Impact of Philosophy and Sociology Teaching on School Performance: An Analysis of the School Census Microdata from the National Institute for Educational Studies and Research (INEP)

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ABSTRACT

The new Provisional Measure 746/2016, removing the compulsory nature of the disciplines of Philosophy and Sociology in the secondary school curriculum, resulted in heated controversies among scholars and massive mobilisations of students across the country against their taking out from High School. The objective of this work was to identify the effect of the presence or not of the disciplines Philosophy and Sociology in the High School curriculum on the students' learning. In terms of methodology, data from the Census of Basic Education 2015 and from the averaged per school performances in the ENEM 2015 were examined by means of several Data Science techniques more specifically, with the resources of the language R. The results of the analysis did not indicate any perceptible influence of the disciplines Philosophy and Sociology on the performance, unlike the Indicator of Student's Socioeconomic Status and the Administrative Dependence of the School. These results seem to contradict the significant positive ones obtained after activities conducted by teachers trained in investigative philosophical dialogue in the classroom. Far from taking sides in the discussion about the pertinence of the inclusion of these disciplines in High School, what was sought here was to point out the need for a rethink about how they should be organised.

Keywords: Philosophy Teaching. Sociology Teaching. School performance.

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Impacto do Ensino de Filosofia e Sociologia no Desempenho Escolar: uma Análise a Partir dos Microdados do Censo Escolar do INEP

RESUMO

A recente Medida Provisória 746/2016, retirando a obrigatoriedade das disciplinas de Filosofia e Sociologia na grade curricular do Ensino Médio, resultou em acaloradas controvérsias entre especialistas e grandes mobilizações de estudantes em todo o país contra sua retirada do Ensino Médio. O objetivo deste trabalho foi identificar o efeito da presença ou não das disciplinas Filosofia, Sociologia e Estudos Sociais na grade curricular sobre o aprendizado dos estudantes no Ensino Médio. Em termos metodológicos, dados do Censo da Educação Básica 2015 e das médias por escola do desempenho no ENEM 2015 foram examinados por meio de diversas técnicas de Ciência de Dados (*Data Science*) mais especificamente, com os recursos da linguagem R. Os resultados da análise não indicaram qualquer influência perceptível das disciplinas Filosofia e Sociologia sobre o desempenho, ao contrário do Indicador de Nível Socioeconômico dos alunos e a Dependência Administrativa da escola. Estes parecem contrariar os resultados positivos significativos obtidos após atividades conduzidas por professores treinados no diálogo filosófico investigativo na sala de aula. Longe de tomar partido na discussão sobre a pertinência da inclusão dessas disciplinas no Ensino Médio, o que se procurou aqui foi apontar para a necessidade de um repensar sobre o como elas deveriam ser organizadas.

Palavras-chave: Ensino de Filosofia. Ensino de Sociologia. Desempenho escolar.

INTRODUCTION

According to Valverde and Esteves (2015), the discipline of Philosophy has been passing over time by a "pendular motion", now of inclusion, now of exclusion, in the curriculum of High School, in the flavour of the interests of dominant sectors in each moment , whether they were Catholic, positivist, patriotic or developmental, sometimes authoritarian, sometimes 'democratic'.

The most recent oscillation of this pendulum was given by Provisional Measure 746/2016 (Brazil, Presidency of the Republic, 2016), which removed the obligation of the disciplines of Philosophy and Sociology that was explicit in the Law of Directives and Bases of Education (LDB). Such oscillation reverberated during 2016, in the form of heated controversies between experts and massive student mobilisations across the country against their removal from High School Curriculum.

Here, we intend to identify the effect of the presence or not of the disciplines Philosophy, Sociology and Social Studies in the curriculum of a high school curriculum about the learning of its students. Far from taking sides in the discussion of whether or not these disciplines should be included in High School, we are trying to provide a basis for a rethinking of how they should be organised.

THEORETICAL FOUNDATION

It is beyond the scope of this work to produce a history about the teaching of Philosophy and Philosophy in school education in Brazil, as well as on the reason for each exit or return to the curriculum, topics thoroughly discussed by Valverde and Esteves (2015) and by Paiva and Piol 2015), among others.

Coelho (2017), citing the Curricular Guidelines for Secondary Education (SEB, 2006), reminds us that they signal to Philosophy the fundamental aspects that guide citizenship in the field of ethics and aesthetics, pointing to mutual tolerance and sensitivity to autonomous identity and democratic participation. To that, Valverde and Esteves (2015) add that the LDB reserved to Philosophy the role of making possible the understanding of the meaning of the learning of the sciences, letters and the arts and to contribute to the development of competencies for the argumentation within these three areas , in addition to contributing – together with the discipline of Sociology – so that, "at the end of high school, the student demonstrates […] the domain of the knowledge of Philosophy and Sociology necessary for the exercise of citizenship" (Brazil, Presidency of the Republic, 1996, section IV, article 36, § 1). In fact, Velasco (2017) argues that, although argumentation is not enough for philosophical activity, it comprises an essential foundation of Philosophy, being one of the central elements of the philosophical exercise in the classroom.

In fact, according to Meerwaldt, Ferri and Nevers (2013), the emphasis on Mathematics and Science classes is often placed on the transmission of factual information. Children are accustomed to having the teacher or book tell them the "right" answer to a question and the teacher expects them to replicate that same response in the assessments. According to these authors, this teaching practice stimulates a vision of Mathematics and Science as finished, highly abstract study fields, detached from reality and without space for investigation and discovery. According to the National Curricular Parameters (NCP), the teaching of Science and Mathematics

> […] has often been accomplished by presenting concepts, laws and formulas, in a disjointed way, distanced from the world lived by students and teachers and not only, but also because of this, empty of meaning. It privileges theory and abstraction, from the first moment to the detriment of a gradual development of abstraction that, at least, starts from practice and concrete examples. (Brazil, Ministry of Education and Technology, 1999, 22)

On the contrary, proponents of constructivist science education (e.g., Driver et al. (1994)) and philosophy in science classes (e.g., Nevers (2009) and Sprod (2011)), as well as advocates for modelling activities in mathematics classes (e.g., Dalla Vecchia (2015)), proposed forms of active construction of knowledge by students and a better conceptual understanding in Science and Mathematics.

Thus, Meerwaldt, Ferri and Nevers (2013) consider several reasons why the practice of philosophising could improve student understanding in the classroom. First, both types of problems discussed are complex and embedded in a narrative context, requiring in-depth reflection on the part of the teacher and the students. Second, the methods and skills employed in both approaches include cooperative learning and dialogue, analytical thinking and reasoning, critical reflection on worldviews, imagination, and creative thinking. Third, since children are directed to everyday problems and issues that children themselves find interesting, learning tends to be more meaningful. Finally, both approaches require the teacher to assume the role of a mentor rather than an instructor.

However, Coelho (2017) denounces that the parameters constructed for the High School for the discipline of Philosophy were guided by the contents given in the banks of the universities to the academics of the course from an entirely Eurocentric perspective. In this way, as Paiva and Piol (2015) remember, Philosophy is confronted with the new requirements of skills and abilities that form the young person for the globalised market. Thus, more than being included in the curriculum, it is imperative that Philosophy be meaningful to the lives and the time of the students. In this way, Coelho (2017) proposes that it be open to the study and discussions of emerging themes, such as ethnic-racial relations and gender, bioethics, environmental ethics, etc.

According to a survey by Fávero et al. (2004), Philosophy in high school is confined, in most cases, to the lecture or group work, with some debate on current themes, confronted with small philosophical texts, in a kind of "general culture" or an 'improved' common sense. According to this same study, many teachers follow a textbook that defines classroom work and the teacher's program, and reading texts by philosophers is often infrequent (Fávero et al., 2004).

More worrying, as reported by Fávero et al. (2004), for lack of competitions to hire teachers with specific training, the work ends up falling to teachers from other areas and disciplines, such as history, social sciences, theology, pedagogy and others, most of the times unprepared to work with Philosophy. In many cases, it occurs until the introduction of relaxation techniques, and other practices that approximate the Philosophy class of a "collective therapy" (Fávero et al., 2004).

Unfortunately, these deficient teaching conditions can turn Philosophy into an 'ornamental discipline' and, by the absence of an effectively reflective engagement, lead the work done to radically distance itself from a model of teaching that can be identified with Philosophy (Favero et al. al., 2004), thus failing to fulfil the objectives of its inclusion in the curriculum.

METHODOLOGY

The so-called 'data mining' was until recently considered one of the five stages of the Knowledge Discovery in Databases (KDD) process proposed by Fayyad, Piatetsky-Shapiro and Smyth (1996), which aimed at identifying new, valid, potentially useful

and understandable patterns that were embedded in the data. They were the selection of adequate bases, the cleansing of the inconsistencies that can afflict this data, the transformation of the data into more adequate formats, the choice of techniques and algorithms for mining, and the evaluation and interpretation of the extracted patterns in the form of the new knowledge. Today, the first three steps are grouped in a phase called *exploratory data analysis* (Peng, 2016).

As mentioned before, the present work intends to identify the effect of the presence or not of the disciplines Philosophy, Sociology and Social Studies in the curriculum of the High School of a school about the learning of its students, evaluated using the average performances by the school in the ENEM.

Of course, there is the risk of criticism for approaching Philosophy under an 'instrumentalist' bias, measuring the effect 'to something' of the presence of these disciplines, as half activities rather than ends in themselves (Valverde & Esteves, 2015). However, it is worth remembering that Philosophy has always been so considered, from Colonial Brazil, when Philosophy was introduced in education by the Jesuits **as an instrument** of fight against the Reformation (Valverde & Esteves, 2015, emphasis added), until today, when the LDB of 1996 considers that Philosophy is necessary for the curriculum **as a teaching instrument** for the "exercise of citizenship" (Brazil, Presidency of the Republic, 1996, section IV, article 36, § 1, emphasis added). However, since it is not clear how this subjective "exercise of citizenship" could be evaluated, the decision of this work was by an objective evaluation through the performances in the ENEM.

Thus, in order to achieve the above objective, the following databases were chosen:

- The microdata of the 2015 Basic Education Census, for the presence or absence of these subjects in the curriculum, and
- The data about the means per school of the performance in the ENEM 2015 of the students enrolled in the 3rd year of the regular High School.

Data related to schools are provided by the teaching unit itself, through the School Census of Basic Education, through the school's enrolment in the *Educacenso*[1] system. The reliability of the census data is initially attributed to the directors and responsible for their completion in the school, after the Inep, which verifies the consistency of the data collected, discloses the preliminary information in the Brazilian Official Journal of the Union and then opens the system for a period of 30 days for verification and possible correction of information.

These data are available through the file "Microdados do Censo da Educação Básica 2015' (Microdata of the Census of Basic Education 2015, with 2,522,857 lines in .csv format, obtained from the Inep website.[2] However, data from this Census also include

[1] http://censobasico.inep.gov.br
[2] http://portal.inep.gov.br/microdados

Early Childhood Education, Elementary Education, Youth and Adult Education (EJA), Vocational Education and Special Education and have therefore had to be filtered in order to be restricted to regular high school.

The data considered relevant for this research were:[3]

- **Indicator of Permanence in School**, defined by the percentage of participants who attended all high school in the same school in which they were enrolled in 2015.
- **School Size**, defined by the number of students enrolled in the 3rd year of Regular High School.
- **Indicator of Socioeconomic Status**, referring to the public attended by the school in a stratum or social level. It is calculated from the parents' schooling, the possession of goods, and the contracting of services by the students' family.
- **Administrative dependency**, whether federal, state, municipal or private.
- **Location**, whether urban or rural.
- **Teacher Training Indicator**, related to teachers with a degree in the same subject that they teach or have a bachelor's degree in the same course with a pedagogical completion course completed.
- **Offer or not of the discipline Philosophy**.
- **Offer or not of the discipline Social Studies**.
- **Offer or not of the discipline Sociology**.

Table 1 lists the possible values for these indicators, as well as the corresponding coding used in the ENEM System.

Table 1
Intra and out-of-school indicators that characterise school contexts.

Indicator	Value	Code
Permanence	Less than 20%	1
	From 20% to 40%	2
	From 40% to 60%	3
	From 60% to 80%	4
	80% or more	5

[3] Further information on these indicators is provided in a specific Technical Note available at: http://portal.inep.gov.br/web/enem/enem-por-escola

Indicator	Value	Code
Size	From 1 to 30 students	1
	From 31 to 60 students	2
	From 61 to 90 students	3
	More than 90 students	4
Socioeconomic Status	No information	1
	Very low	2
	Low	2
	Medium low	3
	Medium	4
	Medium-high	5
	High	6
	Very high	7
Administrative dependency	Federal	1
	State	2
	Municipality	3
	Private	4
Location	Urban	1
	Rural	2

Fonte: (Brazil, 2016a).

Data related to student performance in ENEM 2015 comes from the file 'PLANILHA_ENEM_ESCOLA_2015', in .xlsx format, with 15,597 lines for each knowledge area, included in the set 'Enem 2015 Microdados', also obtained from the Inep website.[4] The areas of knowledge covered were (Brazil, INEP, 2016a):

– Natural Sciences and their Technologies;

– Human Sciences and their Technologies;

– Languages, Codes and their Technologies;

– Mathematics and its Technologies and

– Composing

These two files were joined by the variable that contains the eight-digit School Identification Code, created by Inep at the time of the school's enrollment in the Educacenso system, and is common to both files (Figure 1). There is care in correctly and uniquely identifying each student, initially through his / her CPF, when informed, or other forms of relationship to effect this integration. In addition, a process of consistency is applied by Inep through a phonetic verification script between the data reported by the

[4] http://download.inep.gov.br/microdados/microdados_enem2015.zip

participant in the Enem 2015 registration and the data registered in the School Census (Brazil, INEP, 2016b).

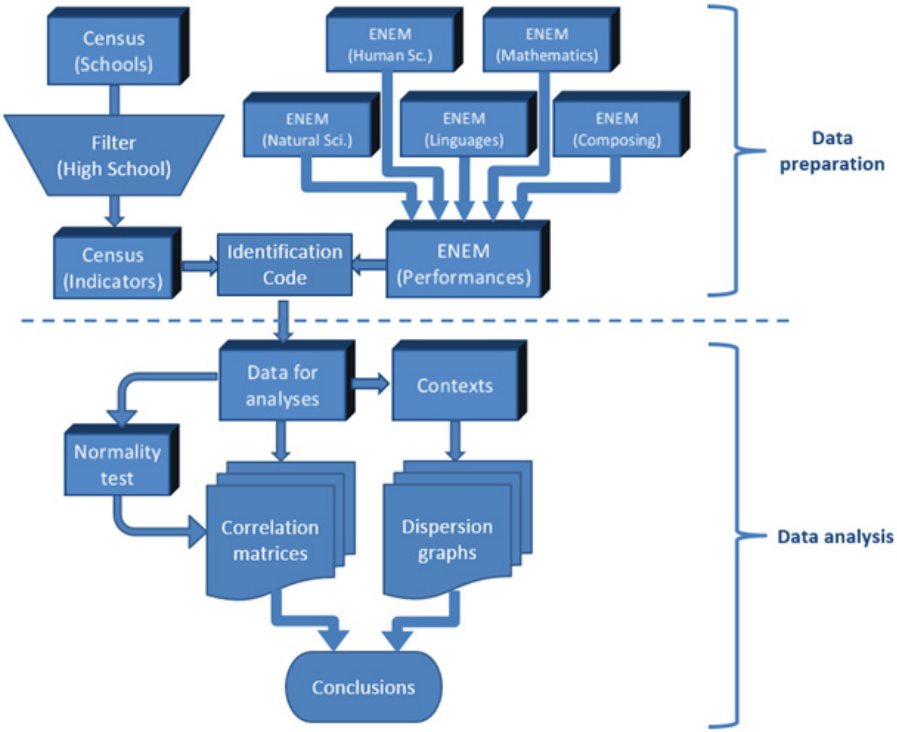

Figure 1. Flowchart of the construction of the database and its analysis.

The resulting database (Figure 1) was explored using Data Science techniques, which derive from the Knowledge Discovery in Databases (KDD) process (Fayyad et al., 1996). It includes the selection of appropriate databases, the cleaning of inconsistencies that can affect this data, the transformation of the data into more adequate formats, the choice of techniques and algorithms for mining, and the evaluation and interpretation of the extracted patterns in the form of the new knowledge.

More specifically, resources from the R language (R Core Team, 2017), version 3.4.0, available on April 21, 2017, were used. Although R is very versatile and has many features, all the work was done in a few minutes on a conventional notebook with 64-bit architecture, and on Windows 8.1 x64.

To test the hypothesis that the presence of the disciplines Philosophy, Sociology and Social Studies in the curriculum of a school has a positive effect on the learning of its High School students, as evaluated through their performances in the ENEM, an analysis

was made of the average proficiency per school in each of the knowledge areas evaluated in the ENEM 2015, and the intra and extracurricular indicators listed in Table 1.

Since the purpose of this paper is not to identify the most relevant factors for school performance, factor analysis and principal component analysis were not considered.

ANALYSES

Initiating the exploratory data analysis, it was observed that the Census of Basic Education 2015 data also include Early Childhood Education, Elementary Education, Youth and Adult Education (EJA), Professional Education and Special Education and were therefore filtered out of to be restricted to regular high school (Figure 1), resulting in 32,924 records.

In addition, it was observed that, surprisingly, the variable *Social Studies* in the file available does not contain any data and, therefore, had to be eliminated from the database.

However, to access the presence or not of the subjects Philosophy, Sociology and Social Studies, it was necessary to use the School Census file referring to classes, but, since the results of ENEM performance relate to the averages per school, without distinction of class, these data had to be aggregated by the school. On the other hand, once there are classes that were offered the subjects of Philosophy or Sociology and others that did not when the data were added, a multiplicity of records with the same entity code occurred, and it was necessary to filter the file again to eliminate these duplications, resulting in 27,993 distinct schools.

Following the data preparation phase, the five files containing data in ENEM 2015 performance per school for each knowledge area were unified by the school (Figure 1), resulting in a single file containing the data of 15,597 different schools.

Furthermore, records containing the value 'No information' in the variable *Socioeconomic Status* were discarded for not being informative, reducing the file to 14,986 schools.

Finally, these two files were joined by the School Identification Code (Figure 1), resulting in a new archive with 14,986 records corresponding to the participating ENEM 2015 schools.

Before starting the correlation analysis, however, it is necessary to investigate whether the assumption of this analysis is valid that the distributions of data have a normal distribution (Figure 1). Of course, the categorical variables in Table 1 are not normally distributed, and we will only concern ourselves with the continuous variables, such as the Teacher Training Indicator and the various average proficiencies per school, in each of the knowledge areas.

There are a number of tests for such verification of normality, such as the Jarque-Bera Test, the Lilliefors Test, and the Shapiro-Wilk Test, among many others. However, such is null hypothesis tests against the assumption of normality, serving to discard data with a distribution other than normal, contrary to what is desired here.

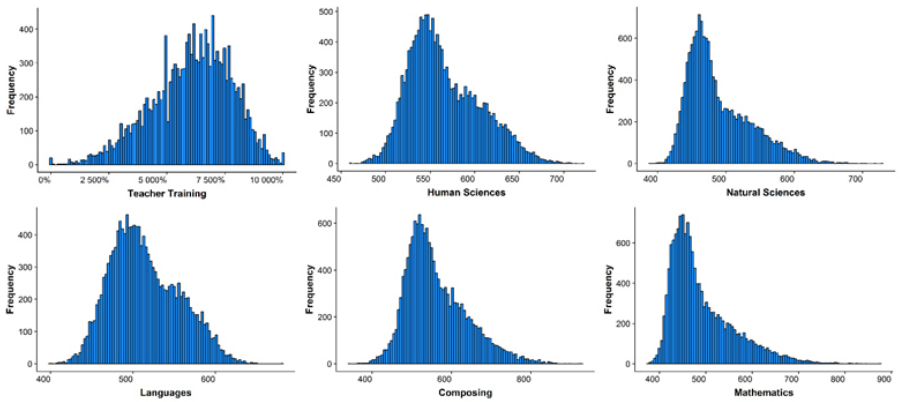

Figure 2. Histograms of the distributions of the continuous variables of the research.

Table 2
Kurtoses[5] *and asymmetries of the continuous variables of the research.*

Variable	Kurtosis	Asymmetry
Teacher Training	-0,07	-0,44
Human Sciences	-0,17	0,59
Natural Sciences	0,73	1,03
Languages	-0,42	0,40
Composing	0,62	0,85
Mathematics	1,55	1,28

The histograms of Figure 2 and the kurtoses and asymmetries of the value distributions of the variables in Table 2, while not far from the zero value corresponding to the normal distribution, show that, in fact, they approach reasonably close to it. More specifically, it is observed that the average proficiency in Human Sciences is the closest to the normal distribution, while the average proficiency in Mathematics is the one that moves away from normality.

Thus, considering the reasonably large number of data we have (n = 14,986), it is assumed that the data are sufficiently normal for the reliability of the correlation analysis

[5] As is common practice, to simplify the comparison with the normal distribution, we use here the so-called "excess kurtosis", calculated by subtracting 3 from the Pearson kurtosis.

and the average proficiency in Human Sciences is used as the measure of performance in the upcoming analyses.

After the selection of databases, cleaning and transformation in the most suitable format for the analysis, we can proceed to the data-mining phase.

In order to investigate the effect of each of the intra- and extracurricular factors that characterize school contexts on student performance in the ENEM, from the resulting base, tables of correlations were constructed between the average proficiencies in each of the knowledge areas and these different factors, as shown in Tables 3, 4, 5, 6, and 7.

Table 3
Correlations between performance in human sciences and intra- and extracurricular factors.

Factor	Cor.	p
SocEconStatus	0.75	0.00E+00
School Depend.	0.65	0.00E+00
Teacher Training	0.26	0.00E+00
School Size	-0.23	0.00E+00
School Location	-0.11	0.00E+00
Sociology	-0.06	2.18E-12
Philosophy	-0.05	1.50E-08
Stud. Permanence	-0.01	3.25E-01

Table 4
Correlations matrix between performance in natural sciences and intra- and extracurricular factors.

Factor	Cor.	p
SocEconStatus	0.75	0.00E+00
School Depend.	0.66	0.00E+00
Teacher Training	0.25	0.00E+00
School Size	-0.23	0.00E+00
School Location	-0.11	0.00E+00
Sociology	-0.06	5.97E-14
Philosophy	-0.05	2.98E-08
Stud. Permanence	-0.01	8.85E-02

Table 5
Correlations matrix between performance in Languages and intra- and extracurricular factors.

Factor	Cor.	p
SocEconStatus	0.80	0.00E+00
School Depend.	0.66	0.00E+00
Teacher Training	0.30	0.00E+00
School Size	-0.21	0.00E+00
School Location	-0.15	0.00E+00
Sociology	-0.06	1.63E-12
Philosophy	-0.05	8.19E-10
Stud. Permanence	-0.03	2.08E-04

Table 6
Correlations matrix between writing performance and intra- and extracurricular factors.

Factor	Cor.	p
SocEconStatus	0.67	0.00E+00
School Depend.	0.64	0.00E+00
Teacher Training	0.23	0.00E+00
School Size	-0.20	0.00E+00
School Location	-0.13	0.00E+00
Sociology	-0.06	8.22E-15
Philosophy	-0.04	1.83E-07
Stud. Permanence	-0.02	4.45E-03

Table 7
Correlations matrix between performance in Mathematics and intra- and extracurricular factors.

Factor	Cor.	p|
SocEconStatus	0.71	0.00E+00
School Depend.	0.62	0.00E+00
Teacher Training	0.25	0.00E+00
School Size	-0.20	0.00E+00
School Location	-0.11	0.00E+00
Sociology	-0.06	2.06E-12
Philosophy	-0.05	1.68E-08
Stud. Permanence	0.02	1.77E-02

From Tables 3, 4, 5, 6, and 7, it is observed that, in any of the five areas of knowledge evaluated by the ENEM 2015, the average proficiency per school correlated very weakly with the variables *Philosophy* and *Sociology*, with average correlations of 0.046 and 0.059 respectively, being these in all the cases, statistically significant results ($p = 0.00$), considering the sample size ($n = 14{,}976$), which leads us to reject the hypothesis that the presence or not in the disciplines Philosophy, Sociology and Social Studies in a

school curriculum has had any effect on the learning of its students in High School, as evaluated through their performances in the ENEM. Although of course aware of the statisticians' warning that "correlation does not imply causation" (Field, 2003, p.10), if a strong correlation does not imply establishing a causal relationship between two variables, on the other hand, a very weak correlation suggests the inexistence of a causal relation between them.

On the other hand, it is also observed that the factors with which these proficiencies correlated best were the Socioeconomic Status Indicator of the students, with correlations varying from 0.67 to 0.80 ($p = 0.00$), and the Administrative Dependence of the school, with correlations ranging from 0.62 to 0.66, all also statistically significant ($p = 0.00$). Thus, as shown in the dispersion and violin charts of Figure 3, not surprisingly, the best performances corresponded to students with a very high Socioeconomic Status, in schools with federal or private administration, of smaller size and with better-trained teachers.

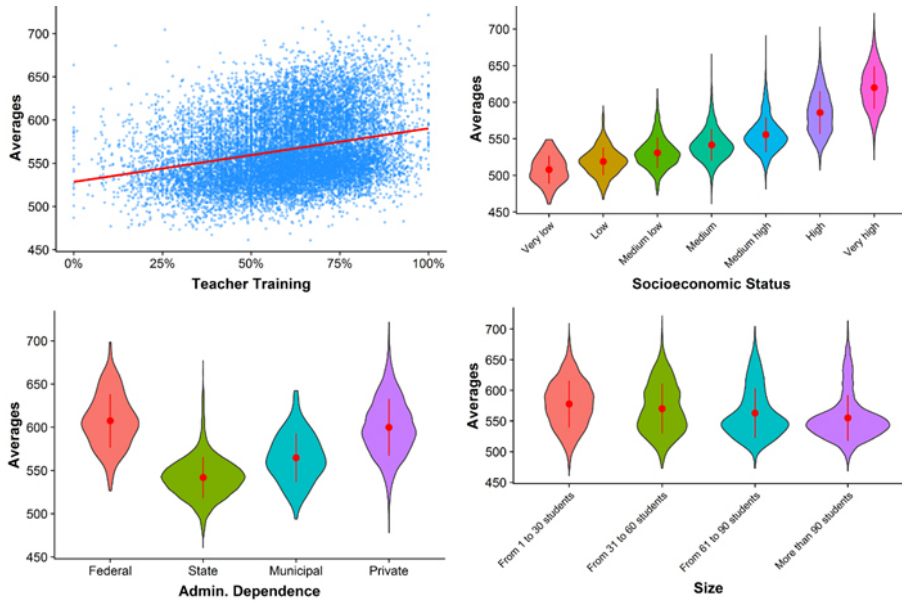

Figure 3. Variation of average performances in Human Sciences in relation to the most correlated intra and extracurricular factors.

However, as the document *Divulgação ENEM 2015 por escola* (ENEM 2015 Disclosure per school) (Brazil, INEP, 2016a) warns, in view of the heterogeneity of contexts in which schools are inserted, comparisons among schools, according to INEP, should take into account the similarity of the contexts in which the schools are located, for the due consideration between the performance and the different intra- and extracurricular factors that characterize these contexts (Brazil, INEP, 2016a).

Thus, for a valid analysis of the effect of the presence or not of the disciplines Philosophy and Sociology in the curriculum of the school about its result in the ENEM, it is necessary to keep invariant the other characteristics of the school and the group that can also influence this result. Thus, one can only compare the performance of schools in a certain context that does not have the discipline of Philosophy with schools of the same context and that have it in their curricula.

In this work, each distinct set of values for the parameters indicated in Table 1 was treated as a 'context' (Figure 1). It should be noted, however, that these contexts that emerged during this research are more specific than any of the contexts defined in the document *ENEM 2015 Disclosure by School*, also distinguishing the variables *Administrative Dependence* and *Location*, and therefore do not have a direct correspondence with those. Thus, for example, according to Table 1, the context 54741 represents schools in which 80% or more of the participating students did all the high school in the school in which they were enrolled in 2015, of big size, that is, with 91 or more students enrolled in the 3rd year of regular high school, with high Socioeconomic Status, private and urban indicators. This context, together with contexts 54711 and 54721, are contained in Context 1 defined in that document *ENEM 2015 Disclosure by School* (Brazil, INEP, 2016a).

An inspection of the results indicates that out of the 378 contexts present in the data, only 43 satisfy this restriction to include both schools that have the discipline of Philosophy in their curricula and schools of the same context that do not. In the same way, only 123 contexts satisfy this restriction regarding the discipline of Sociology. Restricting the database to analysis only in these 43 contexts related to Philosophy results in only 5,447 records, while in the 123 contexts concerning Sociology, in 12,713 schools.

Figure 4 shows the dispersion graph of the performances in the Human Sciences knowledge area of each of the 5,447 schools grouped in these 43 contexts related to the presence or not of the discipline Philosophy. Each vertical set of points represents the distribution of these performances within the same context.

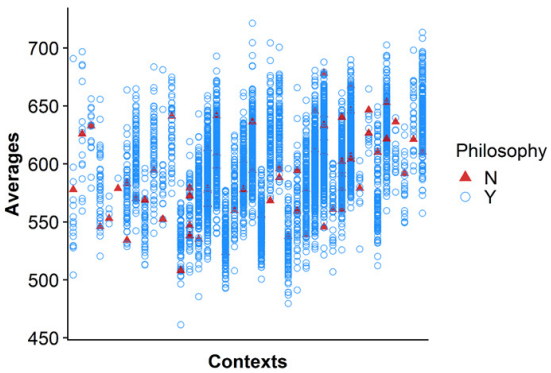

Figure 4. Scatter plot of the performances in Human Sciences grouped by context, regarding Philosophy.

Expected differences in performance distributions between different contexts are observed. On the contrary, the marks of the absence of the discipline Philosophy are distributed, vertically within each context, in a random way amid the marks of its presence in the curricular grid; it is not observed any effect of the presence or not of this discipline on the performances.

Figure 5 shows the dispersion graph of the performances in the Human Sciences knowledge area of each of the 12,713 schools grouped in the 123 contexts related to the presence or not of Sociology. Likewise, aside from the expected differences between different contexts, the marks of the absence of the Sociology discipline are randomly distributed vertically within each context, not observing any effect of the presence or not of this discipline on the performances.

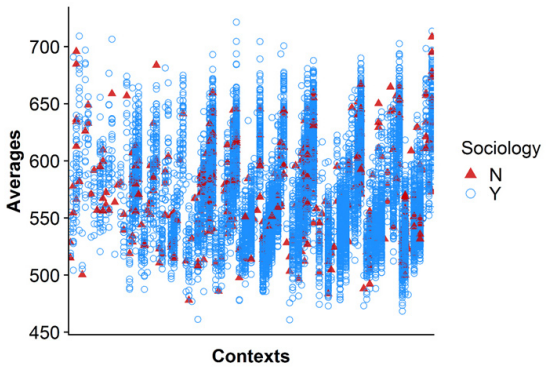

Figure 5. Scatter plot of the performances in Human Sciences grouped by context, regarding Sociology.

This result seems to contradict the significantly positive results obtained by Gorard, Siddiqui and See (2015) in reading comprehension, mathematical skills, spatial relations, abstract reasoning, intellectual confidence and classroom engagement after a year of "thinking skills teaching" through "philosophical dialogue". There is a clear difference in that process since it is a project aimed at 4th and 5th school years students. However, we believe that the major difference lies in the approach used: this intervention was based on the educational approach centred on fostering philosophical research, originally developed by Matthew Lipman, and known in Brazil since 1985 as a program of "Philosophy for Children "(P4C) (Kohan, 2000; Lipman, Sharp, & Oscanyan, 1994; Lipman, 1990). In fact, the longitudinal study of Colom et al. (2014), covering students from 6 to 18 years of age who participated in P4C activities over 12 school years, observed highly significant positive results in verbal ability, numerical ability, spatial relations, abstract reasoning, language and mathematics.

Without underlining the merits of the fundamentals and practices of this program[6], the point to be emphasized here is that, instead of a teaching limited to the analysis and explanation of texts, under the influence of the French school, Lipman's methodology proposes a more active approach to those involved in the teaching and learning of Philosophy (Fávero et al., 2004). Here, teachers are trained in reading philosophical novels (those written by Lipman, however[7]) in the investigative dialogue in the classroom, from the situations proposed by the text, and in the search for solutions that favour the development of reasoning (Kohan, 2000), although understood as having the goal of "avoiding the risk that today's youth will repeat the rebellious and 'irrational' behaviour of their colleagues in the 1960s," according to Silveira's (2015) critique.

FINAL CONSIDERATIONS

Far from taking sides in the discussion about the pertinence of the inclusion of these disciplines of Philosophy, Sociology and Social Studies in High School or defending the program of "Philosophy for Children" as a solution, the empirical results above, in not observing any effect of the presence or not of these disciplines on student performances, seem to indicate the need for a rethink of how they should be organized.

The philosopher Marilena Chauí reports her first contact with Philosophy at school: "The first lesson began with the teacher saying 'Palamede of the Eleatic School, Zeno of Elea …'. It was a class of 15-year-olds who had never heard of Philosophy, much less of Zeno of Elea, and even less of who could be a Palamede!" (Cornelli, Carvalho, & Danelon, 2010, pp.17-18). In spite of this perhaps frightening first class, she decided to pursue Philosophy at the university, thanks to a previous rewarding initiation she had at home with this subject, with parents journalist and teacher, and then with other teachers in the same school.

Not all students are fortunate enough to have a rewarding previous initiation at home. Nonetheless, they should not be deprived of the benefits that these disciplines of Philosophy, Sociology and Social Studies could provide for their academic learning and their training as a conscious and critical citizen. It is hoped that the results of this work will contribute in some way to the solution to this dilemma.

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[6] For a critical analysis of this program, see Silveira (2015) who considers it a "macdonaldization" of the teaching of philosophy ".

[7] It would indeed be interesting to investigate the results of using other 'philosophical novels', such as, perhaps, *The Little Prince*, *Gulliver's Travels*, or *Animal Farm*.

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