INTEGRATION OF FINANCIAL LITERACY INTO MODERN EDUCATION SYSTEM

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Abstract: The research shows that reforming the Russian system of education predetermines the necessity of forming competencies in the sphere of financial literacy in various age and target groups. In the paper, the financial literacy formation level of the population has been monitored in the form of testing the participants of the educational program for schoolchildren and further professional program of skills enhancement for teachers of rural schools carried out in the Republic of Mordovia. Basic competency framework of financial literacy for various age groups has been developed. Possible focus areas of integration of financial literacy modules into school subjects are described. Recommendations are suggested for forming further development path of financial education in the country.

Keywords: financial literacy, integration of education, financial competency, educational programs.

1 Introduction

For the recent fifteen years, within the educational policy carried out in Russia, its system of education has been upgraded (Mangher, 2014; Chigisheva, 2015; Matyunina, 2015). This upgrade process is characterized by the search for a new paradigm of education, creation of the modern system for assessing its quality, improvement of the state educational standards, and forming the requirements for the training level of educational institution graduates. Russia's modern strategy in the sphere of development of education is represented in the State program "The development of education for the years 2018-2020" (approved by Resolution of the RF Government No.1642 dated December 26, 2017) where improvement of the results of Russian school students (in the domain of financial literacy included) further to assessing their educational achievements within the Program for International Student Assessment (PISA) is determined as the priority objective, alongside others.

At the current upgrade stage of Russian education, developing financial education and improving financial literacy of the population become one of the priority lines of the state policy. This is quite justified, because higher financial literacy will enable the population to respond in a relevant way to threats and challenges emerging in the contemporary economy increasingly and to skillfully act in conditions of the economic uncertainty in the future. Moreover, improvement of financial literacy acts as a crucial factor of the sustainable economic growth. In the world of today, financial literacy becomes a skill one needs for ensuring both one's personal and the public financial welfare (Rutkovskaya, 2017). The above renders the problem of integrating the financial literacy component into the modern education system important.

2 Literature Review

It has to be noted there is no uniform approach to detailing the content of the category "financial literacy" currently. The definitions available in the modern literature emphasize various aspects of financial literacy: actual and conscious knowledge of financial issues, the ability of apply the knowledge (Anderson et al. 2017; Blue et al., 2014; Leumann, 2017), individual financial experience, and even reasonable financial behavior (Tsvetova, 2016; Faulkner, 2017). Moreover, such categories as "financial abilities" and "financial potential" (Great Britain), "financial competence" and "financial responsibility" (Germany), "financial education" (Organization for Economic Cooperation and Development (OECD)) are used for assessing financial literacy of the population in foreign countries.

In the modern literature, there is a widespread approach according to which the term "financial literacy" is interpreted as the "knowledge about financial institutions and products offered by them, as well as the ability to use them as the need arises while realizing the consequences of one's actions" (Van Campenhout, 2015; De Moor & Verschetze, 2017).

According to M. E. Paatova and M. Sh. Daurova (2014), the category under consideration includes the "cognitive, the activity-based, and the values and motivation components". The cognitive constituent of financial literacy incorporates the total of knowledge in personal finance management which allows correctly evaluating various financial situations and making the appropriate financial decisions, as well as developing one's financial competence by means of self-education. The activity-based component is the research, analytical, organizational, and other knowledge, abilities and skills of organizing personal financial activity and identifying the ways for improving the latter. The values and motivation component includes personal motives and value-related attitudes, responsibility for financial decisions being made, aspiration to enhance one's financial literacy, and trust in finance and credit institutions.

According to the authors, financial literacy is a total of three components: 1) financial knowledge which is the general understanding of questions concerning financial situations, financial products and services; 2) abilities which allow applying the gained knowledge in various situations; 3) skills of sensible financial behavior, realization of consequences of making financial decisions.

Currently, many countries of the world develop integrated programs of financial education for various target groups: school students (Poltavskaya et al., 2014; Urban et al., 2018; Chaprak & Kuznetsov, 2017; Ozkale & Ozdemir Erdogan, 2017a, 2017b; Lazebnikova, 2017; Grohmann, 2018; Movchan, 2019), students (Karaa & Kuğu, 2016; Çam & Barut, 2015; Kaur et al., 2015; Semenova & Filichkina, 2017), young specialists (Sawatzki, 2017; Sawatzki & Sullivan, 2017; Lusardi et al., 2010; Gutnu & Cihangir, 2015), the retired ones (Lusardi & Mitchell, 2014), investors (Jariwala, 2015).

It should be noted that Russian scientists – pedagogues deal with questions of financial literacy in various domains: mathematics (Almazova & Truntaeva, 2018; Sedova, 2017; Reshetnikova & Goncharova, 2017), IT (Vendina & Maliataki, 2015; Osipova, 2016), physics (Zabelina & Kazakov, 2018), social studies (Krivonos & Kolomiychuk, 2016, Asonova et al., 2017).

3 Materials and Methods

The objective of the research is to develop the algorithm of integrating the financial literacy component into the modern education system. Achievement of the said objective implies completing the following tasks: to substantiate the algorithm of integrating financial literacy into the system of education; to study the best practices of Russian higher educational institutions in fulfillment of financial literacy programs; to word recommendations on forming further path of development of financial education.

The basis for the research was made up by the "Personal finance school" subproject within the project "Promotion of improvement of the financial literacy level of the population and development of financial education in the Russian Federation" and further professional program of skills enhancement for teachers of rural schools of the Republic of Mordovia "Fundamentals of financial literacy, methods of teaching it within the system of middle and secondary education and financial outreach of the rural population". These projects were carried out in 2015-2019 on the base of N. P. Ogarev Mordovia State University, National Research University.

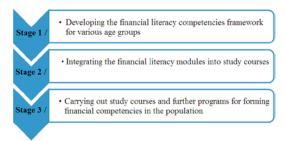
The methodological basis of the research was the integrative approach providing for implementation of the financial literacy components into various school subjects.

4 Results and Discussion

4.1 The Algorithm of Integrating the Financial Literacy Component into the Modern Education System

An important task of the modern educational policy is integration of the competency "financial literacy" into the system of education. The authors believe this process can be represented as a definite algorithm involving three successive stages (Figure 1).

Figure 1 The algorithm of integrating the financial literacy component into the modern education system



Source: developed by the authors

The first stage implies developing the competency framework in financial literacy for various age groups including three main components: knowledge, abilities, skills (see Table 1). The structure of financial competency frameworks for various target groups differs in the set of competencies, which allows keeping the uniform approach to coordination of the frameworks as for various target groups. Meanwhile, the worded competencies of financial literacy are used as a uniform reference point for both adults and the young people, and they are included into both frameworks with respective differences, which implies the consistency of competency frameworks for various age groups.

Table 1 Competency framework of financial literacy for various

age groups Module

age groups					
Module	Competency	Knowledge	Abilities	Skills	
Young people					
Money and payment products	The ability to use various payment methods	Cash and cashless money	Distinguishin g between types of money and payment products	Having the skills of cash and cashless settlement	
2. Personal financial plan	The ability to draw up one's personal financial plan	Personal revenues and expenses structure	Keeping records of revenues and expenses	Drawing up one's personal financial plan on a regular basis	
3. Types of loans	The ability to select the best loan option	Types of loans for individuals, real interest rate, interest accrual methods	Knowing how to calculate interests on loans	Estimating the necessity of getting a loan and possibility of repaying it	
4. Savings and investments	The ability to use financial instruments	Types of banking deposits and financial instruments	Knowing how to compare profits margin on banking deposits and particular financial instruments for improving one's welfare	Opting for sensible schemes of saving and / or investing cash funds	
5. Taxes and ways of payment thereof	The ability to calculate taxes payable	Types of taxes and payment deadlines	Knowing how to identify taxable objects for	Having the skills of calculating taxes payable	

Module	Competency	Knowledge	Abilities	Skills
	The ability to choose	Types of retirement	Knowing how to plan	
Retirement benefits /	methods and	benefits, terms and	the future pension	Planning
pension	means for increasing	conditions	using various	pension savings
provision	one's future	for receiving	methods of pension	savings
	pension The ability	them	savings	
7. Financial	to opt for	Insurance products;	Distinguishin g between	Forming
protection and	sensible schemes of	signs of	insurance	the "financial
fraud	financial	financial fraud	protection instruments	cushion"
	protection	dult population		
		duit population		Drawing up
	The ability to draw up	The	Planning	budget routinely
1. Family	family	advantages of financial	revenues and	and
budget and financial	budget taking into	planning	expenses both in the	keeping to it taking
planning	account the	and keeping the family	short and	into
	human life	budget	long terms	account the
	cycle			human life cycle
	The ability to identify	Types of	Knowing how to opt	Having the skills of the
	the most	banking products	for the most	use of
2. Banking	acceptable	and	acceptable	products
products and services	option of the use of	services,	variant of using	and services,
	banking	including those using	banking	including
	products and services	IT	products and services	those applying IT
			Knowing	
	The ability	Features	how to make independent	
3. Stock market	to opt for sensible	and	decisions on	Forming a
and financial	schemes of	advantages of particular	investing one's	diversified investments
instruments	investing family	financial	savings, with	portfolio
	savings	instruments	possible risks borne	
			in mind	
				Having the skills of
	The ability		Knowing	estimating
	to choose insurance		how to opt for the most	insurance risks and
4. Insurance	products for	Types of insurance	acceptable	calculating
	the purposes of risks	msurance	insurance product	insurance premiums
	management		variant	and
				insurance payouts
	The ability to identify			
5. Taxes and	the taxable	Taxable	A 1	Having the skills of
social security	basis and	objects, types of tax	Applying tax benefits	filling out
of citizens	calculate taxes	deductions		tax declaration
	payable		V	
			Knowing how to	
Retirement benefits and	The ability to plan	Methods of	consciously choose a	Forming an individual
non-state	retirement	retirement	non-state	retirement
pension funds	savings	savings	pension	plan
			provision program	
	The ability to launch	Risks in business		
	to launch and	business activity,	Knowing	
7.	to launch and independentl	business activity, financial	how to plan	Manageme
Entrepreneursh	to launch and independentl y run one's own	business activity, financial report documents,	how to plan business activity	nt and
Entrepreneursh ip and launching the	to launch and independentl y run one's own business as a	business activity, financial report documents, basics of	how to plan business activity allowing for	nt and responsible financial
Entrepreneursh ip and	to launch and independentl y run one's own business as a way for improving	business activity, financial report documents, basics of taxation for individual	how to plan business activity allowing for improvement of one's	nt and responsible
Entrepreneursh ip and launching the	to launch and independentl y run one's own business as a way for improving one's	business activity, financial report documents, basics of taxation for individual entrepreneu	how to plan business activity allowing for improvement	nt and responsible financial
Entrepreneursh ip and launching the	to launch and independentl y run one's own business as a way for improving	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business	how to plan business activity allowing for improvement of one's	nt and responsible financial
Entrepreneursh ip and launching the	to launch and independentl y run one's own business as a way for improving one's financial	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business	how to plan business activity allowing for improvement of one's welfare	nt and responsible financial behavior
Entrepreneursh ip and launching the	to launch and independentl y run one's own business as a way for improving one's financial welfare	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business Types of financial risks, ways	how to plan business activity allowing for improvement of one's welfare	nt and responsible financial behavior
Entrepreneursh ip and launching the	to launch and independentl y run one's own business as a way for improving one's financial welfare	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business Types of financial risks, ways of	how to plan business activity allowing for improvement of one's welfare Knowing how to estimate potential	nt and responsible financial behavior Making independen t financial
Entrepreneursh ip and launching the own business	to launch and independentl y run one's own business as a way for improving one's financial welfare The ability to correlate profit	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business Types of financial risks, ways of preventing financial	how to plan business activity allowing for improvement of one's welfare Knowing how to estimate potential financial	nt and responsible financial behavior Making independen
Entrepreneursh ip and launching the own business	to launch and independentl y run one's own business as a way for improving one's financial welfare	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business Types of financial risks, ways of preventing financial losses,	how to plan business activity allowing for improvement of one's welfare Knowing how to estimate potential financial risks and detect	nt and responsible financial behavior Making independen t financial decisions with risks taken into
Entrepreneursh ip and launching the own business 8. Financial	to launch and independentl y run one's own business as a way for improving one's financial welfare The ability to correlate profit margins and	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business Types of financial risks, ways of preventing financial losses, "Josses,"	how to plan business activity allowing for improvement of one's welfare Knowing how to estimate potential financial risks and	nt and responsible financial behavior Making independen t financial decisions with risks
Entrepreneursh ip and launching the own business 8. Financial risks and fraud	to launch and independentl y run one's own business as a way for improving one's financial welfare The ability to correlate profit margins and risk	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business Types of financial risks, ways of preventing financial losses, "financial	how to plan business activity allowing for improvement of one's welfare Knowing how to estimate potential financial risks and detect financial fraud	nt and responsible financial behavior Making independen t financial decisions with risks taken into account
Entrepreneursh ip and launching the own business 8. Financial	to launch and independentl y run one's own business as a way for improving one's financial welfare The ability to correlate profit margins and risk The ability to protect	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business Types of financial risks, ways of preventing financial losses, "financial security rules" Rules of protection	how to plan business activity allowing for improvement of one's welfare Knowing how to estimate potential financial risks and detect financial	nt and responsible financial behavior Making independen t financial decisions with risks taken into account Having the skills of
Entrepreneursh ip and launching the own business 8. Financial risks and fraud 9. Protection of rights for consumers of	to launch and independentl y run one's own business as a way for improving one's financial welfare The ability to correlate profit margins and risk The ability	business activity, financial report documents, basics of taxation for individual entrepreneu rs and small business Types of financial risks, ways of preventing financial losses, "financial security rules" Rules of	how to plan business activity allowing for improvement of one's welfare Knowing how to estimate potential financial risks and detect financial fraud Knowing how to draw up a lawsuit /	nt and responsible financial behavior Making independen t financial decisions with risks taken into account Having the
Entrepreneursh ip and launching the own business 8. Financial risks and fraud 9. Protection of rights for	to launch and independentl y run one's own business as a way for improving one's financial welfare The ability to correlate profit margins and risk The ability to protect one's rights	business activity, financial report documents, basics of taxation for individual entrepreneurs and small business Types of financial risks, ways of preventing financial losses, "financial security rules" Rules of protection of the rights	how to plan business activity allowing for improvement of one's welfare Knowing how to estimate potential financial risks and detect financial fraud Knowing how to draw	nt and responsible financial behavior Making independen t financial decisions with risks taken into account Having the skills of practical

Module	Competency	Knowledge	Abilities	Skills
	services			solving
				particular
				situations
				in the
				sphere of
				protection
				of the
				rights of
				financial
				services
				consumers

Source: developed by the authors

The second stage is characterized by implementing various modules into the study courses. Table 2 gives some examples of integrating the financial literacy modules into school subjects.

Table 2 Examples of integrating the financial literacy modules into school subjects

Module	Examples of assignments	Subjects	
	The history of origin of money		
	Geometrical shapes of banknotes		
	Numerical equality matching problems	The World Around	
	for exchanging banknotes of various	Us	
	face values	History	
M	Calculation of value of the national	Mathematics	
Money and	currency in relation to a foreign one		
payment	according to the set rate		
products	Currency units of various countries of		
	the world	Geography	
	Cryptocurrency and distributed ledger	ĪT	
	technologies	Social studies	
	E-money and mechanisms of their		
	protection		
	Calculation of the cost of acquiring a		
	pet	The XX and A area.	
D 1	Drawing up a personal or family	The World Around	
Personal	budget	Us	
financial plan	Calculation of the optimum cost	Mathematics	
	variant for a holiday at various resort	Social studies	
	homes		
m c1	Calculation of interests on loan	Mathematics	
Types of loans	Borrower's credit history	Social studies	
	The history of origin of banks		
	Comparison of returns on investment	TT' .	
	of various securities	History Mathematics	
	Calculation of accreted value for	Mathematics	
Savings and	money deposits		
investments	Calculation of simple and compound		
	interests	0!-1 4!	
	Banking deposits insurance system	Social studies	
	Assesing the financial behavior of	Literature	
	literary characters		
Taxes and	Calculation of tax amount payable to		
ways of	the budget	Mathematics	
payment	Calculation of personal income tax	Social studies	
thereof	deductions		
	Finding the relation between		
Retirement	demographic figures and the retirement	Geography	
benefits	benefits level of the population in	Social studies	
	various countries of the world		
	Calculation of insurance indemnity	Mathematics	
Financial	under an insurance contract	Social studies	
protection and	Calculation of the annual insurance		
fraud	premium in life insurance		
	Information security	IT	

Source: developed by the authors

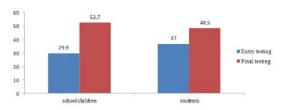
4.2 The Experience of N. P. Ogarev Mordovia State University in Performance of Financial Literacy Programs

The competency framework of financial literacy developed for various age groups underlies the way financial literacy enhancement courses of the "Personal finance school" subproject were formed, and it has also been represented in financial literacy events held within the subproject "Training rural teachers in financial literacy and methods of conducting outreach work with rural population" carried out at N. P. Ogarev Mordovia State National Research University.

Within the performance of the "Personal finance school" subproject, teachers of the faculty of economics have developed study programs for schoolchildren ("Fundamentals of financial literacy for young people") and for students ("My personal finance"). In the said programs, over 558 learners have been trained, with 155 schoolchildren of grades 9-10 and 403 students among them.

For the purposes of monitoring the learners' financial literacy, test assignments have been developed including questions on personal finance, taxes, banking activity, securities, insurance, etc. The results of the entry and final testing are given in Figure 2.

Figure 2. The financial literacy index of young people within the "Personal finance school" subproject, % (authors' calculations)



Source: developed by the authors

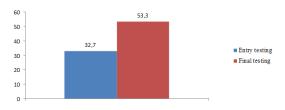
The final testing has shown that from the domains selected by the authors, the most studied topics for the schoolchildren were: family budget, certain banking products and services, some types of securities, terms and conditions of receiving citizen's individual personal account number in the compulsory pension insurance system. As for the students, the most familiar topics for them turned out to be personal financial planning, banking products and services, securities.

To solve the problem of improving financial literacy, the professional potential of pedagogical workers of comprehensive institutions has to be employed, too. It is essential to conduct special training of personnel who are able to convey knowledge and impart practical abilities in financial literacy within school subjects, for integrating the financial literacy component into the educational process.

In 2018-2019, the university ran further professional program of skills enhancement for teachers of rural schools of the Republic of Mordovia "Fundamentals of financial literacy, methods of teaching it within the system of middle and secondary education and financial outreach of the rural population". The program was carried out within the joint project of Russia's Ministry of Finance and the World Bank "Promotion of improvement of the financial literacy level of the population and development of financial education in the Russian Federation", and the subproject "Training rural teachers in financial literacy and methods of conducting outreach work with rural population" upon the initiative of Southern Federal University (Rostov-on-Don) and the Institute of IFC (Moscow). In this program, 50 rural teachers have been trained who teach various subjects: physics and mathematics - 6 people (12%), history and social studies -8 people (16%), the Russian language and literature -5people (10%), primary school teachers - 10 people (20%), foreign language - 7 people (14%), and other subjects - 14 people (28%). The average age of the audience was 42 years.

For identifying the financial literacy level of the participants of the said further educational program, entry and final tests were conducted. Their results are shown in Figure 3.

Figure 3. Financial literacy index of rural teachers, % (authors' calculations)



Source: developed by the authors

In the entry testing, the prevailing part of the participants have shown a satisfactory level of financial literacy. While comparing the answers to all questions of the entry test, it has to be noted that the percentage of learners scoring 36 to 47 points was 78%, and the smallest number of correct answers ranges within 54 to 69 points – 2%. In the entry testing, the questions concerning circulation of money, particularities of financing the entrepreneurial activity of agricultural producers, taxation and financial support of agricultural producers, and the activity of agricultural consumer credit cooperatives turned out to be the most difficult tasks.

The participants have shown higher results in the final testing. The highest effectiveness of acquisition of the financial literacy enhancement program has been demonstrated by teachers of history and social studies, physics and mathematics, and the primary school ones.

5 Conclusion

In conditions of the upgrade of the Russian system of education and development of new educational standards, the questions of integrating financial literacy into the educational system gain special relevance. This is associated with the fact that financial literacy is not merely an essential combination of knowledge, life skills, and responsibility that are necessary for making balanced decisions in the personal finance sphere. It its also an important factor of the long-term sustainable economic development, improvement of the quality and level of life of the population, and the assurance of individual financial security.

The conducted research has allowed wording the following promising lines of development of financial education in Russia:

- improving, implementing, and propagating the developed educational programs in fundamentals of financial literacy;
- including basic financial literacy subjects as a constituent into the Federal state educational standard;
- implementing the financial literacy component into the advanced training system for teachers;
- large-scale training of financial literacy teachers;
- spreading information and feature materials about financial products and services;
- having further educational programs for enhancing financial literacy developed and implemented by higher educational institutions in cooperation with finance and credit institutions;
- creating a digital financial encyclopedia;
- organizing summer financial schools for schoolchildren.

Thus, successful integration of financial literacy into the modern education system depends on a number of factors: study programs in fundamentals of financial literacy have to be available, taking into account the interests of various age groups; an efficient teacher training system is essential; motivation mechanisms at the state level have to be created for business and population to take active part in financial education programs.

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Secondary Paper Section: AH, AM