QUALITY OF EDUCATION IN LATVIAN MUNICIPALITIES AND STATE CITIES – RESULTS OF INTERNATIONAL STUDIES AND STATE EXAMINATIONS

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ABSTRACT

In 2021 a new Law on Administrative Territories and Populated Areas came into force in the Republic of Latvia. To reduce fragmentation, the number of municipalities and State cities was reduced from 119 to 43. There were no changes in 11 local governments, however, other new structures were formed by merging two to eight local governments. On the one hand, these changes are creating new challenges in the education process and institution management, but on the other hand – larger local governments with larger numbers of schools and students opens up new opportunities. One of the opportunity is to make a more accurate assessment of student achievement, which characterizes the performance of a local government's educational institutions. The aim of this article is to show that despite the great differences between local governments (e. g. population differences from 3 to 614 thousand) it is possible to assess the quality of education in local governments by using data from state examinations and international comparative education studies.

Over the last few years Latvia has taken part in IEA (International Association for the Evaluation of Educational Achievement), ICCS (International Civic and Citizenship Education Study), PIRLS (Progress in International Reading Literacy Study), and TIMSS (Trends in International Mathematics and Science Study), as well as in OECD PISA (Programme for International Student Assessment). To obtain the results the data were used from all mentioned studies. This article was supported by European Social Fund project No. 8.3.6.2/17/I/001

Keywords: achievement, state examinations, ICCS, IEA, OECD, PIRLS, PISA, TIMSS

Introduction

OECD has pointed out, that Latvia faces challenges to provide quality education opportunities in all geographic areas of the country (this can be explained by the significant demographic changes, emigration, and urbanization factors) (OECD, 2017). Newly formed municipalities have

opened up new possibilities to assess and improve the quality and equity of education in Latvia.

The main aim of this article is to show, that it is possible to assess the quality of education in newly formed municipalities, based on data obtained from state examinations and international large-scale assessments (ILSA) in education. The usage of ILSA to show the differences in municipalities or regions is not widely used, but some countries where are very large regional differences (e. g. Italy, Spain, Canada, and the United States) share a good example. In these studies links between the local economic situations, employment, regional autonomy in education, and the suitability and administration of schools have been studied (Bratti et al., 2007; Agasisti & Cordero-Ferrera, 2013; Hippe et al., 2018; Daniele, 2021). Similarly, in previous studies, the education systems in the United States (Lee et al., 2011), Canada (Edgerton et al., 2008), and Turkey (Erberber, 2010) have been analysed. This study show how ILSA and state examination data can be used to assess the quality of education in municipalities of Latvia.

Assessing Quality of Education

All students should have a chance to receive a good quality education, regardless of their socio-economic background or other factors (European Commission/EACEA/Eurydice, 2020; Frønes et al., 2020).

Historically quality is associated with industry when an industrially made product had to meet certain quality standards (Scherman & Bosker, 2017). In education the concept of "quality" is more complicated than just meeting the fixed quality standards, as education quality depends on the needs of an always-changing society and processes that are closely related to this change, therefore measuring the quality of education can be quite challenging (Kirsch & Braun, 2020). Quality of education includes a variety of indicators at various levels (Crissien-Borrero et al., 2019; Sulis et al., 2020). Students' academic performance is the main result of various school inputs, and an important aspect of assessing the quality of education (OECD, 2005; Rodríguez et al., 2022). This study is focusing on education quality through the evaluation of student assessment of their academic performance in ILSA and state examinations, keeping in mind the equity aspect and statement that all students should be able to access high-quality education, regardless of their geographical location and background factors.

Within the country, enhancement of the quality of education is important for various reasons e. g. as socioeconomic human capital and development of the economy and welfare (Scherman et al., 2017; Geske et al. 2015; OECD, 2021). Accordingly, that promotes the development of higher socio-economic status (SES). Previous studies have shown that students with higher SES outperform students with lower SES (Sirin, 2005;

OECD, 2013, 2019a, 2022; Marchant & Finch, 2015; Finch & Finch, 2022; Lee et al., 2019; Zhao et al., 2022). Therefore assessment and improvement of the quality of education are important not only for achieving better academic results, but it is also important to promote the overall economy and welfare.

Assessing the quality of education is equally important in the context of equity in education. The OECD has emphasized that one of the main challenges to the quality of education in Latvia is to reduce the differences in the achievement of rural and urban students (OECD, 2016, 2017, 2020). That leads to the question if students in rural areas have equal opportunities to access the same education quality as students from urban areas, keeping in mind that the majority of students are limited in their geographic mobility and the school choice will largely be determined by the location of their family home. Social and academic segregation is a challenge that can be overcome by improving equity in education (OECD, 2019a). Although OECD PISA results show that, with variations, students' performance is related to their SES (OECD, 2019b), in Latvia schools SES has a greater influence on students' achievement than the SES of students' families (Geske et al., 2015; Geske et al., 2020). That should be taken into consideration when taking actions within the school reorganization process that is currently happening within the newly formed municipalities. The newly formed municipalities can make a significant contribution to ensuring equity in education by encouraging evidence-based education policy decisions concerning the reorganization of the school network.

Methodology

To monitor educational outcomes, data from ILSA can be utilized and combined, even with other existing data sources (Strietholt & Scherer, 2018). Merging data from different ILSA and adding other data sources might rise a question – is it legitimate to do so? Can the different tests and other background data be aggregated? It's commonly known, that results may differ from survey to survey. The main reasons why they differ are: different aims; sampling and non-sampling errors that vary across surveys; different item response models that are used (Brown et al., 2007).

In previous studies, Hanushek and Woessmann as well as Brown and Micklewright have proved that combining ILSA with other data sources is legitimate (Hanushek & Woessmann, 2011; OECD, 2015; Brown & Micklewright, 2004). Brown and Micklewright have encouraged combining data by following some simple rules: to look at correlation matrices for the basic results on central tendency and dispersion and to scale the results by assigning the value 500 to the mean and 100 to the standard deviation

(Brown & Micklewright, 2004). As data from various ILSA tests and cycles, as well as other data sources, vary – all data should be recalculated to form a common scale.

The authors of this study have followed the similar methodology, that previously had been used in the related studies in the USA, that have been carried out by Hanushek & Woessmann: to derive a common scale, all data were recalculated to a standard deviation of 100 and a mean of 500 (Hanushek et al., 2012; Hanushek & Woessmann, 2011; Hanushek & Woessmann, 2008; Hanushek et al., 2010).

In this study data from ILSA and from Latvian state examinations were analysed. Particularly data from three IEA (International Association for the Evaluation of Educational Achievement) studies that were conducted in Latvia: PIRLS 2016 (Progress in International Reading Literacy Study); ICCS 2016 (International Civic and Citizenship Education Study); TIMSS 2019 (Trends in International Mathematics and Science Study). And data from PISA 2018 (Program for International Student Assessment) – organized by the OECD.

In addition to ILSA, data from 2018, 2019, and 2020 Latvian state examinations were used (state examination data are available to the public on the website of the State Education Content Center). Data from the year 2021 were not included in the analysis regarding the Covid-19 pandemic and its great impact on the learning process, which might affect the exam results.

Data from three compulsory state exams were selected: the Math exam, the foreign language exam, and the Latvian language exam. In a foreign language exam, the language in which students must take the exam is not specified, however, the majority of high school graduates (87–90%) have chosen English, therefore the English as a foreign language exam was included in the data analysis. The Latvian language exam is compulsory for all high school graduates, regardless of the language of instruction.

To exclude potentially inadequate data, only schools whose language of instruction was Latvian were selected. Students who took their state exams at the University of Latvia, Daugavpils University, and the University of Liepaja were excluded from the analysis. All analysed state examinations are centralized examinations. This means that students took the exam in their school, but their assessments were made in Riga without the assessors knowing the students' names and their schools. The total number of students and schools in each of the data sources is summarized in Table 1.

On 1ˢᵗ July 2021 a new Law on Administrative Territories and Populated Areas came into force in the Republic of Latvia. As a result, the total number of municipalities decreased from 119 to 43. There were no changes in 11 local governments, however, other new structures were formed

by merging two to eight local governments. 11 previous municipalities remained unchanged and the rest were reformed. During the data analysis, each school that was included in the study had to be assigned to the new territorial division.

As shown in Table 1, the IEA studies did not cover all municipalities. That can be explained by the relatively smaller number of schools in the IEA studies sample and the small number of schools and students in particular municipalities (e. g. in Varakļāni and Ventspils municipalities). Nevertheless, the total school coverage in municipalities is considered sufficient.

Table 1. Number of Students and Schools Included in the Data Analysis in Separate Studies and Exams

Study/Exam	Year	Age/Grade	Students	Schools	Municipalities
PIRLS	2016	Grade 4	4157	150	40
ICCS	2016	Grade 8	3224	147	38
PISA	2018	15 years old	5985	308	43
TIMSS	2019	Grade 4	4481	154	39
SE Math	2018	Grade 12	13899	409	43
SE English	2018	Grade 12	12544	407	43
SE Latvian	2018	Grade 12	10555	292	43
SE Math	2019	Grade 12	14477	397	43
SE English	2019	Grade 12	13017	393	43
SE Latvian	2019	Grade 12	11053	282	43
SE Math	2020	Grade 12	14139	383	43
SE English	2020	Grade 12	12343	377	43
SE Latvian	2020	Grade 12	11137	274	43

To combine the data, students' achievements had been recalculated. In the original databases of state exams, students' results are given as a percentage of the maximum possible. For each state exam, the results were recalculated in points with an average value of 500 and a standard deviation of 100. In the ILSA studies data, there are given five plausible values for IEA studies and 10 plausible values for OECD PISA 2018, which also were recalculated to mean values of 500 with a standard deviation of 100.

In the OECD PISA 2018 study, three areas were examined: reading, mathematics, and science. The correlations of student achievement at the regional level ($n = 43$) were strong (0.89, 0.91 and 0.95). These results were combined to prevent the artificially increased impact of PISA 2018

results. The same procedure was done with the TIMSS 2019 results in mathematics and science (r = 0.93). The correlations between all four ILSA studies are shown in Table 2.

Table 2. Correlation of ILSA Students' Achievements at the Regional Level (n = 43)

	TIMSS 2019	PIRLS 2016	ICCS 2016	PISA 2018
TIMSS 2019	1	0.31	0.43	0.38
PIRLS 2016	0.31	1	0.11	0.33
ICCS 2016	0.43	0.11	1	0.48
PISA 2018	0.38	0.33	0.48	1

Compared to other studies, the lowest correlations are in PIRLS 2016. This can be explained by the difference in participants' age groups. The existing correlations are strong enough to combine the results into a single scale with Cronbach's alpha 0.67.

Table 3 shows the correlations between the results of the national exams. Correlation values range from 0.01 (for Mathematics and Latvian language exams in 2018) to 0.87 (for English language exams in 2019 and 2020). Table 3 shows that there are relatively high correlations for single-subject exams in three consecutive years – the highest correlations are in English language exams, but the lowest correlations are in Latvian language exams. The correlations between Mathematics exams and English language and Latvian language exams are significantly weaker. Nevertheless, the correlations are strong enough to combine the results into a single scale with Cronbach's alpha 0.90.

In each ILSA study, the SES of students' families was determined. Students' SES is an important indicator for assessing student achievement at the individual, school, county, and national levels. Overall, higher student SES is associated with higher student achievement. SES measurements in ILSA studies slightly differ. Eighth-grade student questionnaires include more complicated questions about their family than fourth-grade student questionnaires, however, fourth-grade students have an additional parent questionnaire that helps to gather information about family aspects, that form the family's SES. For SES analysis, the following indicators were used: in TIMSS and PIRLS – home resources for learning; in ICCS – National Index of Socio-Economic Background, in PISA – Index of Economic, Social and Cultural Status. All of these indicators include information on the parents' education, work responsibilities, the number of books at home, and the presence of other subjects or services in the family.

Table 3. Cross-correlation at the Municipality Level of the Results from State
Centralized Examinations ($n = 3$)

	SE English 2018	SE English 2019	SE English 2020	SE Latvian 2018	SE Latvian 2019	SE Latvian 2020	SE Math 2018	SE Math 2019	SE Math 2020
SE English 2018	1	0.85	0.84	0.51	0.66	0.77	0.32	0.30	0.36
SE English 2019	0.85	1	0.87	0.47	0.78	0.75	0.22	0.44	0.26
SE English 2020	0.84	0.87	1	0.53	0.68	0.87	0.23	0.33	0.32
SE Latvian 2018	0.51	0.47	0.53	1	0.61	0.62	0.01	0.05	0.16
SE Latvian 2019	0.66	0.78	0.68	0.61	1	0.75	0.26	0.42	0.28
SE Latvian 2020	0.77	0.75	0.87	0.62	0.75	1	0.48	0.53	0.64
SE Math 2018	0.32	0.22	0.23	0.01	0.26	0.48	1	0.69	0.83
SE Math 2019	0.30	0.44	0.33	0.05	0.42	0.53	0.69	1	0.79
SE Math 2020	0.36	0.26	0.32	0.16	0.28	0.64	0.83	0.79	1

To suit the purpose of the analysis, these indicators were recalculated to
have mean values of 10 and a standard deviation of 2. Even though each
of the SES indicators was obtained in a different year, different class, and
with a slightly different method, their correlations at the county level are
very strong, from 0.52 (ICCS and PIRLS) to 0.78 (TIMSS and PIRLS). These
indicators can be compiled in a unified scale that characterizes each region
of Latvia (Cronbach's alpha 0.89). In state examinations, student surveys
are not used, but the statistics obtained by ILSAS or some statistical data on
the economic situation of the counties can be applied.

As state examinations do not provide the student surveys, ILSA
studies surveys or statistics data on countries' economic situation can be
used to gain the information needed to describe the students' SES. As
the new municipalities were established on July 1, 2021, limited sources

for data analysis are available. To describe the economic situation of the municipalities, the authors chose data on the projected amount of personal income tax per person per year in 2022 in each region of Latvia. These data are published on the website of The Latvian Association of Local and Regional Governments (https://www.lps.lv/lv). Personal income tax (PIT) is directly linked to wage, which, accordingly is linked with a person's education and workplace, therefore PIT can be considered a good indicator of a person's SES. For the data analysis, these data were also recalculated to mean 10 and standard deviation 2.

Results and Discussion

In Table 4 the average achievements of students in Latvian municipalities and their socio-economic status are shown.

Table 4. Students' Achievements and Socio-economic Status in Latvian Municipalities

Municipality	Achieve-ment ILSAS (points)	Achieve-ment SE (points)	Achieve-ment Total (points)	SES ILSAS (points)	SES PIT (points)
Ādažu Municipality	520	548	534	10.7	14.6
Aizkraukles Municipality	510	492	502	9.1	9.6
Alūksnes municipality	482	518	500	9.2	8.4
Augšdaugavas Municipality	479	487	482	8.1	7.4
Balvu Municipality	469	500	482	9.2	8.0
Bauskas Municipality	491	502	496	9.4	9.6
Cēsu Municipality	501	494	498	10.0	9.9
Daugavpils	495	469	484	9.8	8.2
Dienvidkurzemes Municipality	463	483	472	8.8	9.0
Dobeles Municipality	466	498	480	9.1	10.1
Gulbenes Municipality	473	490	481	9.1	9.0
Jēkabpils Municipality	478	508	491	9.2	8.8
Jelgava	485	496	489	9.8	10.6

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Municipality	Achieve-ment ILSAS (points)	Achieve-ment SE (points)	Achieve-ment Total (points)	SES ILSAS (points)	SES PIT (points)
Jelgavas Municipality	467	459	464	9.4	10.4
Jūrmala	499	497	498	10.3	12.9
Krāslavas Municipality	451	469	460	8.9	7.1
Kuldīgas Municipality	483	486	484	9.8	9.0
Ķekavas Municipality	510	543	524	10.4	13.6
Liepāja	480	485	482	9.7	9.4
Limbažu Municipality	474	509	492	9.1	9.4
Līvānu Municipality	482	510	496	9.4	8.2
Ludzas Municipality	466	467	466	9.3	7.7
Madonas Municipality	477	505	489	9.4	8.8
Mārupes Municipality	516	549	531	10.9	15.2
Ogres Municipality	509	487	500	10.4	11.5
Olaines Municipality	515	501	509	10.0	11.5
Preiļu Municipality	485	500	491	9.3	7.9
Rēzekne	504	478	493	10.2	8.8
Rēzeknes Municipality	415	490	447	8.4	7.5
Rīga	519	513	516	10.6	12.7
Ropažu Municipality	514	506	510	10.4	13.8
Salaspils Municipality	495	532	513	10.0	11.8
Saldus Municipality	496	486	492	9.3	9.3

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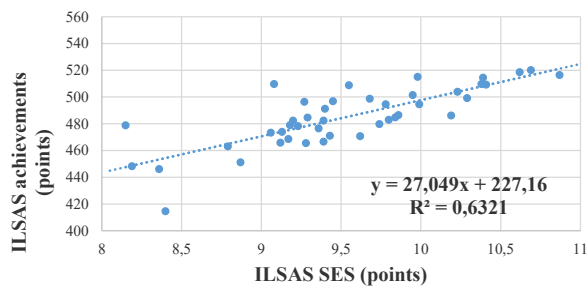| Municipality	Achieve-ment ILSAS (points)	Achieve-ment SE (points)	Achieve-ment Total (points)	SES ILSAS (points)	SES PIT (points)
Saulkrastu Municipality	486	517	499	10.2	12.0
Siguldas Municipality	499	549	520	9.7	11.9
Smiltenes Municipality	509	474	494	9.6	9.3
Talsu Municipality	497	507	501	9.5	8.9
Tukuma Municipality	471	482	476	9.4	9.6
Valkas Municipality	448	539	494	8.2	10.1
Valmieras Municipality	479	515	495	9.2	10.4
Varakļānu Municipality	471	512	496	9.6	8.0
Ventspils	486	505	494	9.9	10.8
Ventspils Municipality	446	531	497	8.4	9.3

Figure 1. Relationship Between Student Achievement in ILSA Studies and Socio-economic Status in Latvian Municipalities in Joint Scales

Figure 1 shows the relationship between these values. The relationship between student achievement and SES (R^2 = 0.63) in Latvian municipalities confirms that the data aggregation method used in this study is legitimate and the result is in accordance with many previous studies on the

relationship between achievement and SES (e. g. Daniele, 2021; Edgerton, et al., 2008). Accordingly, many conclusions can be made. Firstly, when evaluating the education systems of the municipalities, students (population) SES must be taken into account. It is quite clear that as for the average student achievement Augšdaugava municipality cannot compete with, e. g., Ādaži municipality. Secondly, it is possible to distinguish the municipalities where the average student achievement is higher and lower than the average SES. Although the average achievements of students in the Augšdaugava municipality are not the highest, they should be considered very high. In the municipality with the lowest SES, students' achievements are close to the average level of all municipalities.

To validate the obtained results, it is recommended to compare them with other measurements. In Latvia, it is possible to use the data of centralized state examinations and compare them with ILSA study data. It should be taken into consideration that assessments are made for different student age groups. In IEA PIRLS and IEA TIMSS studies the average student age is around 11 years, in IEA ICCS and OECD PISA – 16 and 17 years, but the state examinations – are 19 years.

The highest correlation of the ILSA scale is with the English language examination results – $r = 0.31$. The overall correlation of the ILSA scale with the results of the state examinations is 0.22. This correlation is relatively weak, but still sufficient to form a scale with four ILSA measurements and one combined state examination measurement (Cronbach's alpha 0.67). The SES measurements obtained from ILSA and PIT have a relatively strong correlation with each other ($r = 0.74$). Their corresponding correlations with the ILSA scale are $r = 0.80$ and $r = 0.23$, as well as with the state examination scale – $r = 0.63$ and $r = 0.59$. Therefore, it can be concluded that PIT data can be used to assess students' achievements in municipalities.

Conclusions

The study proved that both ILSA study results and state examination results can be used to assess the quality of education in Latvia's municipalities. In this assessment, it is important to take into consideration the SES of the population. The data from student surveys in ILSA studies as well as the information from the personal income tax (in the case of state examination) case can be used to obtain the SES measurements.

As the study used the data from PIT prognosis, a more accurate assessment could be made by using the actual data. The research was focused on the presentation of problems and challenges in the newly formed municipalities of Latvia, not on the assessment of the quality of education in the previous municipalities. The comparison obtained in this study, together

with the analysis of the possibilities of each municipality, will allow the municipal education policy-makers to manage the further improvement of the quality and equity of education in each municipality of Latvia.

Author Note

References

Agasisti, T., & Cordero-Ferrera, J. (2013). Educational disparities across regions: A multilevel analysis for Italy and Spain. *Journal of Policy Modeling, 35*(6), 1079–1102.

Bratti, M., Checchi, D., & Filippin, A. (2007). Geographical differences in Italian students' mathematical competencies. *Giornale Degli Economisti E Annali Di Economia, 66*(3), 299–333

Brown, G., & Micklewright, J. (2004). *Using international surveys of achievement and literacy: a view from the outside* United Nations Educational, Scientific and Cultural Organization (UNESCO)

Brown, G., Micklewright, J., Schnepf, S. V., & Waldmann, R. (2007). International surveys of educational achievement: How robust are the findings? *Journal of the Royal Statistical Society: Series A (Statistics in Society), 170*(3), 623–646.

Crissien-Borrero, T. J., Velásquez-Rodríguez, J., Neira-Rodado, D., & Turizo-Martínez, L. G. (2019). Measuring the quality of management in education. Review article. *El profesional de la información, 28*(6), e280604. https://doi.org/10.3145/epi.2019.nov.04

Daniele, V. (2021). Socioeconomic inequality and regional disparities in educational achievement: The role of relative poverty. *Intelligence, 84,* 101515, https://doi.org/10.1016/j.intell.2020.101515

Edgerton, J. D., Peter, T., & Roberts, L. W. (2008). Back to the Basics: Socio-Economic, Gender, and Regional Disparities in Canada's Educational System. *Canadian Journal of Education/Revue Canadienne de l'éducation, 31*(4), 861–888. https://doi.org/10.2307/20466732

Erberber, E. (2010). Analyzing Turkey's data from TIMSS 2007 to investigate regional disparities in eighth grade science achievement. *The Impact of International Achievement Studies on National Education Policymaking, 13*, 119–142.

European Commission/EACEA/Eurydice (2020). *Equity in school education in Europe: Structures, policies and student performance.* Eurydice report. Publications Office of the European Union.

Finch, H. & Finch M. E. H (2022). The Relationship of National, School, and Student Socioeconomic Status With Academic Achievement: A Model for Programme for International Student Assessment Reading and Mathematics Scores, *Frontiers in Education, 7.* https://doi.org/10.3389/feduc.2022.857451

Frønes, T. S., Pettersen A., Radišić, J., & Buchholtz, N. (2020). Equity, Equality and Diversity in the Nordic Model of Education – Contributions from Large-Scale Studies. In Frønes T. S., Pettersen A., Radišić J., Buchholtz N. (Eds.), *Equity, Equality and Diversity in the Nordic Model of Education.* Springer. https://doi.org/10.1007/978-3-030-61648-9_1

Geske, A., Grīnfelds, A., Kangro, A., Kiseļova, R., & Stūre, B. (2020). *Monograph Series: Educational Research in Latvia, No. 11 Latvian Students' Achievements and School Environment in OECD PISA Comparison,* University of Latvia.

Geske, A., Grīnfelds, A., Kangro, A., Kiseļova, R., & Mihno L. (2015). *Monograph Series: Educational Research in Latvia, No. 8. Quality of Education: International Comparison. Latvia in OECD Programme for International Student Assessment.* University of Latvia.

Hanushek, E. A., & Woessmann, L. (2008). The Role of Cognitive Skills in Economic Development. *Journal of Economic Literature, 46*(3), 607–668. https://doi:10.1257/jel.46.3.607

Hanushek, E. A., & Woessmann, L. (2011). The economics of international differences in educational achievement. In E. A. Hanushek, S. Machin & L. Woessmann (Eds.), *Handbook of the Economics of Education, 3*, (pp. 89–200).

Hanushek, E. A., Peterson, P. E., & Woessmann, L. (2012). Is the U.S. catching up?: International and state trends in student achievement, *Munich Reprints in Economics 20470*, University of Munich, Department of Economics.

Hanushek, E. A., Peterson, P. E., & Woessmann, L. (2010). *U.S. Math Performance in Global Perspective: How well does each state do at producing high-achieving students?* Harvard's Program on Education Policy and Governance, Report No.: 10–19.

Hippe, R., Jakubowski, M. & Araújo, L. (2018). *Regional inequalities in PISA: the case of Italy and Spain;* Publications Office of the European Union. https://doi:10.2760/495702

Kirsch, I., & Braun, H. (2020). Changing times, changing needs: enhancing the utility of international large-scale assessments. *Large-scale Assess Educ, 8*, 10 https://doi.org/10.1186/s40536-020-00088-9

Lee, Y., Park, Y., & Taylan, D. (2011). A Cognitive Diagnostic Modeling of Attribute Mastery in Massachusetts, Minnesota, and the U.S. National Sample Using the TIMSS 2007. *International Journal of Testing, 11*(2), 144–177

Lee, J., Zhang Y., & Stankov, L. (2019). Predictive Validity of SES Measures for Student Achievement, *Educational Assessment, 24*(4), 305–326, https://doi: 10.1080/10627197.2019.1645590

Marchant, G., & Finch, W. (2015). Student, School, and Country: the Relationship of SES and Inequality to Achievement. *Journal of Global Research in Education and Social Science, 6*(4), 187–196. Retrieved from https://www.ikprress.org/index.php/JOGRESS/article/view/2078

OECD (2005). *School Factors Related to Quality and Equity: Results from PISA 2000*, PISA, OECD Publishing, https://doi.org/10.1787/9789264008199-en

OECD (2013). *PISA 2012 Results: Excellence Through Equity: Giving Every Student the Chance to Succeed (Volume II),* PISA, OECD Publishing. http://dx.doi.org/10.1787/9789264201132-en

OECD (2015). *Universal Basic Skills: What Countries Stand to Gain,* OECD Publishing. http://dx.doi.org/10.1787/9789264234833-en

OECD (2016). *Education in Latvia*, Reviews of National Policies for Education, OECD Publishing, https://doi.org/10.1787/9789264250628-en.

OECD (2017). *Education Policy Outlook: Latvia.* www.oecd.org/education/policyoutlook.htm

OECD (2019a). *Balancing School Choice and Equity: An International Perspective Based on PISA*, PISA, OECD Publishing, https://doi.org/10.1787/2592c974-ne

OECD (2019b). *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, https://doi.org/10.1787/b5fd1b8f-en

OECD (2020). *Education Policy Outlook: Latvia,* available at: www.oecd.org/education/policy-outlook/country-profile-Latvia-2020.pdf.

OECD (2021). *Delivering Quality Education and Health Care to All: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, https://doi.org/10.1787/83025c02-en

OECD (2022). *Mending the Education Divide: Getting Strong Teachers to the Schools That Need Them Most*, TALIS, OECD Publishing, https://doi.org/10.1787/92b75874-en.

Rodríguez, J. V., Rodado, D. N., Borrero,T. C., & Parody, A. (2022). Multidimensional indicator to measure quality in education*, International Journal of Educational Development, 89,* 102541. https://doi.org/10.1016/j.ijedudev.2021.102541

Scherman, V., & Bosker, R. J. (2017). The Role of Monitoring in Enhancing the Quality of Education. In V. Scherman, R. J. Bosker & S. J. Howie (Eds.), *Monitoring the Quality of Education in Schools.* SensePublishers. https://doi.org/10.1007/978-94-6300-453-4_1

Scherman, V., Bosker, R. J., & Howie, S. J. (2017). *Monitoring the Quality of Education in Schools, Examples of Feedback into Systems from Developed and Emerging Economies.* Rotterdam: Sense Publishers. ISBN 9789463004534

Sirin, S. (2005). Socioeconomic Status and Academic Achievement: A Meta-Analytic Review of Research. *Review of Educational Research*, *75*(3), 417–453. https://doi:10.3102/00346543075003417

Strietholt, R., Scherer, R. (2018). The Contribution of International Large-Scale Assessments to Educational Research: Combining Individual and Institutional Data Sources, *Scandinavian Journal of Educational Research*, *62*(3), 368–385. https://doi:10.1080/00313831.2016.1258729

Sulis, I., Giambona, F., & Porcu, M. (2020). Adjusted indicators of quality and equity for monitoring the education systems over time. Insights on EU15 countries from PISA surveys, *Socio-Economic Planning Sciences, 69.* https://doi.org/10.1016/j.seps.2019.05.005

Zhao, D., Liu, S., & Li, Q. (2022). Effects of socioeconomic status and its components on academic achievement: evidence from Beijing-Shanghai-Jiangsu-Zhejiang (China), *Asia Pacific Journal of Education.* https://doi: 10.1080/02188791.2021.2015286