

DOI: 10.5593/sgemsocial2014/B13/S3.051

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Saturday 1 November 2014

Reference: SGEM2014 Conference on Psychology and Psychiatry, Sociology and Healthcare, Education, www.sgemsocial.org, SGEM2014 Conference Proceedings, ISBN 978-619-7105-24-7/ ISSN 2367-5659, September 1-9, 2014, Vol. 3, pp. 383-390

IMPACT OF TEACHER'S INCOME ON STUDENT'S EDUCATIONAL ACHIEVEMENTS

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ABSTRACT

The aim of this paper is to provide an objective overview of the impact of teacher salaries on the educational achievements of students. It is often debated about teacher salaries and improvement or jeopardizing their standard, but educational consequences that may ensue as a result of these intentions are rarely addressed. Teacher's role in student's achievement outcomes is unquestionable. There are many factors that have an impact on student achievement, but this paper will analyze only the impact of teacher's income on student's achievement. A hypothesis for further study has been set by collecting and analyzing pedagogical documentation on teacher salaries and student's educational achievements. Qualitative approach to statistical results of PISA study published in 2013 analyzes following categories: reading, mathematics and science, student's sense of belonging to school and student's personal opinion on does school prepare them for adult life. The study of these elements in selected countries gives us a concrete insight into their interrelationship. The comparative analysis compared the educational achievements of students with the level of teacher's salaries in the following countries: Canada, Denmark, France, Germany, Israel, Japan, Norway, South Korea, Spain and Switzerland. The results of the research show that the level of teacher's income has an impact on student's achievements. The paper confirms the facts that the teaching profession is more popular as incomes increase and therefore attracts more motivated and skilled individuals.

Keywords: income, student, achievement, teacher, success.

INTRODUCTION

There is no aspect of human life that was left out of the influence of the financial crisis. Everybody felt it in a certain way except the persons who even managed to earn extra money during the crisis. Unfortunately, these privileged persons often belong to the group of politicians or very wealthy people who directly or indirectly have influence on the economy and in a certain way on educational policies in their countries. Their influence manifests on all countries around them or countries they cooperate with and are connected with stronger or weaker relations. Education is often highlighted as a powerful model for overcoming the crisis, but on the other hand investments in education are reducing. National budget deficits are dealt with austerity measures, but are still getting bigger. International Monetary Fund, European Central Bank and European Commission insist on fiscal austerity and tight monetary policies to save the economy. However, many individuals like economist and Nobel laureate Joseph Stiglitz

point out that measures of financial austerity will not help the economy and stimulate investment [3].

This social chaos also affects teachers. Their wages are constantly decreasing and those who are responsible for their wages have the opinion they should be even lower. They do not understand that reduction of wages significantly affects the educational achievements of students. Croatian education meets all aforementioned problems. In just last three years teacher wages have repeatedly declined. In 2012 the Croatian Government adopted the Decision [11] where teachers lost 3, 5, 7 and 9% of their wages depending on the years of service. One year after, the Government published a Decree [12] that reduced wages for 3% and the following year the same Decree was changed and teachers lost additional 4, 8, and 10% of their wages depending on the years of service [13]. These reductions applied only to the basic wages. Various additions to wages, transportation and annual fees were also reduced or abolished. Unfortunately, except for payment cuts, resources needed for running schools are reduced so schools can rarely have the luxury to afford basic didactic tools and toiletries. Despite these difficulties, teachers are again being targeted by the part of the public that claims that their wages are still too high. Teachers usually end social dialog with the Government by going on a strike. The strike is considered as totally unnecessary by the part of the public because they do not want to understand the fact that the teachers are not on strike only because of the pay cuts, but also because of the poor conditions in which they work in schools. Agreements between Government and the teacher union always end with the Government proposing cuts that union does not accept. But in the second round of negotiations Government proposes smaller pay cuts that are eventually accepted by the union. Reducing teacher wages and rights little by little is becoming a rule and if everything that was taken away from the teachers in last few years adds up, it gives us an imposing figure.

Nobody wondered what are the effects of lowering teacher's wages. Standard of teachers is at risk, but what about the quality of education and students? According to the results of PISA studies [8] from 2012, Croatian students are significantly below average compared to students from 65 countries that were involved in the research. Although the reasons for this may be different, in this paper we are interested in the connection between teacher's material revenue and student's achievements, which is in this case measured by the results of the PISA survey. Comparing the results of PISA studies with the teacher's income will reveal their interconnection and could be used in the future as an argument in the fight to preserve teacher's salaries and the standard of education in the countries that do not consider it as a carrier of social development.

MATERIALS AND METHODS

This paper studies the correlation between the income of elementary school teachers and educational achievements of fifteen year old students. The study is based on the statistical results and indicators of the PISA study conducted in 2012. Researched categories include competencies in reading, mathematics and science, school satisfaction or sense of belonging to school and student's opinion on how the school has prepared them for life and the world of adults. These categories have been analyzed and interpreted using a qualitative research approach.

The research analyzes abovementioned categories in the following randomly selected countries of the world: Canada, Denmark, France, Germany, Israel, Japan, Norway, South Korea, Spain and Switzerland.

Aim of the research is to show the connection between the elementary school teacher's income and educational achievements of fifteen year old students in selected countries. Studying the available literature will reveal the descriptive indicators followed by analysis and interpretation of the results. A comparative analysis will show the impact of teacher's income on educational achievements of students.

RESULTS

In 1997, Organization for Economic Cooperation and Development (OECD) launched a Program for International Student Assessment - PISA, which proved itself as a valuable tool in obtaining internationally comparable data on the knowledge and skills of students. Given that we needed the data that examine the same skills and knowledge in all selected countries in the research, we decided to use the results of the PISA study conducted in 2012. Apart from PISA results, OECD data about teacher's salaries will be used and correlated with the educational achievements of students.

Average salary of employees in selected countries [10] is displayed alongside elementary school teacher's salaries [9]. The comparison will show the position of teacher's salaries in relation to the average salaries of their fellow citizens. Maximum salary that elementary school teachers can accomplish is used in this analysis.

Table 1: Primary school teacher's income and average salaries in researched countries

Country	Annual teacher's income (\$)	Average salary (\$)
Canada	56,349	58,375
Denmark	50,332	67,826
France	48,916	45,567
Germany	63,286	45,827
Israel	38,377	31,933
Japan	57,621	50,160
Norway	42,055	80,044
South Korea	76,528	28,725
Spain	50,770	34,600
Switzerland	73,585	89,829

According to the available data published in 2013, teachers in Israel and Norway have the lowest salaries, followed by the teachers working in France, and ultimately teachers in Denmark and Spain. Their salaries are below 50,000 \$ per year, with the exception of Denmark and Spain where teachers are paid slightly above 50,000 \$. Research has shown that highest salaries have teachers in South Korea and Switzerland while the salary is slightly lower in Germany. Salaries of teachers in Japan and Canada are in the middle, between the lowest and the highest salaries.

Compared to the average salaries in their countries, teachers have below average salaries in Norway, Denmark and Switzerland while they are slightly lower than average in Canada.

Results of student's achievement in reading, mathematics and science competencies [8] in selected countries in relation to the average results of the PISA test will show how successful students were. Results can be below average, average or above average.

Table 2: Reading, mathematics and science competencies in selected countries

Country	Reading	Science	Mathematics
OECD average	496	501	494
Canada	523	525	518
Denmark	496	498	500
France	505	499	495
Germany	508	524	514
Israel	486	470	466
Japan	538	547	536
Norway	504	495	489
South Korea	536	538	554
Spain	488	496	484
Switzerland	509	515	531

Students in Spain and Israel have results below average in all three observed categories, although students in Spain have slightly lower results than OECD average while students in Israel have significantly lower scores. Norwegian students have below average results in two categories (science and mathematics). Students in Denmark and France have poor results in science while in the other two categories have approximately average results.

Students in other observed countries have achieved above average results in all three categories. Students in Canada, Germany and Switzerland have achieved excellent results that range from 12 up to 37 points above the average. Students in Japan and South Korea have by far the best results that range from 37 to 60 points above average in certain categories. Alongside achievements in observed three categories, students in Japan and South Korea differ in having far better results in all three categories, while students of Canada, Germany and Switzerland had smaller number of points in at least one category.

Researched countries can be classified into two groups based on the results. The first group consists of students who achieved at least one below average result in a certain category (Israel, Spain, Norway, Denmark and France). The second group includes students who had above average results in all three categories (Canada, Germany, Japan, South Korea and Switzerland).

Comparing the results of the survey according to the aim set in the methodological part of this work we have come to the realization that primary school teachers in Israel have the lowest salaries. Results of Israeli students are the worst among the researched countries which may indicate the justification for the claim that

the lowest paid teachers were involved in the education and implementation of the curriculum of those students who have the lowest scores.

Norway follows the worst categorized students and teacher's salaries. It is a country with low salaries and results of the students that are below average in two of three selected categories.

Salaries of teachers in France are slightly higher than the average salaries in this country. Analysis shows that students in France have below average results in the category of science competencies.

Teachers in Denmark have approximately 50,000 \$ of annual income. Students in Denmark have below average results in science competencies.

According to the amount of teacher's revenue the next country is Spain which closes the circle of the lowest paid teachers, but also the weakest results of the students. Spain is an exception in relation to income and results of students. In Israel, Norway, Denmark and France, the amount of teacher revenue is followed by the success of the students so lower salaries mean lower student achievements. Increase of the teacher's income in certain countries was followed by the increase of student's educational achievements. Spanish elementary school teachers have the best salaries in relation to the countries with lower student's educational achievements and earn a lot more than the other employees in the country, but the results of Spanish students are among the weakest because they have below average scores in all three categories.

Canada and Japan have approximately the same teacher's income of 57,000 \$. Results of students in these countries are above average in all three categories although students in Japan are much more successful and with students of South Korea have achieved the best results in the PISA testing.

Teachers in Germany have higher incomes than teachers in Canada and Japan. Students in Germany have achieved above average results but their educational achievements are still lower from the results of their peers in Canada and Japan.

Incomes of teachers in Switzerland are among the highest in researched countries and their students have surpassed German and Canadian students in only one category.

Country with the best paid teachers is South Korea. Students of South Korea are located at the top of the achieved results alongside with students from Japan. Students of Japan and South Korea are approximately equal in the category of reading. Category of science belongs to Japanese students while Koreans are far better in mathematical category.

In countries where salaries are above 50,000 \$ the biggest surprise are teachers of Canada and Japan whose students have extraordinary results despite "lower" teacher salaries. Canadian students have better results in two categories than students in Germany and Switzerland where teachers are better paid than those in Canada.

Although the educational achievements of students partially does not correlate with the amount of teacher's revenue, based on the obtained results it is visible that students have significantly better educational achievements and exam results in countries where salaries are significantly above 50,000 \$ (except in Denmark and Spain where salaries are only slightly above 50,000 \$). This analysis can serve as an indicator of influence of teacher's income on educational achievements of students. We are aware of many other factors that affect success and educational achievements of students, but this analysis points out the close relationship and the impact of teacher's salaries on student success. With this paper we intend to draw attention to the problem which

indicates that teacher's income is also an important, unavoidable and non-negligible factor that reflects on the performance of the educational system and its employees.

The analysis showed there are not many connections between the teacher's income and the opinion of students about sense of belonging to school and has school prepared them for the life of adults. In Israel, where teachers salaries are the lowest, 90.6% of students stated that they feel comfortable in school and are satisfied with the school climate, while in South Korea where teacher salaries are the highest this percentage is around 76%. Students in France are least satisfied with the school climate (47.4%) while most satisfied students are in Spain (93.1%).

Percentage of students who disagree with the statement that school has done little to prepare them for the life of the adults is between 65 and 80% in all countries. Exceptions are the students who attend school in Germany where approximately 62% of them disagreed with the above mentioned statement.

An important factor in achieving successful educational outcomes is total government investment in education. More investment in education and its needs should bring better working conditions, higher teacher salaries, satisfaction with the working environment and thus could improve educational achievements of students. According to OECD data [7] expenditure for education in selected analyzed countries is following:

Table 3: Percentage of GDP allocated for education

Country	Share of GDP (%)
Canada	4.8
Denmark	7.5
France	5.8
Germany	4.5
Israel	5.8
Japan	3.6
Norway	6.1
South Korea	4.9
Spain	4.9
Switzerland	5.5

The data from Table 3 indicates that higher state funding in education does not necessarily mean better education and educational achievements or better salaries for teachers. Denmark invests most in education of all analyzed countries (7.5%), but students in Denmark achieve approximately average scores and teacher's salaries are amongst the lowest of the observed. Japan allocated 3.6% of GDP for education. Teachers have an average salary compared to other researched countries, but the results of their students are among the best. Israel invests in education more than Japan and teacher salaries in Israel are much lower and the results of their students are the weakest. After these disproportionate data and their correlations we come to the conclusion that the funds invested in education in some countries are not rationally distributed and spent wisely. Distribution of funds without planned and defined educational strategy becomes "pumping" the money into activities that are unlikely to improve desired results. In this way, education will not achieve its fundamental role in the society and will not improve or raise economic prosperity of the country.

DISCUSSION

Correlation of elementary school teacher's income and educational achievements of students is a topic in many diverse researches. Research [1] has proven that increase in teacher's salaries by 10% results in improving student's achievements by 5–10%. That fact is proven by another research [2] where teachers were given raise in the beginning of the year and students scored better results throughout the year. Apart from having a positive impact on the educational achievements of students, increase of teacher's salaries affects the reduction of the number of students who leave school prematurely by 3–6 % [5].

Higher teacher incomes have an impact on attracting more competent individuals in the profession. The quality of teacher staff improves with larger number of applicants who enter teacher colleges. More skilled and successful individuals will be selected for colleges who will improve the educational achievements of students with their efforts and personal qualities [1]. Status of the teaching profession, which is already questionable in many countries, will improve with better educational standards of teachers. Sudden increase of teacher salaries will not result in simultaneous improvement of student's results, but positive changes would follow after a longer time during which teachers would be able to devote to their professional and personal development.

Teachers could be motivated by performance based pay where their salary would depend on the success of the students, teacher's professional development, etc. Arguments for performance based pay are fairer rewards for teachers who are doing their job well unlike paying teachers equally without consideration of their contribution to the achievements of students [6]. Counter argument to this method of payment is that elements and criteria which would be used to evaluate the success of teachers and their contribution to the overall achievements of students cannot be objectively determined. Research from India confirmed that private schools with performance based pay achieve better results than state schools [4]. The greatest contribution to this paper is a survey conducted using the results of PISA tests. The author of the survey states that educational achievements of students are better in those countries where the payment is based on teacher's performance rather than in countries where this form of payment is not present [14]. Students in these schools achieve greater success in mathematics (24.8%), reading (24.3%) and science (15.4%). Performance based pay has numerous variants and some of the possible are rewarding teachers as individuals, groups of teachers or the whole school. Which variant will be used depends on specific educational system and the strategy of the country that applies it.

More attention should be given to teacher's income as this and many other studies proved that it has an impact on the results of students. Education needs more investment if we want to achieve social, economic and civilizational progress. Alongside funds also goes a well defined strategy that will direct money to those places where it is most needed, and in some countries that is teacher's income. If we want to profit, we must invest, and there is no better and safer place for investment than education. The teaching profession must regain its respect in all countries and one way to achieve that is by increasing salaries to attract capable individuals to work in schools. Alongside financial rights, it is important that the teachers receive full support and deserved respect of the public because their mission is to guide and raise children who remain as a pledge for a better future.

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