

Does the Financial Literacy Increase During the Secondary School Study?

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Abstract: (1) Background: The development of new technologies, changes in the functioning of the economy in national and international space, growth in the financial sector place increasing pressure on the man's ability referred to as "a financial literacy". Our study aims to find out if and how does the level of financial literacy of young people change during their study of the secondary grammar school. (2) Methods: The research methodology is based on the questionnaire survey, in which the solution of the four model situations was asked. We focused on three age groups of students: the first included the students of the second year of study. The second group included the students of the fifth year of study, and the third group included the students of the eight years of study. (3) Results: The results did not confirm an increasing level of financial literacy depending on the length of study. (4) Conclusion: The level of financial literacy does not change during the secondary school study. Limitation of the results lies in the number of respondents and only one type of secondary school and also in the model situation, which tests the students' ability to make financial decision.

Keywords: financial literacy; finance; financial decision

JEL Classification: A22; I25; D14

1. Introduction

The changes in the functioning of the economy in national and international space, the development of new technologies which are closely linked with the growth in the financial sector place increasing pressure on the man's ability to make correct financial judgments and decisions. This ability is generally referred to as "financial literacy". Although the content of this term still has not been defined precisely, many studies have analyzed this phenomenon in various conditions and from multiple points of views. In the economies transforming from the centrally planned economy to the economy functioning on the market principles, this ability is an integral part of the overall transformation of the society and acquire a specific feature. "Individuals are taking responsibility for a growing number of financial decisions, the two most important arguably being the purchase and financing of a home and preparing for retirement." (Hung et al., 2009) All these processes increase the pressure on everyone's ability to make qualified financial judgments and decisions making in conditions when increasing the difficulty and complexity of solved issues.

On the other side, this ability is considered as an essential tool of the performance and stability of the economic system as a whole: "The Endogenizing financial knowledge has important implications for welfare as well as policies intended to enhance levels of financial knowledge in the larger population." (Lusardi, Mitchell, 2014). The importance of financial knowledge was underlined in the first decade of the century and is seen in connection of the personal financial stability as a base of financial stability of the whole economy. "Current economic conditions have raised serious concerns about Americans' financial security, especially for those who lack the skills and resources to withstand financial market downswings and take advantage of upswings."

In consideration of the financial crisis in the year of 2007-2011, many specific international projects were prepared to increase the level of education in the economic area on both on European and worldwide level. It was aimed mainly to raise the global awareness of the significance and importance of financial literacy. Based on it, the EU member states were recommended to develop national strategies for financial education. In 2010 Ministry of Finance CR prepared material called National strategy for the Financial Education. This strategy aimed to reinforce financial literacy of the population, above all as a part of complex measures in the area of consumer protection. In the implementation of this strategy, activities aimed at increasing financial education is gradually expanding. However, a systematic approach to addressing this issue is still missing. Some concrete measures were taken, for example, in the area of secondary education: the schools have to incorporate selected/proper financial knowledge into the content of social science subjects. But the realization of this goal is left to the schools themselves, within the framework of school educational programs. Specific courses and exams were introduced in the area of investment advisors as an obliged condition to conduct their profession. In the past two years, in the field of financial literacy of young people and children, the activity of financial institutions has increased (e.g. Czech Central Bank, Czech Savings Bank). But all these activities are not coordinated, solving only partial problems. They are not based on real knowledge of the actual situation in the financial education as well as on the definition of target state.

Research in this area focuses on various aspects of financial literacy. In the mainstream, the ability to make qualified financial decision is closely linked with the retirement planning. The choice of how much to save for retirement is a complex one, as it requires collecting and processing a broad set of information concerning Social Security and pensions, inflation, and interest rates. Policymakers seek to learn whether households are effectively protected for many years in retirement, whether they know how to plan for retirement and whether they can execute these plans effectively." (Lusardi, Mitchell, 2008).

Other researchers derive the requirement of financial literacy from the rapid development of financial markets. The financial market is expanding in the various form to the retail marketplace: in the form of the student loans, mortgages, credit cards, pension accounts, and annuities. As the findings of the research show, young people's readiness to deal with these situations and their qualified solutions is deficient (Brown et al., 2013).

Another direction of research aims to analyze financial literacy from various aspects, e. g. the level and extent of financial literacy or illiteracy in the different layers of population, the factors influencing the level of the financial literacy, what is the content of financial literacy as a category, what range of knowledge, abilities and skills it covers.

This ability acquire unique character and form in conditions of the transition economies in Central and Eastern Europe. Increasing financial literacy of each member of society is an integral part of the overall transformation of the economic system towards the economy functioning on market principles. Acquiring and increasing knowledge and skills commonly referred to as financial literacy of the all population, but especially young people is a part of overall change in economic behaviour in the process of transformation to a market mechanism.

The research of financial literacy in the Czech Republic is at the beginning. Research studies in this field is associated with names of J. Belász (Belász et al. 2018), J. Svárovská (Svárovská, 2015), B. Chmelíková (Chmelíková, 2015, Chmelíková and Svoboda, 2015), D. Kubíčková (Kubíčková et al. 2019). However, more systematic research attention to this problem is not given.

Our research aims to find out if and how does the level of financial literacy of young people as the ability to decide elementary financial situation change during their study on the secondary school, more precisely at the eight-years of grammar school.

2. Methodology

To reach the aim of our research, we used the questioning method. The respondents were the students of the eight-year grammar school, namely students of the second, fifth and eighth years of study. The questionnaire survey was carried out under the conditions of the normal education

process in October and November 2019. We supposed that the level of financial literacy is increasing during the study, i. e. that the financial literacy is higher in the last year of study compared to the second year and the fifth year of study. It can be supposed that the factor influencing this ability is both the study courses and – may be in the vast extension - the experiences gained in the daily life. To identify the impact of the two factors can be the aim of the next stage of investigation, in our research, we concentrated on the changes in the level of financial literacy during the study.

The level of financial literacy we measure by the four model situations. The situation we try to construct different levels of difficulty so that the ability level can be differentiated to some extent. The construction of the questioning arise from the hypotheses:

H1: The level of financial literacy measured by the selected model situations is higher in the higher classes,

H2: the ability to solve the complicated tasks increased during the study and is the highest at the end of the study.

In the first part, the questionnaire collected the descriptive data on respondents, including their age and the achieved level of their parents' education. The second part included four model situations, the construction of which was based on prior literature (Balász et al., 2016; Kubičková et al., 2019). These model situation aims to identify the level of financial literacy of the students in different degree of their study and find out if and how this ability change in the various stages of their study. The parallel objective of this research is to extend the knowledge of the current situation in the Czech environment.

The solution of model situations lies in choosing one of the suggested solutions which is according to respondents' view the best solution of it. These model situations represent basic, frequent situations where some financial knowledge is necessary. We want to investigate the way of solving these situations by the respondents.

The first one consisted in deciding on a loan with different conditions and tested the ability to take into account all the essential information and to choose a better offer in the credit area. The second situation was based on the assessment of two different payment schedule and had to test the ability to use elementary calculation operations. The third situation was aimed to reveal students' access to long-term income management. The fourth model situation sought to find out the ability to use different forms of payment for goods. The gathered data was processed using essential statistical tools (percentage, average value) and elementary test, the F-test, to reveal the significance of differences between the results in all the three groups of students. More details we present in part 3.

The sample of respondents consisted of three groups of students, aged between twelve to eighteen years. The composition of the examined group of respondents, its gender structure we present in Table 1. Based on the prior research, we consider the level of the parents' education as a significant factor that could affect the results. Thus we have added this information in the data set description. In all three groups, parents with university education prevail.

Table 1. Data Set Description.

	Second class				fifth class				eighth class			
	Number		Level of parents' education (in %)		Number		Level of parents' education (in %)		Number		Level of parents' education (in %)	
	abs.	in %	Mother	Father	Abs.	in %	Mother	Father	Abs.	in %	Mother	Father
			U/S	U/S			U/S	U/S			U/S	U/S
Male	18	58%	x	x	18	43%	x	x	7	25%	x	x
Female	13	42%	x	x	24	57%	x	x	21	75%	x	x
Total	31	100%	81%/19%	84%/16%	42	100%	81%/19%	79%/21%	28	100%	82%/18%	75%/25%

Note: U/S = university degree / secondary degree of education (technical or social sciences)

3. Results

3.1. Model situations

In the first model situation, we investigated the ability to evaluate all information when deciding on a loan correctly. The two solutions offered reflected the right and wrong decisions. This ability represents one of the elementary skills to ensure a higher quality of individual life because the respondent is not exposed to unnecessary losses and effectively expends its resources.

In the second model situation, we again aimed to assess the ability to evaluate the terms of the loan comprehensively, but while involving time in decision making. The difficulty of the solution was thus greater.

The third model situation was focused on the perception of the future when deciding on the use of income. In this situation, three solutions were offered, one of which was the most correct, which respected the expected view of future needs, the second one differed in the reason of the decision, but with respect of the future.

In the fourth model situation, we tested knowledge of the conditions and benefits of various forms of payment. Three solutions were offered, aimed to reveal different approaches and experiences with different forms of payment. Only one solution represents the most advanced solution.

3.2. Results of the questioning

The results in all three groups/classes we present in Table 2. The correct answers in every group are highlighted in grey. Total number of the answers right and incorrect is divided according to male and female respondents.

Table 2. Results of the questioning in three students' group/classes.

Model situation		Second class			Fifth class			Eighth class		
		total	male	female	total	male	female	total	male	female
	<i>Number</i>	31	18	13	42	18	24	28	7	21
1 a)	abs.	26	17	9	41	17	24	25	7	18
	%	84%	94%	69%	98%	94%	100%	89%	100%	86%
1 b)	abs.	5	1	4	1	1	0	3	0	3
	%	16%	6%	31%	2%	6%	0%	11%	0%	14%
2 a)	abs.	25	14	11	37	16	21	26	7	19
	%	81%	78%	85%	88%	89%	87%	93%	100%	90%
2 b)	abs.	6	4	2	5	2	3	2	0	2
	%	19%	22%	15%	12%	11%	13%	7%	0%	10%
3 a)	abs.	28	16	12	37	17	20	26	6	20
	%	90%	89%	92%	88%	94%	83%	93%	86%	95%
3 b)	abs.	0	0	0	0	0	0	0	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3 c)	abs.	3	2	1	5	1	4	2	1	1
	%	10%	11%	8%	12%	6%	17%	7%	14%	5%
4 a)	abs.	6	1	5	2	2	0	0	0	0
	%	19%	5%	39%	5%	11%	0%	0%	0%	0%
4 b)	abs.	19	13	6	35	16	19	23	4	19
	%	62%	72%	46%	83%	89%	79%	82%	57%	90%

4 c)	abs.	6	4	2	5	0	5	5	3	2
	%	19%	23%	15%	12%	0%	21%	12%	43%	10%
Average rate of correct answers		79.2%	83.2%	73%	80.2%	91.5%	87.2%	89.2%	85.8%	90.2%

The results in all three groups of students/classes are similar. Slightly better can be assessed the results in the eighth class – in the average value of correct solutions - and the second and third model situation. Relatively significant decrease of correct answers' portion is in the fourth model situation in the second class. It can be explained by a vague wording of the task that does not correspond to the experience of the student in this age group.

The average percentage of correct answers in the four model situations in all three students' group are very similar, in the range of 79 to 89 per cent. Using this average success rate as a measure of financial literacy and its development in the age category from 12 to 18 years on the secondary grammar school, we can conclude that financial literacy increases, albeit only very slightly. Interestingly, a relatively high level of financial literacy, similar to the other groups, we found in the second class. The reason of this fact can be in the second year curriculum: based on the recommendation of Ministry of Education and Sport special subject was included, aimed to explain elementary financial situations. The other course with the same purpose is in the curriculum of the eighth class. But it is a part of the optional component of the curriculum.

As the level of education achieved by parents is similar in all classes, the similarity of results in all groups can be associated with the influence of this factor. Differences in the level of financial literacy observed in the previous phase of research in grammar school and business academy students were accompanied by different levels of parent education (Kubíčková et al., 2019). It can thus be concluded that the factor of parents' education plays a role in the level of financial literacy of their children. However, this assertion needs to be verified in further research that focuses on this factor and its role in the financial literacy of young people.

The relation of the correct answers in all three groups of students we present in the following Figure 1.

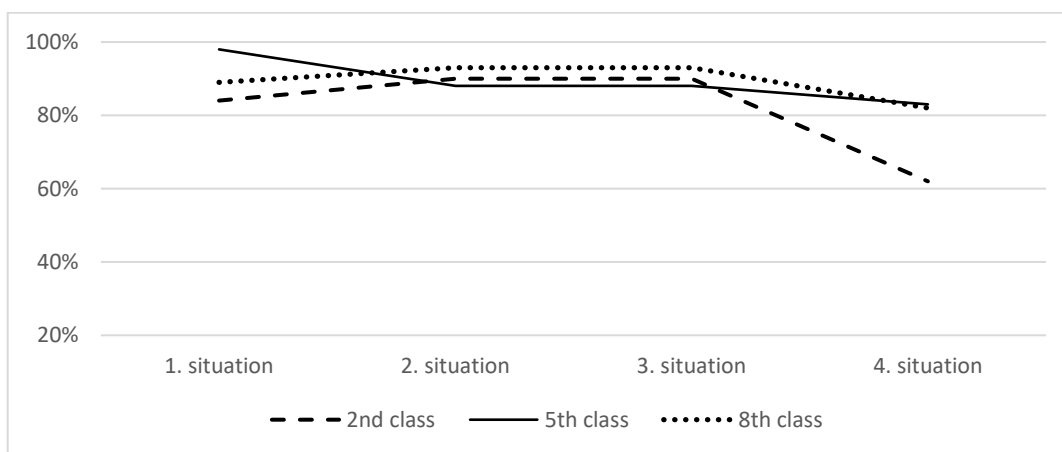


Figure 1. The proportion of correct solutions of model situations in the three students' groups.

3.3. Significance of the results differences

To verify the above-formulated conclusion, we tested the results in all three groups using a two-file match test. We used the F-test, which compares the data of two independent selections. If the resulting value of $F < F_{crit}$ we can reject the null hypothesis, i.e. the variance of both sets is not statistically significantly different (i.e. the samples come from the same basic set with common variation). To test the significance of the differences between the three sets of results, we examine three pairs of data set: results of second and fifth class, the result of eighth and fifth class and the

result in eighth and second class. The three sets of values and the resulting value of the three F-test we present in Table 3.

Table 3. The resulting value of the F-test.

Year of study/class		Second	Fifth	Eighth
Model situation:	Solution:			
Situation 1	a)	83,9	97,6	89,3
	b)	16,1	2,4	10,7
Situation 2	a)	80,6	88,1	92,9
	b)	19,4	11,9	7,1
Situation 3	a)	90,3	88,1	92,9
	b)	0,0	0,0	0,0
	c)	9,7	11,9	7,1
Situation 4	a)	19,4	4,8	0,0
	b)	61,2	83,3	82,1
	c)	19,4	11,9	17,9
F-test			0.551598	0.5475088
Critical value (p=0,005)	4.026			0.9950586

All the three values of F-test were identified lower than the critical value. That means the results in all three groups/classes come from the same basic set, and the differences are not significant. Based on that conclusion, we can reject the hypothesis H1 in which the level of financial literacy measured by the selected model situations was supposed higher in the higher classes. The second hypothesis H2 specified in more details the level of financial literacy. In this hypothesis was assumed that the ability to solve complicated tasks, is increasing during the study and is the highest in last year of study. As the more complicated financial situation, we considered the first and the third ones. The correct results in these situations are similar in all the three groups compared to the other two ones: 83.9%, 97.6% and 89.3% in the first model situation and 90.3%, 88.1%, 92.9% in the third model situation. Based on these results we can reject this hypothesis, although a slight increase of correct solutions in the eighth year we should to mention.

4. Discussion

The results of the questioning did not confirm both the first and the second hypothesis. Neither the higher score of correct answers in the last year nor their increasing trend in the three monitored years was confirmed. On the other hand, it is necessary to emphasize an outstanding level of financial literacy demonstrated in all three years of study, which differs significantly from the results in previous research in terms of grammar school and business academy. The proportion of correct solutions in this previous research was in the range of 45-60%. The explanation can be in the fact that the knowledge and problems included in the abilities, skills and approaches referred to as financial literacy is a part of at least two subjects in the curriculum at the grammar school where we conducted the survey.

However, this explanation is not sufficient in the context of the results of previous research achieved at the business academy. In this type of secondary school, there are much more financial oriented subjects in the curriculum. And the proportion of the correct solutions was found to be lower than in the grammar school. Based on these findings and conclusion, we can summarize one crucial conclusion, i. e. to ensure the increase of financial literacy, it is necessary to design a purpose-oriented course included in the curriculum. But this conclusion must be verified in further research.

Broader conclusions based on these results are limited due to the small set of respondents and one type of school and also due to the conditions of only one school. In further research, it will be necessary to focus on the other grammar schools and even different types of school.

Broader conclusions based on this research are also limited, among other things, due to the model situations that we used to measure the financial literacy of respondents. Again, there is an urgent need to define the content and scope of the financial literacy category. It can also be an incentive for further research.

5. Conclusions

Our research aimed to find out if the level of financial literacy of young people change during their study on secondary school, namely on the eight-year grammar school. We used the questionnaire survey method. The respondents were the students of three different years of study: the second year, the fifth year and the eighth year. The questioning consisted of solving four model situations, whose solution belongs to the set of abilities known as financial literacy. We suppose that the ability to correctly resolve these situations will increase in proportion to the length of study, i.e. in higher classes will be higher. The results did not confirm both the first and the second hypothesis. The percentage of correct solution was in all three years of study approximately the same. The higher score of correct answers we identified in the eighth year, but the differences were not significant. The test confirmed this conclusion based on which we can conclude the differences are not substantial. The level of financial literacy does not depend on the length of study

The research findings, however, have an essential limitation associated, primarily, with the sample size examined and the structure of the interviewed students. A broader set of respondents-students, as well as other schools, could increase the reliability and explanatory power of the results. A significant limitation arises from the selection and construction of model situations. There is no agreement of the researchers concerning what does the category of financial literacy content. Thus, it is very complicated to select the suitable cases which allow to measure the level of it. Its construction and wording could be improved: the number of situations could be extended, the content could be differentiated according to difficulty, etc. All these questions can be an incentive for the next stage of research.

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