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THE MAIN PERSPECTIVES OF THE QUALITY OF LIFE OF STUDENTS IN THE SECONDARY CYCLE: AN OVERVIEW OF OPPORTUNITIES, CHALLENGES AND ELEMENTS OF GREATEST IMPACT

Abstract: *The level of Quality of Life (QoL) influences and reflects some elements of student health and impacts on academic performance. The objectives of this study were to analyze content to identify the main research opportunities and challenges on the quality of life of students aged 15 to 16 years in public and private schools, and to verify if there is a correlation between student QoL, social, economic, and educational indicators. The methods adopted in this research were bibliographic research, content analysis and multivariate statistical analysis. The academic contribution of this work was the articulation of a theory on student quality of life, and the applied contribution was subsidy for the government and educational institutions to elaborate strategies, considering the correlations between the economic, social and educational variables.*

Keywords: *Quality of Life; Student; Student Quality of Life; School Performance.*

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1. Introduction

The constant technological growth of society contrasts with the reduction of young people enrolled in schools, especially where educational systems seek to keep up with population growth (Santos, Mandado, Silva, & Doiro, 2019). Even when more children are enrolled, many do not acquire the basic skills and competencies to work in society (United Nations, 2020). The impacts of Quality of Life (QoL) became important to health when the World Health Organization (WHO) established the elements for the definition of health, in 1946 (Paro et al., 2010). The previous definition of health was

“a healthy mind in a healthy body,” and has become “a state of total physical, mental and social well-being.” That is, health now included the mental and social dimensions (Larson, 1996).

The WHO did not stipulate any basic level of QoL, considering sex, age, culture, and occupations. Therefore, QoL is subjective and temporary for individuals, since their ideas, desires and life are constantly changing, making the act of measuring and comparing QoL complex (Paro et al., 2010). Academic failure is among the educational reasons that are negatively associated with quality of life and satisfaction (Barraza & Moreira, 2013). However, the quality system

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certification can help to minimize some problems (Santos et al., 2019a; Sá et al., 2019; Santos, Murmura & Bravi, 2019; Martins, Lopes & Santos 2019; Bravi Murmura & Santos, 2019; Araújo et al., 2019). Students who have gone through stressful academic or psychosocial situations tend to have a drop in quality of life. The eminent triggers of stress are school tests/exams. Even though tests are relevant to academic training, they are not favorable due to the stress that is generated for students (Hettiarachchi, Lakmal Fonseka, Gunasekara, Jayasinghe, & Maduranga, 2014).

QoL benefits from the practice of yoga, which also affects self-regulation, self-esteem, physical fitness, with improved academic performance and reduced stress (Bazzano, Anderson, Hylton, & Gustat, 2018). A moderate physical activity contributes to the development of a healthy lifestyle, resulting in improved quality of life (Panachev, 2013). Children who practice sports and exercise have superior academic performance, absorb the contents seen in the classroom better, do better in tests, among other effects. When present, safety elements, such as support nets or versatility in chores, help to eliminate risks and improve well-being (Gillett-Swan & Grant-Smith, 2018).

Student environments are advised to develop policies to improve interpersonal relationships and create recreational activities, such as health promotion and changes in student curriculum (Barraza & Moreira, 2013).

There are indices that can be used to illustrate the relationship between student quality of life and other variables. Among them, there is the GINI Coefficient (GC), which was originally designed to portray the difference in income distribution of the population in a given location (Yang, Zhang, Xia, & Sun, 2020). The index varies between 0 (zero) and 1 (one), where 0 represents a nation without inequality and 1 represents maximum inequality (Acurcio et al., 2020).

The GC is akin to a QoL assessment, since quality of life encompasses the subject's perception regarding their insertion in the environment (Sullivan & Sagala, 2020). Another tool is the research conducted by PISA, or Programme for International Student Assessment (Rohatgi & Scherer, 2020).

A search carried out in the Scopus database, as described in the Research Method section, identified a study that analyzed third-year medical students, who are attending the surgery course. The results demonstrate that the number of hours of sleep is correlated with cases of depression (McLeod, Evangelista, Evans, & Meterissian, 2009). A second study assessed the quality of life of dental students at a college in the United States of America (USA) (Andre, Pierre, & McAndrew, 2017).

Considering these issues, the question that will guide this research is: What are the main opportunities, challenges and variables presented in the scientific literature for student quality of life, and what is the level of correlation with social, economic, and educational indicators? To answer this question, two objectives are proposed: (1) to carry out a content analysis to identify the main opportunities and challenges for research on the quality of life of students aged 15 to 16 years old, from public and private schools; (2) to check if there is a correlation between student QoL and social, economic, and educational indicators.

The structure of this work includes, in addition to this introduction, the theoretical framework, method, results and discussion, conclusion, and references.

2. Research Method

This research can be classified as applied and exploratory, with a combined approach (qualitative and quantitative). The technical procedures adopted, respectively, were bibliographic research, content analysis and multivariate statistical analyses (Kothari &

Garg, 2019). The variables chosen for this research totaled 19 parameters identified in the World State of Quality (WSQ, 2018) and PISA (2018) reports.

The WSQ is a project that aims to assess, analyze and classify countries according to their multidimensional quality levels. The variables from the WSQ considered here were, as shown in Appendix B: (a) population, (b) healthy life expectancy, (c) neonatal mortality rate (in %), (d) education index, (e) Gini index (%), (f) GDP (millions of USD), and (g) per capita income.

The variables chosen from PISA, as shown in Appendix C, were: (h, i, j) average grade on PISA 2018 (in Reading, Mathematics, and Science); (l, m) top-performance and low-achieving students (participation of the top-performance in at least one subject - level 5 or 6; and percentage of low-achieving students in the three levels - below level 2); (n, o) difference between upper and lower class students in Reading; percentage of students in schools whose Principal reported a lack of educational materials (advantages and disadvantages - %); (p) percentage of students who reported being victims of any type of bullying at least a few times a month; (q) percentage of students who are satisfied with life; (r) percentage of students who reported sometimes or always feeling happy; (s) difference between students who felt bad and those who did not feel bad, and who reported sometimes or always feeling sad, after considering the characteristics of the students and the school.

To achieve the objectives of this research, it was divided into seven stages: (1) Definition of the research subject, the search terms, objectives, and methods; (2) Content analysis and elaboration of the theoretical framework; (3) Identification of opportunities and challenges for student quality of life; (4) Correlation matrix; (5) Principal component analysis; (6) Discussion; (7) Conclusion.

Firstly (1), a search was performed in the Scopus database on June 26, 2019. The

following keywords were used in the search: "Student Quality of Life", "Students Quality of Life", "Schoolchild Quality of Life", "Schoolboy Quality of Life", "Bob Quality of Life," and "Pupil Quality of Life." From the search, only articles published in English were selected, as it is the language most commonly used in science (Nunhes & Oliveira, 2018; Barbosa, Oliveira & Santos, 2018). A total of 73 articles were found. Among these, the 30 articles with the highest number of citations were selected.

Afterwards, the theoretical framework (2) was developed, and the content analysis was carried out based on the 30 most cited articles, which allowed the identification of the main opportunities and challenges for student quality of life (3). After being identified, they were systematized in clusters (Reis, Costa et al., 2020).

Subsequently, a correlation matrix (4) was created, in order to understand which are the main social, economic and educational variables that best correlate with student quality of life variables. For the correlation matrix, the Gretl statistics and econometrics software was used. In a correlation matrix, data close to zero indicate a low linear relationship between variables, while results close to 1 or -1 show a very significant linear relationship between variables. A correlation around 0.5, positive or negative, indicates that there is a linear correlation between the measured variables (Razdolsky, 2014; Reis, Silva et al., 2020).

As the last procedure of applied research, (5) principal component analysis (PCA) was used, also performed in the Gretl software, in which, from a data matrix, the dominant patterns in the matrix are extracted in terms of a set of complementary data, both in terms of punctuation and in loading graphs. With this procedure, it was possible to analyze which were the most important variables grouping or distancing countries in terms of social, economic, educational and student quality of life variables (Wold, Esbensen, & Geladi, 1987).

For the correlation matrix and the principal component analysis, data involving income, student performance at school, quality of life and health were selected. The gathering of this information resulted in 19 variables. The criterion for a country to be on the list of study was to have presented data for all 19 variables in the WSQ (2018) and PISA (2018) reports. A total of 53 countries that were part of both reports presented all information for the variables. The data for the principal component analysis (from “a” to “s”) were chosen due to their direct influence on student quality of life.

The “income” variable, which includes information about the Gini Index, GDP (Gross Domestic Product), and Income Per Capita, was important for the study, given that personal factors, such as financial stress, directly affect the learning experience and consequently, academic performance (Gillett-Swan & Grant-Smith, 2018).

It should be noted that to avoid that the statistical relationships become negative, (e) Index Gini, (c) Mortality Rate, (m) Top-performing and low-achieving students-Share of low achievers in all three subjects (below Level 2), (o) Percentage of students in schools whose Principal reported a lack of educational materials, and (p) Students who

have been bullied, were considered in the reverse order from how the indicators were presented, as shown in Appendix D. For example, if there was a Gini Index indicator of 0.3, it was considered as 0.7, because in this case, the higher the indicator, the worse the social issue is. And if there is a lower number, it is a more favorable indicator for the country. The same is true for the other two cases.

After analyzing the opportunities and challenges for student quality of life, and analyzing the correlation matrix and principal components, the Discussion (6) and Conclusion of the research (7) were carried out.

3. Results and Discussion

This section presents the results of the analysis of opportunities and challenges of the correlation matrix with variables that impact student quality of life, and the principal component analysis. Table 1 presents the main opportunities identified for Student QoL in the 30 most relevant articles found on the topic, which are: Wellness and physical health, Mental and psychological health, Good practices and public policies, and Applied Studies.

Table 1. Research Opportunities

| Research Trends | Authors |
|------------------------------------|---|
| Wellness and physical health | Chen et al.(2015); Krisdapong, Prasertsom, Rattananangsim, & Sheiham(2012); McLeod, Evangelista, Evans, & Meterissian(2009). |
| Mental and psychological health | Bonifas & Napoli(2014); M. A. Henning, Hawken, Krägeloh, Zhao, & Doherty(2011); M. Henning, Krägeloh, Hawken, Zhao, & Doherty(2010); Hettiarachchi et al.(2014); Mikkonen, Kyngäs, & Kääriäinen(2015); Monte-Santo et al. (2018); Odacı et al.(2009). |
| Good practices and public policies | Arslan & Akkas(2014); Barraza & Moreira(2013); Bazzano et al.(2018); Bolghan-Abadi, Ghofrani, & Abde-Khodaei(2014); Garzón Umerenkova & Gil Flores(2017); Gillett-Swan & Grant-Smith(2018); Hopkins, Dougherty, & Brown(2017); Koydemir & Sun-Selişik(2016); Lambert & Dryer(2018); Messina et al.(2016); Neveu et al.(2012); Panachev(2013); Paro et al.(2010); Pozza et al.(2017); Tempiski et al.(2012). |
| Applied Studies | Abadio, da Silva, Alves, & Iossi(2016); Abdollahpour, Salimi, & Shushtari(2015); Recabarren, Gaillard, Guillod, & Martin-Soelch(2019); Rodríguez-Sanz et al. (2018); Williams et al.(2014). |

The expression “health-related quality of life” (HQRL) symbolizes the impacts of health status, medical treatment and political health for the feeling of well-being(Paro et al., 2010). Functional barriers impact individuals' quality of life, and are due to physical, cognitive, sensory, and emotional problems (Odacı et al., 2009). Even if people are young, if they do not take care of themselves, they may cause foot disorders, such as scoliosis, which results in postural complications, slow walking, imbalance of plantar pressure, difficulties in activities of daily living, increased risk of falling, and onset of neurological diseases that compromise academic performance, QoL, and other factors(Rodríguez-Sanz et al., 2018).

Quality of life has a general definition, and is directly influenced by physical health, psychological status, among other dimensions of life, comprising, simultaneously, the perception of the level of well-being (Chen et al., 2015; Odacı et al., 2009). Research has revealed that the QoL of some students suffers negative interference from elements such as emotional fatigue, emotional exhaustion, and stress(Bonifas & Napoli, 2014). Such mental distress is linked to poor academic performance and impaired quality of life. The relationship between depression and QoL is also notorious(Paro et al., 2010). An example of this correlation are medical students, who go through high levels of stress, worry, sleep deprivation, heavy

workload, among other situations, to obtain a good performance, resulting in problems related to anxiety and depression(M. Henning et al., 2010). Efficient health education curricula emphasize the teaching of knowledge about health, sculpting individual principles and concepts that constitute guidelines for adhering, carrying out and preserving healthy actions(Brener et al., 2017). The promotion of understandable platforms that aim to enhance awareness and zeal for students is significant, since this implementation would have positive impacts on QoL(M. Henning et al., 2010).

Broader samples, including subjects from different countries, in addition to other factors, are more advantageous to reinforce the importance of topics related to QoL(Rodríguez-Sanz et al., 2018). These data are significant for professionals and institutions to consider adopting programs and actions aimed at filling practical research gaps(Koydemir & Sun-Selışık, 2016).Table 2 presents the main challenges identified for Student Quality of Life, based on the 30 most cited articles on the subject, which are: Developing strategies that can maintain the quality of life;Improving the structures of educational institutions, Promoting quality of life as an ideal; andInhibiting prejudice.QoL is associated with “happiness” by some authors.So, if happiness is the link between individuals' ambitions and their achievements, QoL is a portrait of happiness (Messina et al., 2016).

Table 2. Research Challenges

| Challenges | Authors |
|---|---|
| Developing strategies that can maintain the quality of life | Garzón Umerenkova & Gil Flores(2017); M. A. Henning et al.(2011); Koydemir & Sun-Selışık(2016); Neveu et al.(2012). |
| Improving the structures of educational institutions | Arslan & Akkas(2014); Barraza & Moreira(2013); M. Henning et al.(2010); Panachev(2013); Tempski et al.(2012). |
| Promoting quality of life as an ideal | Bonifas & Napoli(2014); Gillett-Swan & Grant-Smith(2018); McLeod et al.(2009); Paro et al.(2010). |
| Inhibiting prejudice | Abadio et al.(2016); Lambert & Dryer(2018); Odacı et al.(2009). |

The high number of compulsory hours of academic courses can even deteriorate the relationship between students and their families, cooperating for emotional distress, which reduces the quality of life for students. Adaptation and mechanisms developed by students themselves are harmful and contribute to lasting stress. Guiding students to respond instead of acting according to the central problems in their personal lives, through agents of mindfulness that provide management and efficient mechanisms for coping with stress, increases student quality of life (Bonifas & Napoli, 2014). Educational institutions develop devices in academic environments that aim to develop students' social relationships, in addition to dynamic and playful exercises for the promotion of health and student curriculum (Barraza & Moreira, 2013). When accessible, protective elements, such as support groups or assistance in student's paid work obligations, may be useful to minimize or cancel threats to well-being, consequently improving student quality of life (Gillett-Swan & Grant-Smith, 2018). Authors report that cooperative teaching methods tend to generate positive interdependence, the goal of which is that the desire to help others is reciprocal across the environment. In contrast, environments saturated with competitiveness lead to negative interdependence and even a feeling of immobility. Studies show that a high number of students have difficulties accessing some structures, such as transportation, parking, computers and the library (M. Henning et al., 2010). Therefore, the development and improvement of educational structures are essential, as they, accompanied by human elements, generate positive results for student quality of life when they are accessible and efficient. (Arslan & Akkas, 2014). The concept of QoL is also closely related to the individual abilities, as well as with the freedom to choose between what is desired in order to have quality of life. QoL is dynamic, full of search and changes, and this dynamism is the fundamental

essence to improve quality of life (Barraza & Moreira, 2013). It is not possible to control genes and life situations, however, the way we interpret and face obstacles plays an important role in improving QoL (Bonifas & Napoli, 2014). Studies state that the barriers faced by students with disabilities in higher education have a negative influence on their well-being (Lambert & Dryer, 2018). Students report that they face several stressors on a daily basis, such as poor academic performance, exclusion from peers, and other factors. Functional disabilities caused by physical, psychological, emotional, cognitive and sensory disorders have a direct impact on QoL (Bazzano et al., 2018). Table E1 (see Appendix E) presents the correlation matrix. The main criterion considered for the inclusion of a country in the correlation matrix was that it disclosed all 19 variables used, according to the description of the method (from "a" to "s."). Due to these criteria, some countries important to the geopolitical context could not be included, such as Belgium, China, Canada, and India. However, the main intention was achieved, as the participating countries have a diversity of characteristics for the criteria adopted, bringing together poor, rich, very or sparsely populated countries, with good and bad education rates, among other factors. With this diversity of indicators, the most significant correlations between the variables could be verified, highlighting the relevant and irrelevant indices. The data set structure of the correlation matrix was in "cross-sectional data," with observations from 1 to 19. The Correlation Coefficient, using observations 1-53, and 5% critical value (two-tailed), was 0.2706, considering the sample of 53 countries used in the research. Notably, neonatal mortality rates, higher life expectancy and income per capita have a high percentage of correlation with good performance in Reading, Language and Science exams. In countries with the longest life expectancy and the lowest mortality rates, there is a significant correlation with

lower rates of bullying in schools (0.5917 and 0.6869). Regarding countries that have a more significant Gini Index, there is a stronger correlation with better performance in Mathematics (0.6207). Countries with the lowest-achieving students correlate strongly with neonatal mortality rates (0.8693). In countries where the distribution of materials is broader to the population, there is a low correlation with income distribution (0.4312). In countries where the distribution of materials is restricted to few, there is a correlation with infant mortality and income per capita (0.5882 and 0.6453). Analyzing the education index of the WQO report (2018) compared to the PISA report (2018), there is a considerable correlation between test performance (Languages, Mathematics

and Science) (0.8047, 0.8189 and 0.7841), and countries with the 5 or 6 students with the top academic performance (0.7987), countries with few low-achieving students (0.7861), countries where there is little concentrated distribution of materials (0.6305), and in relation to the difference between students who never felt bad for having academic difficulties and students who have had this feeling (0.6841).

As shown in Figure 1, the information was treated similarly to the construction of the Correlation Matrix. The Correlation Coefficient used observations 1-19. The data projection was on a graph with X and Y axes, and the accumulated 2nd Component totaled 60.61% of the explanation of all variables.

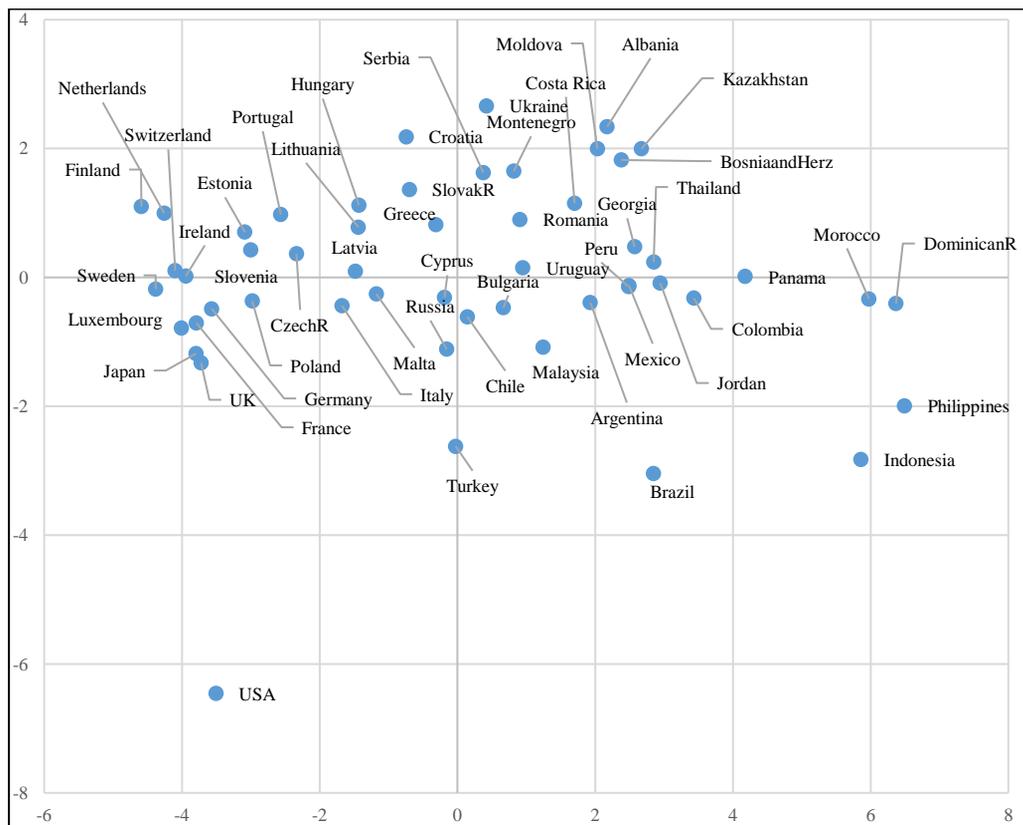


Figure 1. Principal Component Analysis from WQO and PISA

To the right of the graph are the countries with the lowest levels of income per capita and with the worst levels of education among the countries that were analyzed. The countries on the left have the highest income per capita, longest life expectancy, lowest neonatal mortality and the best education indices. The countries at the top of the chart are those that stand out in the Gini Index and have the best distribution of materials for students. The countries at the bottom are those that stand out for having the largest populations and for having the largest Gross Domestic Product. With the PCA, it was possible to verify the geographical layout of countries that have similar financial status (Japan and the United Kingdom), as well as geographical proximity, as in the case of Indonesia and the Philippines, Sweden and Finland, Italy and Malta, Serbia and Montenegro, among others.

It was possible to note that education indicators are strongly correlated with health and the economy (Rodríguez-Sanz et al., 2018; Rohatgi & Scherer, 2020). It was also verified that there is a considerable correlation between countries with less bullying and positive results in the PISA exams, in the three assessment dimensions (Bazzano et al., 2018).

Personal satisfaction and feeling of “happiness” had no significant correlation in these studies, as had been proposed by Arslan & Akkas (2014). But it is worth mentioning that in the systematization of research opportunities, it was identified that the Mental and Physical Health cluster mentions the importance of well-being and satisfaction of students.

From the number of studies identified in the databases, this is a very important topic that should be more researched and debated among scholars, school management, public authorities, students, the school community, among others, becoming more present in educational institutions and public bodies (Koydemir & Sun-Selşik, 2016). The goal of increasing this dialogue is for students to

be able to complete their journey more satisfactorily in their school life.

4. Conclusion

The main objectives of this study, to conduct a content analysis to identify the main opportunities and challenges for research on student quality of life, and to verify if there is a correlation between student QoL indicators and social, economic, and educational indicators, have been successfully achieved.

The main academic contribution of this work was the articulation of a more refined theory about student quality of life, since the structure presented in this article is unprecedented and can facilitate the study of the subject by other researchers, contributing to the literature. It was also possible to demonstrate social equity as an important variable for student development.

The applied contribution of this study was to gather a set of relevant information about the student quality of life, which can be used as one of the bases for school guidelines by pedagogical coordinators, educational advisors, principals and all school management, so that students can feel more fulfilled at school and obtain good grades in internal and external tests, of municipal, national or even international scope.

The main novelty presented by this research was to provide subsidies for the elaboration of strategies by public authorities and educational institutions, which can reconcile the premises of quality of life with academic performance.

The main limitation of this study was the absence of information for student quality of life, such as emotional fatigue, exhaustion, sleep deprivation and poor nutrition, in the correlation matrix and in the principal component analysis, as they are parameters of great relevance. Future studies could deepen the analysis of the impact of satisfaction with life and feelings of happiness on school performance, because

from the results obtained in this research, no significant correlation could be obtained.

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Appendix A

Table A1.Thirty most cited articles

| Authors | Title | Source (ISSN) | Scientific Gaps | Challenges |
|--|---|--|---|--|
| Helena B. M. S. Paro <i>et al.</i> (2010) | Health-related quality of life of medical students | Medical Education (0308-0110) | Developing strategies and actions to ensure the quality of life of students in schools. | Elaboration of tactics that develop the promotion of quality of life. |
| Patricia Tempski <i>et al.</i> (2012) | What do medical students think about their quality of life? A qualitative study | BMC Medical Education (1472-6920) | Promoting better learning environments and psychological support for students. | Stimulation of a healthy student environment |
| Sudaduang Krisdapong <i>et al.</i> (2012) | Relationships between oral diseases and impacts on Thai schoolchildren's quality of life: Evidence from a Thai national oral health survey of 12- and 15- year olds | Community Dentistry and Oral Epidemiology (0301-5661) | Identifying the impact of oral diseases characteristic of childhood and adolescence. | Presence of oral diseases in adolescents |
| Robin P. Bonifas; Maria Napoli (2014) | Mindfully increasing quality of life: a promising curriculum for MSW students | Social Work Education (0261-5479) | Strengthening students' ability to deal with challenges and preparing them for professional practice. | Maintain routines that provide well-being |
| Marcus Henning; Christian Krägeloh (2010) | Quality of life and motivation to learn: a study of medical students | Issues in Educational Research (0313-7155) | Examining the level of student quality of life and their satisfaction with the medical course. | Access to structural teaching elements |
| Marcus A. Henning <i>et al.</i> (2011) | Asian medical students: quality of life and motivation to learn | Asia Pacific Education Review (1598-1037) | Establishing a relationship between students' motivation to learn and their quality of life. | Adaptation of foreigners to new places |
| D. Neveu <i>et al.</i> (2012) | Students perceived stress in academic programs: consequences for its management | Revue d'Epidemiologie et de Sante Publique (0398-7620) | Developing strategies aimed at adapting students to improve their academic performance. | Confrontation strategies and problem solving |
| G. Messina <i>et al.</i> (2016) | Italian medical students quality of life: years 2005-2015 | Annali di Igiene (1120-9135) | Programing conditions that develop student resilience. | Maintain mental and physical health throughout the course |
| Kristina Mikkonen; Helvi Kyngas; Maria Kaariainen (2015) | Nursing students' experiences of the empathy of their teachers: a qualitative study | Advances in Health Sciences Education (1382-4996) | Assessing students' expectations about their professional development. Implementing instructions or systems to develop empathy in teachers. | Intensifying the practice of empathy in professional environments |
| Aya Williams <i>et al.</i> (2014) | Web-based depression screening and psychiatric consultation for college students: a feasibility and acceptability study | International Journal of Telemedicine and Applications (1687-6415) | Identifying the cost-benefit of online psychiatric consultations for students. | Strong presence of depressive symptoms in students and lack of treatment |
| Mustafa Bolghan-Abadi <i>et al.</i> (2014) | Study of the spiritual intelligence role in predicting university students' quality of life | Journal of Religion and Health (0022-4197) | Developing spiritual interventions for students. | Psychological problems arising from the events of the 21st |

| Authors | Title | Source (ISSN) | Scientific Gaps | Challenges |
|--|---|--|--|--|
| Sevda Arslan; Ozlem Altinbas Akkas (2014) | Quality of college life (QCL) of students in Turkey: students' life satisfaction and identification | Social Indicators Research (0303-8300) | Developing strategies to improve student personal satisfaction in schools. | Structural Precarity in Universities |
| Selda Koydemir; Z. Eda Sun-Selişik (2016) | Well-being on campus: testing the effectiveness of an online strengths- based intervention for first year college students | British Journal of Guidance and Counselling (0306-9885) | Developing policies that increase student well-being. | Adaptation of students who are in their first year of college |
| Ying-Ping Chen <i>et al.</i> (2015) | Factors influencing quality of life of obese students in Hangzhou, China | PLoS ONE (1932-6203) | Analyzing the impact of being overweight and obese on student quality of life. | Prevalence of obesity in children and young students |
| Alessandra N. Bazzano <i>et al.</i> (2018) | Effect of mindfulness and yoga on quality of life for elementary school students and teachers: results of a randomized controlled school-based study | Psychology Research and Behavior Management (1179-1578) | Developing strategies in the school environment to develop students' coping skills. | Presence of stress in children |
| A. Umerenkova; Javier Gil Flores (2017) | The role of academic procrastination as factor of university abandonment | Revista Complutense de Educacion (1130-2496) | Incorporating tools for the prevention of academic procrastination. | Evasion in higher education and lack of strategies to alleviate such problem |
| Manjula Hettiarachchi <i>et al.</i> (2014) | How does the quality of life and the underlying biochemical indicators correlate with the performance in academic examinations in a group of medical students of Sri Lanka? | Medical Education Online (1087-2981) | Measuring the degree of anxiety and stress of students about their performance in exams. | Consequences the exams have on students |
| Oliveira W.A. <i>et al.</i> (2016) | Experiences and perceptions of discrimination related to bullying among Brazilian students | Maltrattamento e Abuso all'Infanzia (1591-4267) | Implementing research on bullying in schools. | Existence of bullying in the educational field |
| Valery D. Panacheva (2016) | Innovative problems of improving the quality of life of the welfare state | International Journal of Environmental and Science Education (1306-3065) | Promoting the development of social actions towards a healthy lifestyle. | Low promotion of a healthy lifestyle in the university sphere |
| Carmen Gloria Barraza; Liliana Ortiz Moreira (2013) | Factors related to quality of life and satisfaction in nursing students; Factores relacionados a la calidad de vida y satisfacción en estudiantes de enfermería | Ciencia y Enfermería (0717-2079) | Identifying corrective factors and actions to improve student quality of life. | Implementation of tricks that enhance students' interpersonal relationships |
| Monte-Santo AS <i>et al.</i> (2018) | Prevalence of early loss primary molar and its impact in schoolchildren's quality of life | International Journal of Paediatric Dentistry (0960-7439) | Analyzing the impact of oral health on students' emotional well-being. | Predominance of molar loss in children |
| Gregory R. Hopkins <i>et al.</i> (2017) | The Ohio contrast cards: visual performance in a pediatric low-vision site | Optometry and Vision Science (1040-5488) | Developing tools that aim to identify health problems in students. | Shortage of instruments that recognize students' health problems |

| Authors | Title | Source (ISSN) | Scientific Gaps | Challenges |
|--|--|--|--|---|
| Ibrahim Abdollahpour; Yahya Salimi; Zahra Jorjoran Shushtari (2015) | Migraine and quality of life in high school students: a population-based study in Boukan, Iran | Journal of Child Neurology (0883-0738) | Identifying students and schools that have low quality of life. | Prevalence of migraine in adolescents, linked to the ills of their own |
| Robin McLeod <i>et al.</i> (2009) | Review of surgical clerkship and student quality of life | Journal of the American College of Surgeons (1072-7515) | Understanding the interference of surgical clerkship in student quality of life. | Consequences the exams have on students |
| Hatice Odaci; Melek Kalkan; Pinar Karasu (2009) | A predictor of quality of life of the mainstreamed elementary students: cognitive errors | International Journal of Special Education (0827-3383) | Examining the impact of student's cognitive errors on their quality of life. | Existence of bullying in the educational field |
| Romina Evelyn Recabarren <i>et al.</i> (2019) | Short-term effects of a multidimensional stress prevention program on quality of life, well-being and psychological resources. A randomized controlled trial | Frontiers in Psychiatry (1664-0640) | Investigating the long-term effects of quality-of-life programs. | Low promotion of a healthy lifestyle in the university sphere |
| Jenna Gillett-Swan; Deanna Grant-Smith (2018) | A framework for managing the impacts of work-integrated learning on student quality of life | International Journal of Work-Integrated Learning (2538-1032) | Offering counseling and support programs to students, including on weekends. | Implementation of tricks that enhance students' interpersonal relationships |
| David C. Lambert; Rachel Dryer (2018) | Quality of life of higher education students with learning disability studying online | International Journal of Disability, Development and Education (1034-912X) | Promoting support programs with multiple facets and study projects for students. | Predominance of molar loss in children |
| Fernanda Seyr Pozza Luciana Bertoldi Nucci; CarlaCristinaEnes (2018) | Identifying overweight and obesity in Brazilian schoolchildren, 2014 | Journal of Public Health Management and Practice (1078-4659) | Developing partnerships between the educational network and health systems. | Shortage of instruments that recognize students' health problems |
| David Rodríguez-Sanz <i>et al.</i> (2018) | Foot health and quality of life among university students: cross-sectional study | Sao Paulo Medical Journal (1516-3180) | Identifying significant factors that influence the quality of life of university students. | Prevalence of migraine in adolescents, linked to the ills of their own |

Appendix B

Table B1. Quality Directory

| Countries | Population | Healthy Life expectancy | Mortality Rate | Education index | Gini index (%) | GDP (Millions US\$) - 2018 | Per capita incomes |
|------------------------|------------|-------------------------|----------------|-----------------|----------------|----------------------------|--------------------|
| Albania | 2873457 | 69.1 | 0.12 | 0.745 | 0.29 | 15,147.02 | 5074,90 |
| Argentina | 44271041 | 68.4 | 0.10 | 0.816 | 0.42 | 519,871.52 | 10043,50 |
| Bosnia and Herzegovina | 3507017 | 67.2 | 0.05 | 0.718 | 0.33 | 20,183.50 | 6037,10 |
| Brazil | 209288278 | 66 | 0.14 | 0.686 | 0.51 | 1,885,482.53 | 11079,70 |
| Bulgaria | 7075991 | 66.4 | 0.07 | 0.805 | 0.37 | 66,200.85 | 8670,60 |
| Chile | 18054726 | 69.7 | 0.07 | 0.800 | 0.48 | 298,258.02 | 15111,70 |
| Colombia | 49065615 | 67.1 | 0.13 | 0.676 | 0.51 | 333,568.93 | 7696,30 |
| Costa Rica | 4905769 | 70.9 | 0.08 | 0.719 | 0.49 | 60,553.90 | 9936,60 |
| Croatia | 4125700 | 69 | 0.04 | 0.791 | 0.31 | 60,991.40 | 15905,60 |
| Cyprus | 1179551 | 73.3 | 0.02 | 0.808 | 0.34 | 24,962.00 | 31506,90 |
| Czech Republic | 10591323 | 69.3 | 0.03 | 0.893 | 0.26 | 244,987.41 | 23324,20 |
| Dominican Republic | 10766998 | 65.2 | 0.26 | 0.643 | 0.45 | 85,555.38 | 7697,70 |
| Estonia | 1315480 | 68.2 | 0.02 | 0.869 | 0.33 | 30,747.16 | 19949,60 |
| Finland | 5511303 | 71.7 | 0.02 | 0.905 | 0.27 | 275,893.68 | 48805,70 |
| France | 67118648 | 73.4 | 0.03 | 0.840 | 0.33 | 2,787,863.96 | 43720,00 |
| Georgia | 3717100 | 64.9 | 0.10 | 0.845 | 0.37 | 17,599.70 | 4734,40 |
| Germany | 82695000 | 71.6 | 0.03 | 0.940 | 0.32 | 3,949,548.83 | 47,490.5 |
| Greece | 10760421 | 72 | 0.03 | 0.838 | 0.36 | 218,138.37 | 23,546.6 |
| Hungary | 9781127 | 66.8 | 0.04 | 0.815 | 0.30 | 157,882.91 | 16,636.2 |
| Indonesia | 263991379 | 61.7 | 0.22 | 0.622 | 0.40 | 1,042,240.31 | 4,284.7 |
| Ireland | 4813608 | 72.1 | 0.03 | 0.918 | 0.32 | 382,674.36 | 76,662.7 |
| Italy | 60551416 | 73.2 | 0.03 | 0.791 | 0.35 | 2,085,764.30 | 35,433.8 |
| Japan | 126785797 | 74.8 | 0.02 | 0.848 | 0.32 | 4,954,806.62 | 48,766.1 |
| Jordan | 9702353 | 66.4 | 0.15 | 0.711 | 0.34 | 42,231.30 | 3,266.7 |
| Kazakhstan | 18037646 | 63.4 | 0.10 | 0.814 | 0.27 | 179,339.99 | 11,165.5 |
| Latvia | 1940740 | 66.2 | 0.04 | 0.866 | 0.34 | 34,313.87 | 16,216.7 |
| Lithuania | 2827721 | 66.1 | 0.04 | 0.879 | 0.37 | 53,455.17 | 17,637.3 |
| Luxembourg | 599449 | 72.6 | 0.02 | 0.792 | 0.31 | 70,919.96 | 110,701.9 |

| Countries | Population | Healthy Life expectancy | Mortality Rate | Edudation index | Gini index (%) | GDP (Millions US\$) - 2018 | Per capita incomes |
|-----------------|------------|-------------------------|----------------|-----------------|----------------|----------------------------|--------------------|
| Malaysia | 31624264 | 66.6 | 0.07 | 0.719 | 0.46 | 358,581.94 | 12,120.1 |
| Malta | 465292 | 72.2 | 0.06 | 0.818 | 0.29 | 14,603.58 | 28,758.5 |
| Mexico | 129163276 | 67.7 | 0.13 | 0.678 | 0.43 | 1,220,699.48 | 10,403.5 |
| Moldova | 3549750 | 63.6 | 0.14 | 0.710 | 0.26 | 11,457.41 | 3,527.4 |
| Montenegro | 622471 | 68.1 | 0.04 | 0.790 | 0.32 | 5,506.77 | 8,245.7 |
| Morocco | 35739580 | 65.3 | 0.23 | 0.529 | 0.41 | 117,921.39 | 3,361.2 |
| Netherlands | 17132854 | 72.1 | 3.2 | 0.906 | 0.29 | 914,104.85 | 55,021.0 |
| Panama | 4098587 | 69.4 | 14.1% | 0.692 | 0.50 | 65,128.20 | 11,755.1 |
| Peru | 32165485 | 67.5 | 11.9% | 0.689 | 0.44 | 222,044.97 | 6,453.6 |
| Philippines | 104918090 | 61.7 | 21.5% | 0.661 | 0.40 | 346,841.90 | 3,190.8 |
| Poland | 37975841 | 68.5 | 0.04 | 0.866 | 0.32 | 587,114.10 | 16,692.8 |
| Portugal | 10293718 | 72 | 0.03 | 0.759 | 0.36 | 241,274.63 | 24,035.8 |
| Romania | 19586539 | 66.6 | 0.08 | 0.762 | 0.28 | 241,626.95 | 11,586.5 |
| Russia | 144495044 | 63.5 | 0.07 | 0.832 | 0.38 | 1,669,583.09 | 11,844.4 |
| Serbia | 7022268 | 67.4 | 0.05 | 0.778 | 0.29 | 50,597.29 | 6,886.0 |
| Slovak Republic | 5439892 | 68.3 | 0.05 | 0.831 | 0.27 | 105,820.50 | 20,574.0 |
| Slovenia | 2066748 | 70.5 | 0.02 | 0.886 | 0.25 | 54,034.36 | 26,684.2 |
| Sweden | 10067744 | 72.4 | 0.02 | 0.904 | 0.29 | 555,455.37 | 57,911.2 |
| Switzerland | 8466017 | 73.5 | 0.04 | 0.897 | 0.33 | 705,140.62 | 79,235.0 |
| Thailand | 69037513 | 66.8 | 0.11 | 0.661 | 0.38 | 506,514.10 | 6,370.0 |
| Turkey | 80745020 | 66 | 0.11 | 0.689 | 0.42 | 771,350.33 | 15,069.0 |
| Ukraine | 44831159 | 64 | 0.08 | 0.794 | 0.25 | 130,901.86 | 3,106.0 |
| United Kingdom | 66022273 | 71.9 | 0.04 | 0.914 | 0.33 | 2,860,667.73 | 43,324.0 |
| United States | 325719178 | 68.5 | 0.06 | 0.903 | 0.42 | 20,580,223.00 | 55,809.0 |
| Uruguay | 3456750 | 68.8 | 0.08 | 0.733 | 0.40 | 59,596.89 | 14,597.3 |

Appendix C

Table C1. PISA

| Countries | Average PISA | | | Best and Low Performance | | Diffence Adva. Disad. in Reading | Stud. Without Material | | Stud. Who Have Been Bullying | Stud. Satisfied With Life | Stud. Sometimes Happy | Diff Felt Bad and From School |
|------------------------|--------------|-------|---------|--------------------------|---------|----------------------------------|------------------------|-----------|------------------------------|---------------------------|-----------------------|-------------------------------|
| | Reading | Math. | Science | Best 5-6 | Below 2 | | Adva.(%) | Disad.(%) | | | | |
| Albania | 405 | 437 | 417 | 2.5 | 29.7 | 61 | 40.7 | 70.7 | 25 | 86 | 95 | 7 |
| Argentina | 402 | 379 | 404 | 1.2 | 41.4 | 102 | 23.0 | 58.2 | 32 | 70 | 92 | 18 |
| Bosnia and Herzegovina | 403 | 406 | 398 | 1.0 | 41.3 | 58 | 47.4 | 66.8 | 25 | 76 | 92 | 13 |
| Brazil | 413 | 384 | 404 | 2.5 | 43.2 | 97 | 6.2 | 52.0 | 29 | 65 | 90 | 12 |
| Bulgaria | 420 | 436 | 424 | 5.5 | 31.9 | 106 | 17.2 | 29.5 | 34 | 65 | 87 | 16 |
| Chile | 452 | 417 | 444 | 3.5 | 23.5 | 87 | 18.0 | 25.6 | 24 | 64 | 94 | 15 |
| Colombia | 412 | 391 | 413 | 1.5 | 39.9 | 86 | 29.0 | 85.2 | 32 | 73 | 93 | 10 |
| Costa Rica | 426 | 402 | 416 | 0.9 | 33.5 | 83 | 51.1 | 56.7 | 24 | 79 | 95 | 18 |
| Croatia | 479 | 464 | 472 | 8.5 | 14.1 | 63 | 52.8 | 56.2 | 18 | 76 | 94 | 16 |
| Cyprus | 424 | 451 | 439 | 5.9 | 25.7 | 69 | 0.0 | 53.4 | 34 | 63 | 88 | 12 |
| Czech Republic | 490 | 499 | 497 | 16.6 | 10.5 | 105 | 25.0 | 37.9 | 30 | 65 | 86 | 12 |
| Dominican Republic | 342 | 325 | 336 | 0.1 | 75.5 | 65 | 19.8 | 69.7 | 44 | 79 | 92 | 12 |
| Estonia | 523 | 523 | 530 | 22.5 | 4.2 | 61 | 19.8 | 39.3 | 25 | 70 | 89 | 19 |
| Finland | 520 | 507 | 522 | 21.0 | 7.0 | 79 | 20.6 | 19.2 | 18 | 78 | 91 | 30 |
| France | 493 | 495 | 493 | 15.9 | 12.5 | 107 | 11.0 | 16.3 | 20 | 70 | 94 | 28 |
| Georgia | 380 | 398 | 383 | 1.2 | 48.7 | 68 | 32.6 | 47.8 | 24 | 74 | 74 | 15 |
| Germany | 498 | 500 | 503 | 19.1 | 12.8 | 113 | 37.5 | 42.9 | 23 | 67 | 92 | 22 |
| Greece | 457 | 451 | 452 | 6.2 | 19.9 | 84 | 46.3 | 62.6 | 27 | 65 | 89 | 12 |
| Hungary | 476 | 481 | 481 | 11.3 | 15.5 | 113 | 45.8 | 52.6 | 23 | 68 | 92 | 21 |
| Indonesia | 371 | 379 | 396 | 0.6 | 51.7 | 52 | 36.9 | 69.4 | 41 | 70 | 62 | 4 |
| Ireland | 518 | 500 | 496 | 15.4 | 7.5 | 75 | 15.3 | 40.9 | 23 | 61 | 96 | 24 |
| Italy | 476 | 487 | 468 | 12.1 | 13.8 | 75 | 15.2 | 40.8 | 24 | 67 | 91 | 12 |
| Japan | 504 | 725 | 529 | 23.3 | 6.4 | 72 | 42.2 | 67.4 | 17 | 50 | 91 | 17 |
| Jordan | 419 | 400 | 429 | 1.4 | 28.4 | 64 | 34.5 | 62.1 | 38 | 62 | 81 | 6 |
| Kazakhstan | 387 | 423 | 397 | 2.2 | 37.7 | 40 | 35.2 | 57.4 | 32 | 87 | 93 | 10 |
| Latvia | 479 | 496 | 487 | 11.3 | 9.2 | 65 | 15.1 | 22.8 | 35 | 69 | 87 | 19 |
| Lithuania | 476 | 481 | 481 | 11.1 | 13.9 | 89 | 31.9 | 21.9 | 23 | 75 | 90 | 17 |

| Countries | Average PISA | | | Best and Low Performance | | Diffence Adva. Disad. in Reading | Stud. Without Material | | Stud. Who Have Been Bullying | Stud. Satisfied With Life | Stud. Sometimes Happy | Diff Felt Bad and From School |
|-----------------|--------------|-------|---------|--------------------------|------------|---|---------------------------|-----------|------------------------------------|---------------------------------|-----------------------------|--|
| | Reading | Math. | Science | Best 5-6 | Below 2 | | Adva.(%) | Disad.(%) | | | | |
| Luxembourg | 470 | 483 | 477 | 14.4 | 17.4 | 122 | 0.0 | 0.1 | 21 | 68 | 91 | 24 |
| Malaysia | 415 | 440 | 438 | 2.7 | 27.8 | 89 | 13.5 | 27.8 | 36 | 63 | 94 | 13 |
| Malta | 448 | 472 | 457 | 11.3 | 22.6 | 85 | 0.7 | 40.6 | 32 | 60 | 94 | 14 |
| Mexico | 420 | 409 | 419 | 1.1 | 35.0 | 81 | 24.7 | 69.2 | 23 | 83 | 96 | 12 |
| Moldova | 424 | 421 | 428 | 3.2 | 30.5 | 102 | 58.9 | 65.3 | 24 | 77 | 92 | 13 |
| Montenegro | 421 | 430 | 415 | 2.3 | 31.5 | 55 | 43.7 | 31.7 | 25 | 75 | 93 | 16 |
| Morocco | 359 | 368 | 377 | 0.1 | 60.2 | 51 | 54.3 | 75.1 | 44 | 62 | 88 | 9 |
| Netherlands | 485 | 519 | 503 | 21.8 | 10.8 | 88 | 20.9 | 7.1 | 12 | 79 | 97 | 21 |
| Panama | 377 | 353 | 365 | 0.3 | 59.5 | 95 | 26.6 | 71.3 | 33 | 77 | 95 | 10 |
| Peru | 401 | 400 | 404 | 1.4 | 42.8 | 110 | 19.6 | 74.6 | 22 | 68 | 96 | 13 |
| Philippines | 340 | 353 | 357 | 0.2 | 71.8 | 88 | 15.9 | 70.0 | 65 | 66 | 95 | 6 |
| Poland | 512 | 516 | 511 | 21.2 | 6.7 | 90 | 18.0 | 27.2 | 26 | 62 | 87 | 18 |
| Portugal | 492 | 492 | 492 | 15.2 | 12.6 | 95 | 34.8 | 39.7 | 14 | 69 | 96 | 23 |
| Romania | 428 | 430 | 426 | 4.1 | 29.8 | 109 | 22.6 | 51.6 | 34 | 80 | 93 | 17 |
| Russia | 479 | 488 | 478 | 10.8 | 11.2 | 67 | 26.2 | 55.0 | 37 | 69 | 85 | 17 |
| Serbia | 439 | 448 | 440 | 6.7 | 24.7 | 73 | 40.0 | 68.3 | 26 | 74 | 90 | 20 |
| Slovak Republic | 458 | 486 | 464 | 12.8 | 16.9 | 106 | 49.8 | 63.2 | 28 | 70 | 87 | 11 |
| Slovenia | 495 | 509 | 507 | 17.3 | 8.0 | 80 | 12.3 | 41.0 | 21 | 64 | 83 | 16 |
| Sweden | 506 | 502 | 499 | 19.4 | 10.5 | 89 | 5.8 | 11.6 | 19 | 67 | 88 | 26 |
| Switzerland | 484 | 515 | 495 | 19.8 | 10.7 | 104 | 14.2 | 21.0 | 22 | 73 | 95 | 21 |
| Thailand | 393 | 419 | 426 | 2.7 | 34.6 | 69 | 23.9 | 84.3 | 27 | 73 | 92 | 8 |
| Turkey | 466 | 454 | 468 | 6.6 | 17.1 | 76 | 2.7 | 27.0 | 24 | 44 | 81 | 16 |
| Ukraine | 466 | 453 | 469 | 7.5 | 17.5 | 90 | 73.4 | 80.8 | 22 | 82 | 91 | 18 |
| United Kingdom | 504 | 502 | 505 | 19.4 | 9.0 | 80 | 18.5 | 26.3 | 27 | 53 | 93 | 23 |
| United States | 505 | 478 | 502 | 17.1 | 12.6 | 99 | 13.1 | 17.6 | 26 | 61 | 91 | 23 |
| Uruguay | 427 | 418 | 426 | 2.4 | 31.9 | 99 | 14.5 | 35.8 | 26 | 73 | 94 | 14 |

Appendix D

Table D1. Percentage Conversion

| Countries | Mortality Rate | Gini index (%) | Top-performing and low in all three subjects (below 2) % | Stud. without material disadvantaged (%) | Stud. Who Have Been Bullying |
|------------------------|----------------|----------------|--|--|------------------------------|
| Albania | 0.88 | 0.710 | 0.703 | 0.293 | 0.750 |
| Argentina | 0.90 | 0.576 | 0.586 | 0.418 | 0.680 |
| Bosnia and Herzegovina | 0.95 | 0.673 | 0.587 | 0.332 | 0.750 |
| Brazil | 0.87 | 0.487 | 0.568 | 0.480 | 0.710 |
| Bulgaria | 0.94 | 0.626 | 0.681 | 0.705 | 0.660 |
| Chile | 0.93 | 0.523 | 0.765 | 0.744 | 0.760 |
| Colombia | 0.87 | 0.492 | 0.601 | 0.148 | 0.680 |
| Costa Rica | 0.92 | 0.513 | 0.665 | 0.433 | 0.760 |
| Croatia | 0.96 | 0.692 | 0.859 | 0.438 | 0.820 |
| Cyprus | 0.98 | 0.660 | 0.743 | 0.466 | 0.660 |
| Czech Republic | 0.98 | 0.741 | 0.895 | 0.621 | 0.700 |
| Dominican Republic | 0.75 | 0.547 | 0.245 | 0.303 | 0.560 |
| Estonia | 0.98 | 0.673 | 0.958 | 0.607 | 0.750 |
| Finland | 0.98 | 0.729 | 0.93 | 0.808 | 0.820 |
| France | 0.97 | 0.673 | 0.875 | 0.837 | 0.800 |
| Georgia | 0.91 | 0.635 | 0.513 | 0.522 | 0.760 |
| Germany | 0.97 | 0.683 | 0.872 | 0.571 | 0.770 |
| Greece | 0.97 | 0.640 | 0.801 | 0.374 | 0.730 |
| Hungary | 0.96 | 0.696 | 0.845 | 0.474 | 0.770 |
| Indonesia | 0.78 | 0.605 | 0.483 | 0.306 | 0.590 |
| Ireland | 0.97 | 0.681 | 0.925 | 0.591 | 0.770 |
| Italy | 0.97 | 0.653 | 0.862 | 0.592 | 0.760 |
| Japan | 0.98 | 0.679 | 0.936 | 0.326 | 0.830 |
| Jordan | 0.85 | 0.663 | 0.716 | 0.379 | 0.620 |
| Kazakhstan | 0.90 | 0.731 | 0.623 | 0.426 | 0.680 |
| Latvia | 0.96 | 0.658 | 0.908 | 0.772 | 0.650 |
| Lithuania | 0.96 | 0.626 | 0.861 | 0.781 | 0.770 |

| Countries | Mortality Rate | Gini index (%) | Top-performing and low in all three subjects (below 2) % | Stud. without material disadvantaged (%) | Stud. Who Have Been Bullying |
|-----------------|----------------|----------------|--|--|------------------------------|
| Luxembourg | 0.98 | 0.688 | 0.826 | 0.999 | 0.790 |
| Malaysia | 0.93 | 0.537 | 0.722 | 0.722 | 0.640 |
| Malta | 0.94 | 0.710 | 0.774 | 0.594 | 0.680 |
| Mexico | 0.87 | 0.566 | 0.65 | 0.308 | 0.770 |
| Moldova | 0.86 | 0.737 | 0.695 | 0.347 | 0.760 |
| Montenegro | 0.97 | 0.681 | 0.685 | 0.683 | 0.750 |
| Morocco | 0.77 | 0.593 | 0.398 | 0.249 | 0.560 |
| Netherlands | -2.20 | 0.707 | 0.892 | 0.929 | 0.880 |
| Panama | 0.86 | 0.496 | 0.405 | 0.287 | 0.670 |
| Peru | 0.88 | 0.562 | 0.572 | 0.254 | 0.780 |
| Philippines | 0.79 | 0.599 | 0.282 | 0.300 | 0.350 |
| Poland | 0.96 | 0.682 | 0.933 | 0.728 | 0.740 |
| Portugal | 0.97 | 0.645 | 0.874 | 0.603 | 0.860 |
| Romania | 0.92 | 0.717 | 0.702 | 0.484 | 0.660 |
| Russia | 0.93 | 0.623 | 0.888 | 0.450 | 0.630 |
| Serbia | 0.95 | 0.715 | 0.753 | 0.317 | 0.740 |
| Slovak Republic | 0.95 | 0.735 | 0.831 | 0.368 | 0.720 |
| Slovenia | 0.98 | 0.746 | 0.92 | 0.590 | 0.790 |
| Sweden | 0.98 | 0.708 | 0.895 | 0.884 | 0.810 |
| Switzerland | 0.96 | 0.675 | 0.893 | 0.790 | 0.780 |
| Thailand | 0.90 | 0.622 | 0.654 | 0.157 | 0.730 |
| Turkey | 0.89 | 0.581 | 0.829 | 0.730 | 0.760 |
| Ukraine | 0.92 | 0.750 | 0.825 | 0.192 | 0.780 |
| United Kingdom | 0.96 | 0.668 | 0.91 | 0.737 | 0.730 |
| United States | 0.94 | 0.585 | 0.874 | 0.824 | 0.740 |
| Uruguay | 0.92 | 0.603 | 0.681 | 0.642 | 0.740 |

Appendix E

Table E1. Correlation matrix between social economic, educational and quality of life variables

| | Population | Healthy Life Expectancy | Mortality Rate | Index Education | Index Gini | GDP (Million US\$) | Per capita incomes | Average PISA | | | Best and Low Performance | | Diffence Adva Disad in Reading | Stud. Without Material | | Stud. Who Have Been Bullying | Stud. Satisfied With Life | Stud. Sometimes Happy | Diff Felt Bad and From School |
|--------------------------------------|------------|-------------------------|----------------|-----------------|------------|--------------------|--------------------|--------------|---------|---------|--------------------------|---------|--------------------------------|------------------------|---------|------------------------------|---------------------------|-----------------------|-------------------------------|
| | | | | | | | | Reading | Math | Science | Best 5-6 | Below 2 | | Adva. | Disad. | | | | |
| Population | 1 | | | | | | | | | | | | | | | | | | |
| Healthy Life Expectancy | -0.2365 | 1 | | | | | | | | | | | | | | | | | |
| Mortality Rate | -0.2766 | 0.6737 | 1 | | | | | | | | | | | | | | | | |
| Index Education | -0.1436 | 0.5311 | 0.8218 | 1 | | | | | | | | | | | | | | | |
| Index Gini | -0.3415 | 0.2047 | 0.5032 | 0.5427 | 1 | | | | | | | | | | | | | | |
| GDP (Million US\$) - 2018 | 0.715 | 0.1224 | 0.1055 | 0.2473 | -0.1154 | 1 | | | | | | | | | | | | | |
| Income Per Capita | 0.0143 | 0.7082 | 0.5453 | 0.5888 | 0.2876 | 0.2966 | 1 | | | | | | | | | | | | |
| Reading | -0.0304 | 0.5979 | 0.8248 | 0.8047 | 0.468 | 0.2711 | 0.6170 | 1 | | | | | | | | | | | |
| Math | -0.1035 | 0.5858 | 0.7520 | 0.8189 | 0.6207 | 0.1861 | 0.6250 | 0.9363 | 1 | | | | | | | | | | |
| Science | -0.0037 | 0.5737 | 0.8047 | 0.7841 | 0.5156 | 0.2667 | 0.6127 | 0.9772 | 0.9656 | 1 | | | | | | | | | |
| Best 5-6 | 0.0038 | 0.6114 | 0.7104 | 0.7987 | 0.5220 | 0.2883 | 0.7056 | 0.9020 | 0.9237 | 0.9272 | 1 | | | | | | | | |
| Below 2 | -0.0969 | 0.5621 | 0.8693 | 0.7861 | 0.5460 | 0.1928 | 0.5440 | 0.9578 | 0.9537 | 0.9632 | 0.8269 | 1 | | | | | | | |
| Diffence Adva. Disad. in Reading | -0.0165 | 0.2718 | 0.2615 | 0.2422 | -0.0219 | 0.1444 | 0.3483 | 0.2677 | 0.1972 | 0.2382 | 0.2502 | 0.2051 | 1 | | | | | | |
| Stud. Without Material | 0.1181 | 0.3081 | -0.1576 | 0.2004 | -0.2100 | 0.1344 | 0.4312 | 0.1681 | 0.1737 | 0.1692 | 0.2433 | 0.1224 | 0.2184 | 1 | | | | | |
| Disad. | -0.0807 | 0.4483 | 0.5882 | 0.6305 | 0.2011 | 0.2078 | 0.6453 | 0.6175 | 0.6128 | 0.5992 | 0.6123 | 0.583 | 0.3046 | 0.5625 | 1 | | | | |
| Stud. Who Have Been Bullying | -0.1902 | 0.5917 | 0.6869 | 0.5004 | 0.3243 | 0.0890 | 0.4304 | 0.6521 | 0.6040 | 0.6152 | 0.5208 | 0.6664 | 0.2223 | -0.0838 | 0.3754 | 1 | | | |
| Stud. Satisfied With Life | -0.2515 | -0.2535 | -0.1574 | -0.1359 | 0.1156 | -0.2640 | -0.2538 | -0.3203 | -0.2804 | -0.3506 | -0.3237 | -0.2782 | -0.1093 | -0.3997 | -0.2673 | 0.0771 | 1 | | |
| Stud. Sometimes Happy | -0.3016 | 0.3765 | 0.2160 | 0.0823 | -0.0588 | 0.0235 | 0.1995 | 0.1109 | 0.0740 | 0.0548 | 0.0760 | 0.0751 | 0.3022 | 0.0250 | 0.0484 | 0.2560 | 0.2493 | 1 | |
| Diff. Stud. Felt Bad and From School | -0.1039 | 0.5316 | 0.6662 | 0.6841 | 0.3083 | 0.2441 | 0.6533 | 0.7504 | 0.6615 | 0.6932 | 0.7041 | 0.6467 | 0.3775 | 0.2185 | 0.6807 | 0.5961 | -0.1084 | 0.2681 | 1 |

