2, pupils multiplied correct answer number two, we assume that this was due to the fact that 50% remains Alice.*
3. *Although the amount of 3,4 € was correctly divided into half, they did not take into account the number of magazines.*
4. *The opposite is when pupils did not divide the sum of € 3.4 by two but multiplied by the number of magazines.*

At the end of the questionnaire we asked students whether they were already thinking about the vocation they would like to pursue in the future. Approximately 15% of pupils were not able to indicate what kind of work they would like to do in the future. The most represented jobs: teacher, mason, dentist, cop, IT technician, translator, hairdresser, veterinarian, car mechanic, salesman, soldier, chef, fireman, actress and singer. Among the most interesting jobs we have included the following answers: nuclear physicist, digital media designer, midwife, violinist, judge, international tourist guide or humanitarian worker, professional ballerina, meteorologist, hippotherapist, priest, soccer player, forensic pathologist, historian, etc.

## **Conclusion**

The research goal was as follows - to find out if pupils of the lower secondary school based in Eastern Slovakia can understand, answer, define or express an opinion on questions focusing primarily on money, the perception of the euro currency within the European Union, or pricing on a number of variations of issues where mathematics and logic need to be used. We can say to the results of the electronic questionnaire that we are first and foremost pleased that 2,094 elementary school pupils in eastern Slovakia were involved in our research. Based on the answers from the students, we can state that the most common mistakes did not occur with bad mathematical adjustments, but from a misunderstood read text.

We also tried to theoretically define the concept of financial literacy through the view of several authors and organizations working in this field. The issue of

financial literacy is covered by the Ministry of Education, Science, Research and Sport of the Slovak Republic. It focuses on its website important documents, support materials, and Internet links to support financial literacy teaching; especially, the National Financial Literacy Standard or the Financial Literacy Methodology. The National Financial Literacy Standard is a strategy for financial education and personal finance management. However, not only the Ministry, but also the schools themselves should give more room in this area through discussions, workshops, case studies and other activities that would enhance students' knowledge of finance, insurance, financial and mortgage markets, capital and other similar topics.

#### *Acknowledgement*

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