

School library and students' achievement: the relationship in schools from diverse socio-economic and cultural backgrounds

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Abstract

School library and students' achievement: a relationship to go into

This study investigates the relationship between School Library and Students' achievement on a population sample of 9896 Schools. Many international researches confirmed the importance of the School Library for the Students learning. Recently the IEA PIRLS survey has revealed a positive relationship between the Reading comprehension performance and the size of the School Library collection.

In this paper, we verify the relation between the results of INVALSI tests in Italian and Mathematics - on school grades 5,8,10 - with the presence and functioning of the School Library.

The information on the School Library comes from the School Questionnaire compiled by the School Principal in the course of the Self-evaluation Report.

The analysis confirm a positive relationship in each school grade and in both subjects of investigation.

Keywords: School Library – Students' Achievement – Invalsi Test

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Introduction

In Italy, the School Library (SL) has a very long legislative history, but less organic and consistent; the initial legislative references date back to the 19th century (before Italy unification). Since then a succession of several legislative decrees and projects have not assured the SL presence and its functioning in every school.

The last school reform¹ has paid a particular attention to the SL and a step ahead has been made in acknowledging the SL a crucial role as learning environment. However, in Italy, binding regulations on SLs are missing, unlike many European and extra European countries.

The Azione #24² overcomes the traditional idea of a library as a space dedicated to the conservation and use of books to open up to the more articulated concept of 'innovative' SL characterized by an important digital component that extends its range of action and perspectives.

The innovative SL assumes an even wider function for accessing information and overcoming every form of disadvantage, including the digital divide.

In fact, the SLs are places where students '*cultivate the key competences of lifelong learning, such as in particular the comprehension of the text and the competence of learning to learn, linked to autonomous learning, the ability to persevere in learning, the ability to carry out research, to select and recognize sources, to organize their own pathways*' [...]³

The role assigned to the SL in the PNSD (National Digital School Plan) has been positively welcomed by the library community: *given that the new generations are more and more oriented towards digital consumption, it is essential to look into the problem of how to connect the reading to other forms of textuality* (Roncaglia, 2016).

However, broader legislative actions are expected, involving specialized personnel and resources not tied to sporadic projects (Venuda, 2016); only in this way the SL can perform the indispensable function that has been recognized for the promotion of information (information literacy) and cultural growth.

In the past, in the SL, the documentary teacher (generally one of the teachers chosen by the College) and the librarian teacher alternated, sometimes only at the terminological level.

¹ School Reform Law 107/2015

² Full text available at http://www.istruzione.it/scuola_digitale/index.shtml

³ http://www.istruzione.it/scuola_digitale/prog-biblioteche-scolastiche-innovative.shtml

For a time, the teachers who were not suitable for teaching were assigned to the SL, subsequently trained in reading and research education.

Currently, at legislative level, the allocation of staff to the SL is not expected; passionate teachers, practically in the form of voluntary work, support the functioning of the SL.

Previous surveys

The first important research to show a positive relation between the quality of the SL and the student performance was carried out within the American Library Association (Gaver, 1963). Subsequently, a research team coordinated by Keith Curry Lance conducted the study in several US states and the positive relation between the quality of the SL and the students' results to the standardized tests was confirmed (Lance, Colorado State Dept of Education, Denver State Library and Adult, Education Office, & Others, 1992).

The International Education Association (IEA) in the Reading Literacy Study survey, conducted on 9 and 14 year-old students, demonstrated the positive relation between SL quality and reading literacy (Plomp, Tjeerd., Warwick, Elley B., IEA, International Association for the Evaluation of Educational Achievement., 1994).

Similar results of numerous studies have led to the conclusion that the quality of the library is a predictor of academic performance, albeit less than the socio-economic background (Lonsdale & Australian Council for, Educational Research, 2003).

More recently, the IEA PIRLS⁴ 2011 survey confirmed the reading literacy data, highlighting the importance of the book heritage of the SL: internationally, 4th grade students attending schools with more than 5,000 books score 25 points higher (525 versus 500) compared to students who attend schools with smaller library collections.

Specifically, Italian students attending schools with SLs with more than 5,000 books score 10 points higher than students who attend schools with smaller library collections (Mullis, Martin, Foy, & Drucker, 2012).

In 2014, the American Association of School Librarians (AASL) involved academics and practitioners in a national forum coordinated by Prof. Thomas Cook to discuss the causality between SL quality and academic performance. The study of this theme has solid foundations in the United

⁴PIRLS stands for Progress in International Reading Literacy Study

States where numerous researches have been conducted in which the activity and programs implemented by librarians have been related to student learning and teacher support (*Causality: School libraries and student success (CLASS). white paper2014*).

It must be considered that the USA are much more advanced than Italy with regard to the “SI world”. They have detailed reference legislation and a wide book heritage: every comparison immediately appears ruthless. In the United States the average volume in schools is in fact 12,780, with a minimum of 7,370 volumes in schools with fewer than 100 students, up to a maximum of 17,460 volumes in schools with more than 1,000 students (Bitterman, Gray, Goldring, & National Center for, Education Statistics, 2013).

If we take into consideration the national panorama, the AIE (Italian Publishers Association) has conducted an investigation to know the 'health status' of the Italian SLs: 89% of the schools of the sample (about 7000 schools) declares to possess at least one. The positive news on the presence of SLs undergoes a first 'downsizing' from the data relating to the book heritage: the average number of volumes per school is about 3,000, with a 20% of schools that own 52% of global assets. The picture is even less promising when we go beyond the presence / absence data and we investigate the services or what makes a SL 'alive and operative' (Peresson, 2013).

The study

This study investigates the relationship between SL functioning and student performance; the survey, descriptive-observatory, is the first exploration of the theme on a large scale at national level. The initial input came from the results of the international survey IEA PIRLS 2011 which found a significant difference between the scores of students attending schools with well-resourced libraries compared to those attending schools with smaller library collections or without a library.

We intend to verify that the SL has a relationship with the academic performance, as suggested by numerous international studies that identify in the SL the second predictor of academic success after the socio-economic background.

Regarding the student performance data, we refer to the results of the INVALSI tests of Italian and mathematics related to grade 5, grade 8 and grade 10. Information on SL is based on the School Questionnaire as part of the Self-Assessment Report (RAV). As far as the methodology is concerned, the analyses carried out are quantitative and have been conducted with the SPSS software.

The schools with both data available, tests results and Self-Assessment Report, are 9,896 distributed as in the following table (TAB.1)

TAB.1 – Population

	State schools	State-recognized Private Schools	Total
I Cycle	5606	1315	6921
II Cycle	2463	512	2975
Total	8069	1827	9896

School libraries

Data on SLs come from the Learning Environments section of the School Questionnaire compiled by the School Principal. The first question we have analysed is the presence of SL in the educational institution. As evident from the following table (TAB.2), 90% of schools has at least one SL: a wide diffusion if we consider that the legislation is not binding, only 10% of schools does not have this learning environment.

TAB. 2 – Presence of SL

	<i>Frequency</i>	<i>Percentage</i>
YES	8938	90,3%
NO	958	9,7%
Total	9896	100%

We observe (TAB. that the presence of SLs is higher in the schools of the II Cycle (94%) rather than in those of the I Cycle (89%) and in the State Schools (92%) rather than in State-recognized Private Schools (84%).

TAB.3 – School Libraries by Cycle

	SCHOOL LIBRARY		Total
	YES	NO	
I Cycle	6133	788	6921
	88,6%	11,4%	100%
II Cycle	2805	170	2975
	94,3%	5,7%	100%
Total	8938	958	9896
	90,3%	9,7%	100%

TAB.4 – School libraries by School type

	SCHOOL LIBRARY		Total
	YES	NO	
State schools	7398	671	8069
	91,7%	8,3%	100%
State-recognized private schools	1540	287	1827
	84,3%	15,7%	100%
Total	8938	958	9896
	90,3%	9,7%	100%

The presence of SL is not homogeneous in the Italian regions; comparing the presence of SLs in the Convergence Objective Area⁵ of the 2007-2013 PON with the other Italian regions, a 5% gap emerges in disadvantaged areas.

TAB.5- School Library and PON Regions

	SCHOOL LIBRARY		Total
	YES	NO	
PON Regions	2941	447	3388
	86,8%	13,2%	100%
Other Regions	5997	511	6508
	92,1%	7,9%	100%
Total	8938	958	9896

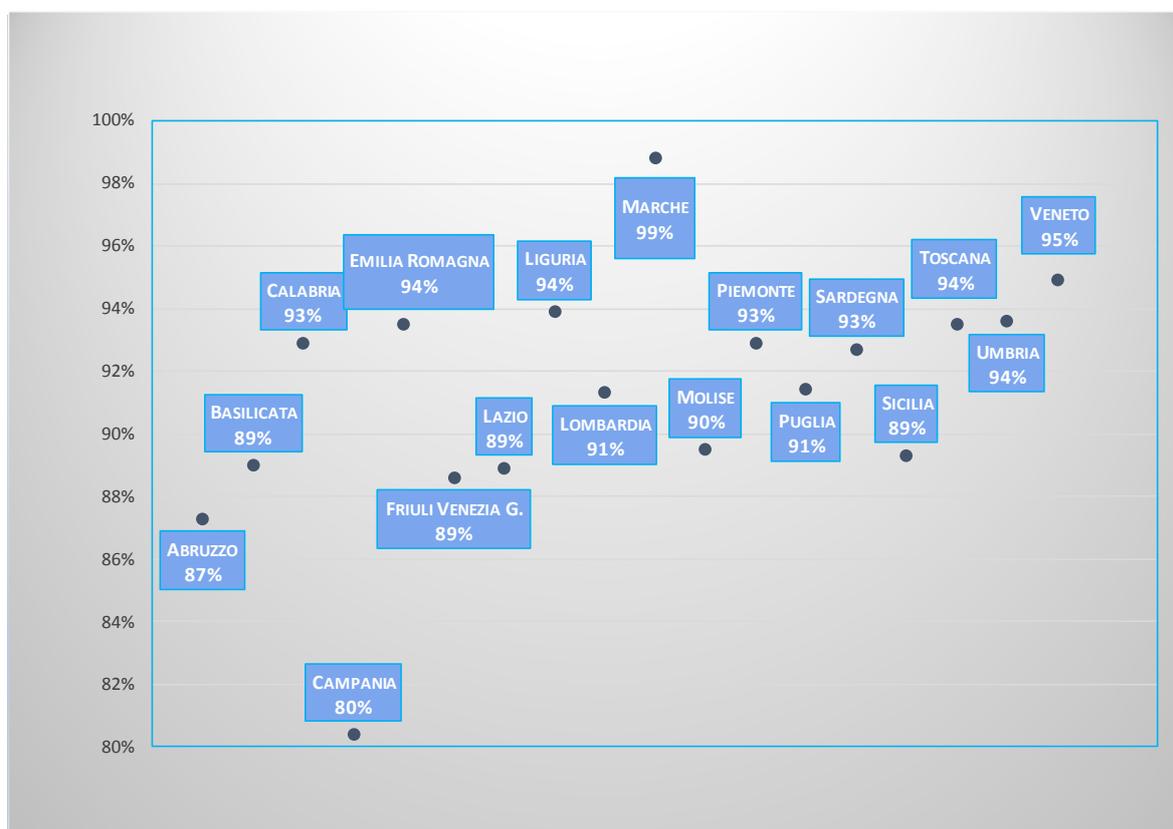
⁵ PON is the National operative programme for Research and Competitiveness funded by the European Union. The Convergence Objective concerns the Member States and the Regions whose gross domestic product per capita (GDP/inhabitant) is less than 75% of EU average. In Italy this regions are: Calabria, Campania, Puglia, Sicilia.

Next graph (GRAF.1) shows the percentage of schools with SL by region.

In Marche the percentage of schools with SLs is very high (99%), it is an excellence also for the library network⁶, followed by Veneto (95%), Emilia Romagna, Liguria, Toscana and Umbria (94%). Data from Valle d'Aosta and Trentino Alto Adige are not available as they are exempt from the compilation of the RAV for the 2014-2015 school year.

However, in Alto Adige, thanks to its special statute and wide legislative autonomy, the widespread⁷ presence of the SLs is guaranteed by the provincial legislation, which also establishes the figure of a qualified school librarian; similar attention we notice also in Trentino⁸.

GRAPH.1 – School Library by region



⁶ <http://www.biblioscuolemarche.it/>

⁷ As foreseen by the Art. 7 of Presidential Decree 80/2013

⁸ The school librarians in addition to having a professional qualification in the library sector, has knowledge in the subject areas of teaching.

School library and academic achievement

The subsequent questions of the School Questionnaire explore the characteristics and services of the existing SLs. What is striking is that 30% of the SLs is missing, at least for the investigated school year, a reference figure - more or less specialized - that guarantees the functioning of the SL (TAB.6).

Tab.6 Reference figure

	<i>Frequency</i>	<i>Percentage</i>
YES	6213	69,5%
NO	2725	30,5%
Total	8938	100%

Data relating to the presence of the SL is further reduced by the fact that 18% of the SLs do not have the reading and consultation room and 20% of the SLs do not provide the loan service (TAB.7) The absence of the basic services of the library suggests a limited and/or occasional use.

TAB.7 Consultation and loan services

	Consultation		Loan	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
YES	7307	81,8%	7168	80,2%
NO	1631	18,2%	1770	19,8%
Total	8938	100%	8938	100%

As can be seen from the following tables, libraries with so-called advanced services are rare: 22% (TAB.8) has an online catalog (OPAC), 8% participates in library network, 7% has interlibrary loan service (TAB 9). These data can be easily explained by the lack of personnel assigned to the SLs and the legislative gap regarding the figure of the specialized librarian.

TAB.8 Online catalog

	<i>Frequency</i>	<i>Percentage</i>
YES	1969	22%
NO	6969	78%
Total	8938	100%

TAB.9 Library network and interlibrary loan

	Library network		Interlibrary loan	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
YES	742	8,3%	650	7,3%
NO	8196	91,7%	8288	92,7%
Total	8938	100%	8938	100%

The six previous variables (Reference figure, Room consultation, Loan service, Online catalog, Library network, Interlibrary loan) that concur to understand the degree of activity of a library have been added together to create an operating index divided into 3 different level of functioning

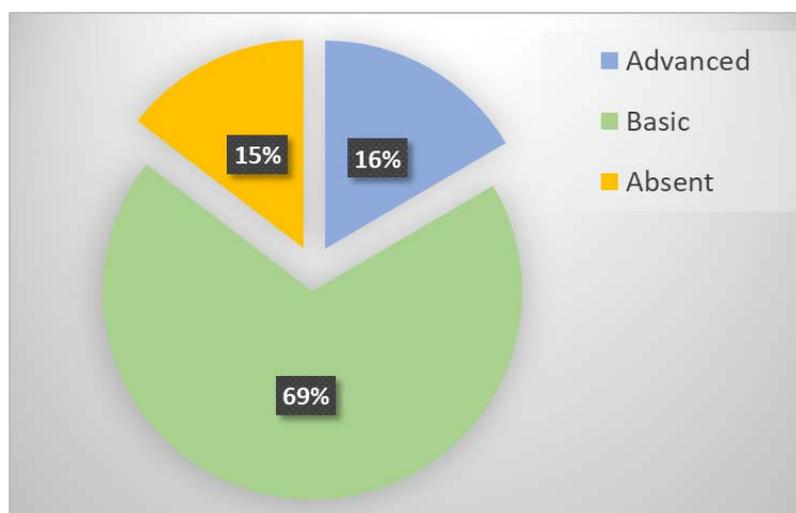
From 4 to 6 = Advanced

From 1 to 3 = Basic

0 = Absent

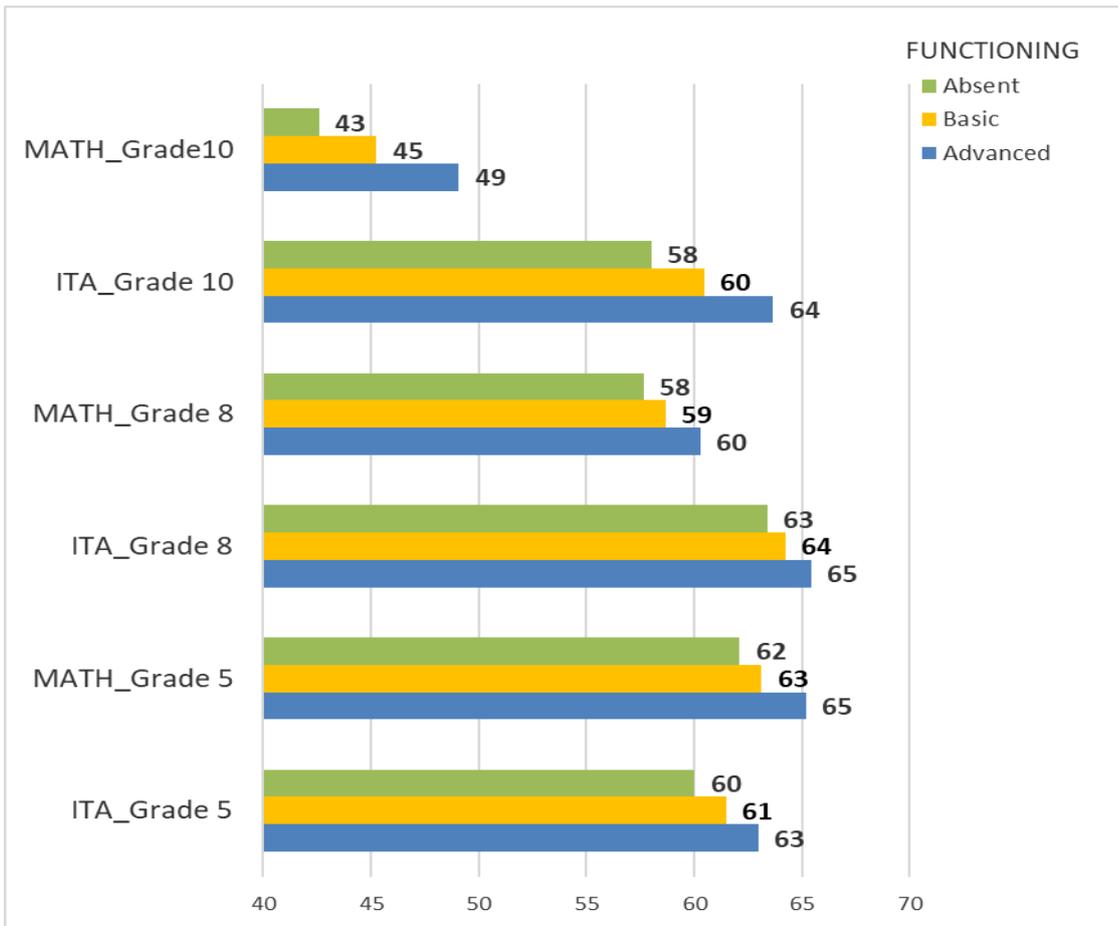
The graph below shows that in 16% of schools, the SL has an advanced level of functioning, in 69% of schools the SL has a basic level of functioning, in 15% of schools the SL is absent or not working. We put together the schools without referent figure and services (5%) with the schools without library (10%).

GRAPH. 2 School Library functioning



The following graph (GRAPH. 3) shows that the increasing level of functioning is associated to an increasing trend of the INVALSI test scores, with notable differences especially in secondary schools but significant also in primary schools.

GRAPH. 3 School Library functioning and students' performance



The ANOVA results confirm that the difference between groups are significative, both for Italian and for mathematics scores:

	<i>F</i>	<i>Sign</i>
<u>ITA Gade 5</u>	35,442	,000
<u>MATH Grade5</u>	29,657	,000
<u>ITA Gade 8</u>	23,733	,000
<u>MATH Grade8</u>	38,312	,000
<u>ITA Gade 10</u>	41,136	,000
<u>MATH Grade10</u>	61,638	,000

School Library collection and students' performance

The answers to the open questions on the book collection have been clustered into three segments, the same that have made significant differences in the IEA PIRLS survey. The analyses concerning the book collection exclude schools without SLs and schools that do not know the number of books of their SL. Globally these schools are more than 20% of the reference population (TAB.11).

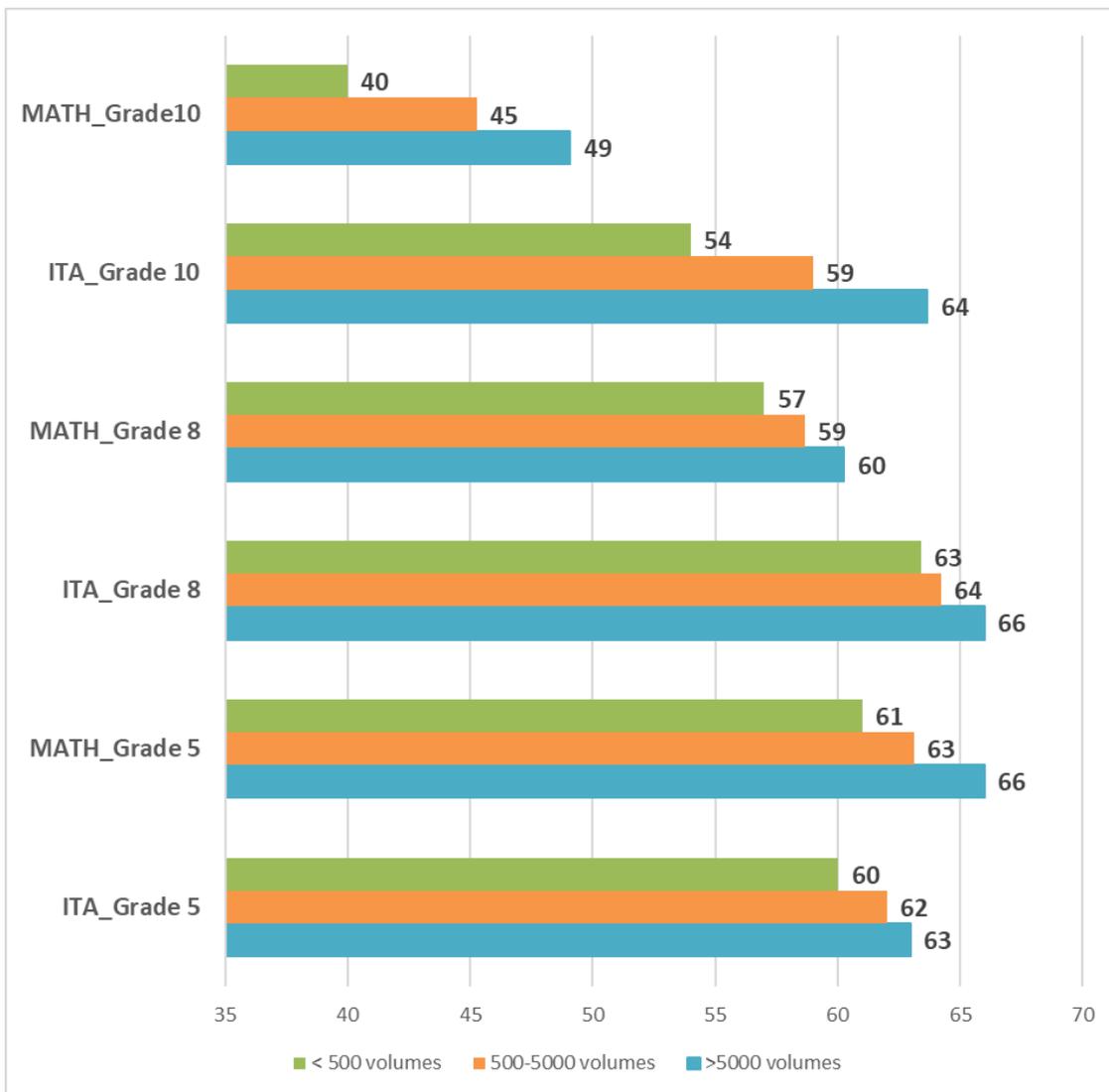
TAB.11 School Library collection

	<i>Frequency</i>	<i>Percentage</i>
> 5000	2345	23,7%
500 - 5000	4636	46,8%
< 500	913	9,2%
I do not know	1044	10,5%
SL absent	958	9,7%
Total	9896	100%

As the following graph (GRAPH.4) shows, the students perform better in schools with well-resourced SL, both for Italian and for Mathematics test. We observe major

differences in Secondary Schools, though the association is also evident in the 5th Grade of Primary schools.

GRAPH. 4 School Library collection and students' performance



Also for the Library collection, ANOVA show the differences between the groups are significant in all the Grades:

	F	Sign
<u>ITA Gade 5</u>	49,854	,000
<u>MATH Grade5</u>	86,196	,000
<u>ITA Gade 8</u>	64,796	,000
<u>MATH Grade 8</u>	58,199	,000
<u>ITA Gade 10</u>	115,410	,000
<u>MATH Grade 10</u>	92,064	,000

Conclusions

Many elements contribute to a good academic performance and certainly, the learning environments are among these.

In particular, numerous international studies confirm the importance of SL and its educational potential.

The analyses showed that different results at INVALSI tests are associated with different levels of SL functioning; moreover, there are better results in schools whose SLs have well-resourced collections.

The policy maker has paid attention to the SL issue with #Action24, which has recognized and encouraged the crucial role of the SL in order to enhance the information and digital literacy.

However, the risk of the project funding is to miss the neediest schools: those without library or reference figure to follow the project.

In this regard, it is necessary to reflect on the lowest percentage of SLs in the schools of the PON regions, the presence of SLs is a necessary - even if not sufficient - condition for its didactic function.

The 5% negative gap of the PON regions compared to the other regions is significant and a rebalancing intervention would be useful, both to assure students equal educational opportunities and to counteract the effects of a low socio-economic background.

The attempt would not be reckless: several studies have shown that the SL is the second predictor of academic performance after the socio-economic background.

A broader intervention would allow an extension to the national territory of the legislation already in force since 1995 in Alto Adige that guarantees the School Library in all schools and the introduction of the specialized school librarian.

Of fundamental importance, as the IEA PIRLS survey had already pointed out, is the presence of a well-resourced collection.

Data obtained in this study will be deepened in the next work considering the socio-economic background of schools.

References

- Bitterman, A., Gray, L., Goldring, R., & National Center for, Education Statistics. (2013). *Characteristics of public elementary and secondary school library media centers in the united states: Results from the 2011-12 schools and staffing survey. first look. NCES 2013-315*. National Center for Education Statistics.
- Causality: School libraries and student success (CLASS). white paper* (2014). American Association of School Librarians. Retrieved from <https://eric.ed.gov/?id=ED561868>
- Lance, K. C., Colorado State Dept of Education, Denver State Library and Adult,Education Office, & Others, A. (1992). *The impact of school library media centers on academic achievement*. Castle Rock COL : Hi Willow Research & Publishing, 1993
- Lonsdale, M., & Australian Council for, Educational Research. (2003). *Impact of school libraries on student achievement: A review of the research*. Melbourne : Australian Council for Educational Research.
- Mullis, I. V. S., Martin, M. O., Foy, P., & Drucker, K. T. (2012). *PIRLS 2011 international results in reading*. Chestnut Hill, MA: IEA, TIMSS & PIRLS, International Study Center, Lynch School of Education, Boston College.
- Peresson, G. (2013). *La costellazione dei buchi neri. rapporto sulle biblioteche scolastiche in italia 2013. AIE. edizione del kindle*. Milano: AIE.
- Plomp, Tjeerd., Warwick, Elley B., IEA,International Association for the Evaluation of Educational Achievement.,. (1994). *The IEA study of reading literacy : Achievement and instruction in thirty-two school systems*. Oxford: Pergamon Press.

Roncaglia, G. (2016). Biblioteche scolastiche: Le prospettive aperte dall'azione 24 del piano nazionale scuola digitale. *Biblioteche Oggi*, 34, 12-16.

DOI: <http://dx.doi.org/10.3302/0392-8586-201606-012-1>

Venuda, F. (2016). Biblioteche scolastiche "a progetto". *Biblioteche Oggi*, 34, 17-27.