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INFLUENCE OF QUALITY OF LIFE ON STUDENT ACHIEVEMENT

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The purpose of the article is to measure the influence of economic home factors on student achievement. Economic home factors are analysed as one of dimensions of quality of life. Since the concept of quality of life is wide, only one of its dimensions – economic home factors – was chosen for the analysis. Moreover, one of the tasks set was to measure the connection between economic home factor and student achievement. In Lithuania, research on quality of life has expanded over the last decade, particularly in health sciences and sociology. However, analysis of quality of life is particularly rare in education field. Therefore, education field was chosen for this research. Methods of the research: questionnaire, tests. Research instruments: tests on mathematical, reading, and scientific literacy. Students of the 10th grade took part in the survey. Sample: 420 respondents from 139 schools of Lithuania. The research revealed that economic home factor, as one of the dimensions of the quality of life, has strong influence on student achievement. Comparison between different learning subjects showed that economic home background is best reflected in the higher results of reading literacy. Regarding students' living location, the strongest impact of economic factor on the learning outcomes was observed for those living in the urban area. Comparison between genders showed that economic home factor has stronger relationship with boys' achievements than with girls' achievements.

Keywords: *quality of life, economic home factor, student achievement.*

INTRODUCTION

In Lithuania, research on quality of life has expanded over the last decade, particularly in health sciences and sociology. On a global scale research of quality of life, as a separate area of research in social sciences, was introduced in the sixties. Interdisciplinary approach was introduced in the research and assessment of quality of life by including economics, psychology, sociology, health sciences and other disciplines. The research, which has been carried out for more than half a century, still has not provided an unambiguous concept of quality of life. Quality of life is generally considered as a level of satisfaction of certain needs as a whole (e.g., cultural, spiritual, economic, demographic, health-related, related to safe environment). The methodological criteria for the assessment of the quality of life and choice of indicators of quality of life are still the subjects of discussions.

However, analysis of quality of life is particularly rare in education field. Therefore, education field was chosen for this research. Since the concept of quality of life is wide and covers several dimensions, only one of them – economic home factor – was chosen. Moreover, one of the tasks set was to measure the connection between economic home factor and the learning achievements of the students.

It is important to analyze impact of this indicator on the learning achievements. In every country, on which we can have data, the learning achievements of students are positively correlated with indicators of their parents' socioeconomic status. This pattern has surprised many scholars, with early contributions in sociology by, for example, J. Coleman (1966), and in economics by, for example, G. Becker (1964). The topic has also arisen frequently in policy debates, and most democratic societies have adopted policies aimed at reducing the impact of family background on student achievement (Björklund, Salvanes, 2010). Although the topic is classical in social science, there is no doubt that research in this area has

intensified during recent decades, not least thanks to better data having become available to researchers: for example, international studies of IEA TIMSS, IEA PIRLS, OECD PISA.

The data on the correlation between home environment and the learning achievements of the students raises a few key questions: how important is economic family background for student achievement? Is family economic status a major or a minor determinant of student achievement? These questions are important to be answered for each country, as each country has different home environments.

The purpose of the article is to measure the influence of quality of life on student achievement in Lithuania. Since the concept of quality of life covers several dimensions, only one of them – economic home factor – was chosen.

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THEORETICAL BACKGROUND

Studies in numerous countries have shown that the socio-economic home environment is strongly correlated with student achievement (Fan, 2012; Martin *et al.*, 2012; Mullis *et al.*, 2012b; OECD, 2010a; OECD, 2010b; Dudaitë, 2010; House and Telese, 2007; Papanastasiou, 2006; Kiamanesh, 2004; Broeck, 2004; Przybysz-Zaremba, 2010). Such findings regarding the contribution of student socio-economic profile of family background to the learning achievements of students were received in various disciplines (Anders Y. *et al.*, 2012; Mullis *et al.*, 2012a; OECD, 2010b; Dupere *et al.*, 2010; Stubbe and Buddeberg, 2008; Falaye, 2006; Elijio and Dudaitë, 2005; Breèko, 2004; Diepen et al. 2004; Geske, 2004). Chiu and Xihua (2008) examined the data on 107,975 students concerning home effects on student mathematical achievement across 41 countries. Students scored higher in richer countries, with higher family socio-economic status, more books, cultural possessions, or cultural communication.

So, it is well established in the scientific literature that socio-economically disadvantaged students do less well on learning achievement compared with their more advantaged. On the other hand, the results received by Marks, Cresswell and Ainley (2007) showed that material home resources have a substantial impact on the learning achievements only in a small minority of countries.

Concerning various variables of home background there are some different results, particularly in regard to information technology. For example, Vigdor and Ladd (2010) conclude that the introduction of home computer technology is associated with modest but statistically significant and persistent negative impacts on student's scores in mathematics and reading tests. The main results of the research of Malamud and Pop-Eleches (2011) indicate that home computers have both positive and negative effects: children had significantly lower school grades but demonstrated better computer skills. Similar conclusion was formulated by Polish authors (Daszykowska, 2012; Rewera, 2013) with respect to situation in Poland. On the other hand the results received by Drechsel and Prenzel (2008) showed only negative impact of having and using computers on student achievement.

Davis-Kean and Pamela (2005) analyzed relationship between the income of parents and the learning outcomes of their children and concluded that parents' income indirectly relates to children's achievements through parents' beliefs and behaviors. Parental income allows better educational resources at home.

Very strong positive link with student achievement was received by analyzing the case of books at home. The results of many researchers show that the more books student has at home, the higher learning achievements he or she reaches (Stubbe and Buddeberg, 2008; Arora and Ramirez, 2004; Marcoulides *et al.,* 2004; Nowakowski, 2002: 71-77). According to the results received by Breèko (2004) not only the quantity, but also the type of books is important. The results of the said survey also showed that student achievement is related to the possession of a study desk, computer, calculator, student's own room; there is a link (stronger or weaker) between all these variables and student achievement.

Other authors state that student socio-economic status has a profound impact on their attitudes in school. Students having high socio-economic status seek higher learning achievements as compared with students having lower socio-economic status (Osa-Edoh and Alutu, 2011; Przybysz-Zaremba, 2012: 88-109, 2010a: 89-104). This is in line with the results received by Agulanna and Nwachukwu (2009) which show that parents having high socio-economic status reward and motivate their children in their academic success and give them encouragement to enjoy learning. The attitude

towards learning also have the strong relationship with student achievement (Kim *et al.*, 2013; House and Telese, 2007). It means that family background can have both direct and indirect impact on student achievement.

The research findings of Mohamadkhani, Ghasemizad, and Kazemi (2011) indicated that there was a significant and positive correlation between variables of social capital and the student's quality of life. This means that socio-economic home background is related with the quality of life.

The data on the relationship between student achievement and socio-economic profile of family background raise the following important question: how strong is the impact of economic family factor on the learning achievements of the students in Lithuania? Socio-economic factor can be described in various ways. In this paper, only economic home variables are taken into consideration.

RESEARCH METHODOLOGY

Methods of the research: test and questionnaire. **Research instruments**: tests on mathematical, reading, and scientific literacy, consisting of close-ended and open-ended questions; questionnaire consisting of close-ended questions. All tests consisted only of general literacy issues.

Sample: students of the 10th grade took part in the survey. The analysis covers the influence of economic home factor on the learning achievements of the students of the 10th grade by various aspects. 420 respondents from 139 schools were chosen for the survey. **Type of sample of schools**: systematic sampling. Schools were selected according to school location, school type and size. The sample encompasses schools of different location, all types and sizes. **Type of sample of students** within schools: simple random sample (2-4 students from each school according to the school size).

Data analysis methods: regression analysis, factor analysis, Cronbach Alpha. Data were analyzed using SPSS software package, version 15.

Ethics. The survey was based on free-will principle. The survey was conducted in the classrooms during instructional time.

RESULTS AND FINDINGS

Economic home factor was estimated by the method of factorization of the student questionnaire results. Economic factor includes such student home variables: dishwasher, digital camera, MP3 player, at least 2 TV, DVD, computer, learning software, the Internet, personal cell phone, personal room, study desk, place to study, number of books, classical literature, poetry, additional textbooks, dictionary and works of art. Factor's KMO=0.8, $p<0.001$, Cronbach Alpha = 0.75. Factor is standardized to have a mean of 0 and variance of 1. Such economic home variables as automobile, subscription of the press, additional learning tools were not included into the factor because of the low Cronbach Alpha and factor loadings' parameters.

The following regression equation (1) was calculated to estimate influence of economic home factor on student achievement (Score = $ß_0 + ß_1 \cdot x + e$):

$$\textit{Combined literacy score} = 520 + 34 \cdot (\textit{economic home factor}) + e,\ p < 0.001,\ R^2 = 0.15 \quad (1)$$

Combined literacy score was calculated by combining mathematical, scientific, and reading literacy scores. The average of the scale in which the calculation was carried out – 500 points, standard deviation – 100. The regression equation is visually presented in Figure 1.

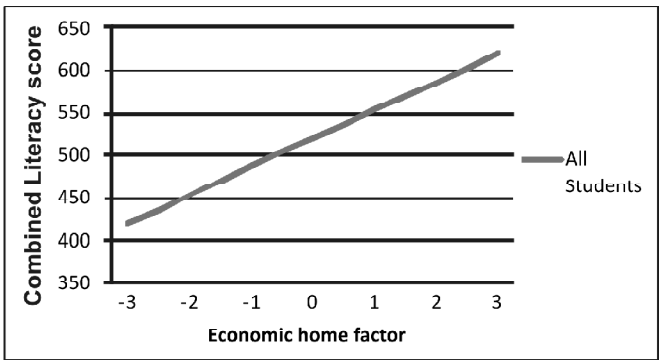

Figure 1. Relationship between the economic home factor and student achievement

As we can see, the relationship between economic home factor and student achievement is very strong. At the lowest values of economic home factor, average student achievement score is about 420 points, while at the highest values of economic home factor, it reaches about 620 points. This shows strong influence of economic home factor on student achievement.

Analysis of influence of economic home factor on student achievement in separate learning subjects (mathematical, reading, and scientific literacy) shows that economic home factor has slightly stronger influence on reading literacy scores (see equations [2], [3], and [4] and Figure 2). In terms of mathematical and scientific literacy, there is no difference in influence of economic home factor on the learning achievements of student: the study results show identical increase.

Mathematical literacy=528+32·*(economic home factor)*+e, p<0.001, R^2=0.12 (2)

Reading literacy =507+37·*(economic home factor)*+e, p<0.001, R^2=0.15 (3)

Scientific literacy =527+32·*(economic home factor)*+e, p<0.001, R^2=0.11 (4)

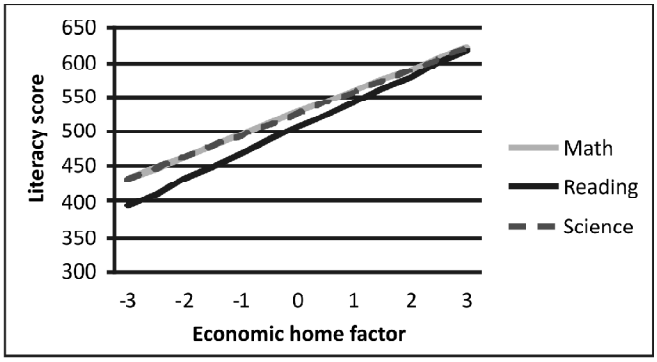

Figure 2. Relationship between the economic home factor and mathematical, scientific, and reading literacy achievements

Comparison between the students' home location and economic home factor's influence on student achievement might be interesting to investigate. The following regression equations (5), (6) and (7) were calculated to find out whether economic home factor has different influence on the learning achievements of students' from cities as compared to students' from towns and villages (the results are visually presented in Figure 3):

Comb. literacy score (city)=521+38·*(economic home factor)*+e, p<0.001, R^2=0.11 (5)

Comb. literacy score (town)=525+32·*(economic home factor)*+e, p<0.001, R^2=0.15 (6)

Comb. literacy score (village)=504+19·*(economic home factor)*+e, p<0.05, R^2=0.11 (7)

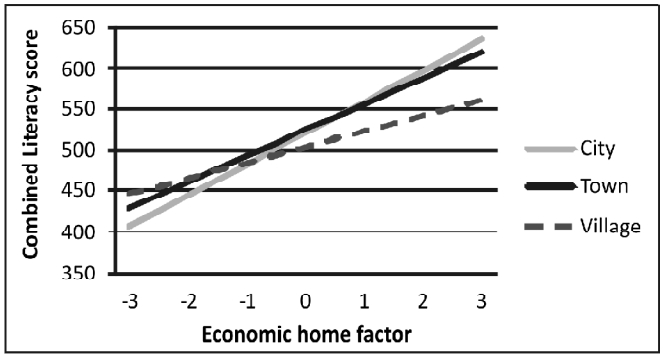

Figure 3. Relationship between the *economic home factor* and *student achievement.* Difference between students' living location.

Comparison between the students' living location showed that influence of economic factor on student achievement is the highest for those living in cities, then for those living in towns. The factor's influence on the learning achievements for those students who live in villages is significantly lower. So we may conclude that in Lithuania economic home situation has lower influence on students living in villages. This can be explained by the lower economic diversification in rural areas compared to urban areas.

Comparison between the genders is also important in order to find out whether economic home factor has different influence on learning achievements of girls as compared to boys. The following regression equations (8) and (9) were calculated to find out this question (the results are visually presented in Figure 4):

Comb. literacy score (girls)=524+26·*(economic home factor)*+e, p<0.001, R^2=0.19 (8)

Comb. literacy score (boys)=513+45·*(economic home factor)*+e, p<0.001, R^2=0.26 (9)

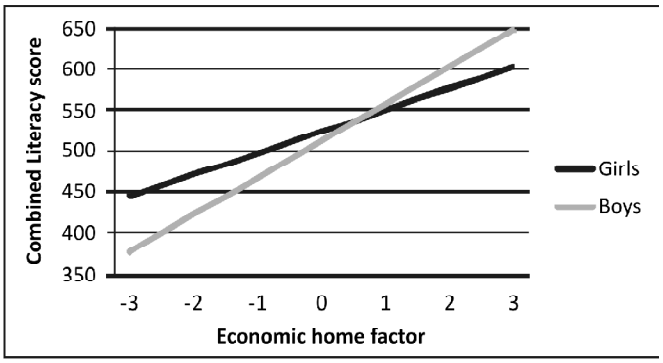

Figure 4. Relationship between the *economic home factor* and *student achievement.* Difference between girls and boys

As we can see, influence of economic home factor on the learning achievements of girls and those of boys differs; stronger influence of economic home factor on the learning achievements was observed for boys. With poor economic home conditions, learning achievements scores of boys are lower from those of girls by 70 scale points, while with good economic home conditions average scores of girls are lower from those of boys by 50. The boys' scores grow much faster than the girls. The difference between the boys highest and the lowest results is as high as 275 scale points. It means that economic home situation has stronger influence on boys than on girls.

International research studies on student achievement (TIMSS, PIRLS and PISA) each time show that in Lithuania average achievement scores of girls are higher than those of boys (OECD, 2010a; Mullis *et. al.*, 2012b). The results of this research also prove this fact: average score for combined literacy (mathematical, scientific, and reading literacy) of girls are 528 scale points (standard deviation – 82.5), boys – 518 scale points (standard deviation – 87.3). However, Figure 4 shows that the lower boys' results appear only with poor economic home conditions.

Comparison between the students' mother tongue in order to find out whether economic home factor has different influence on learning achievements of Lithuanian, Polish and Russian students would be interesting. In Lithuania the largest number students are speaking Lithuanian (more than 80 per cent). Russian-speaking students represent about 8 percent of the population, Polish-speaking students represent about 6 percent of the population. Equations (10), (11), and (12) and Figure 5 show that in terms of different mother tongue, the steepest increase of results are for Russian-speaking students. There is no difference in influence of economic home factor on the learning achievements of Lithuanian-speaking and Polish-speaking students. These results might be explained by the fact that the Russian population lives only in urban areas in Lithuania. As we see in the Figure 3, influence of economic factor on student achievement is the highest for those living in cities.

Comb. lit. score (Lith.)=529+31·*(economic home factor)*+e, $p<0.001$, $R^2=0.13$ (10)

Comb. lit. score (Polish)=438+31·*(economic home factor)*+e, $p<0.05$, $R^2=0.33$ (11)

Comb. lit. score (Russian)=466+52·*(economic home factor)*+e, $p<0.001$, $R^2=0.27$ (12)

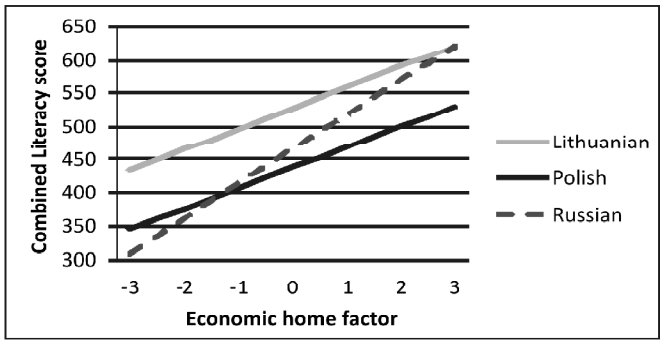

Figure 5. Relationship between the *economic home factor* and *student achievement*. Difference between Lithuanian-speaking, Polish-speaking and Russian-speaking students

DISCUSSION

In Lithuania quality of life research in education field just started. Therefore, no data is collected on the quality of life in relationship to student achievement. This article deals with the measurement of the influence of economic home factor on basic school student achievement (particularly on the 10th grade student achievement). It would be interesting to know, what is the impact of economic home factor on elementary school student achievement, and on high school student achievement. It is possible, that economic home factor has stronger relationship with learning achievements of primary school students than with learning achievements of basic or high school students.

It would be useful to carry out comparative study on students of other grades and to compare the received results with the results of this research by the same sections. This would help to answer the question whether economic home factor has the same influence on learning achievements of students of all grades, whether the learning achievements of boys of all grades are more influenced by economic home factor as compared to girls, and whether influence of economic home background on urban area students' and Russian-speaking students' learning achievements is always stronger.

CONCLUSIONS

1. Economic home factor, as one of the dimensions of the quality of life, has strong influence on student achievement.
2. Comparison between different learning subjects showed that economic home background is best reflected in the higher results of reading literacy.
3. Regarding students' living location, the strongest impact of economic factor on the learning outcomes was observed for those living in the urban area. Economic home background has significantly lower influence on the learning achievements of students living in the rural area.
4. Comparison between genders showed that economic home factor has stronger relationship with boys' achievements than with girls' achievements.
5. The strongest positive influence of economic home background on learning achievements of the students was observed in case of Russian-

speaking students. There is no difference in influence of economic home factor on the achievements of Lithuanian-speaking and Polish-speaking students.

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