Article

What Kind of School Organizational Decisions Serve to Enhance Sustainable Personal and Social Growth?

José Víctor Orón Semper [1], Inmaculada Lizasoain [2,3,*], Jaione Abaurrea [2], Concepción González-García [4] and Esperanza Ayuga-Téllez [4]

1 Fundación UpToYou Educación, 50015 Zaragoza, Spain; jv.oron@uptoyoueducacion.com
2 Department of Statisitics, Computer Sciences and Mathematics, Universidad Pública de Navarra, Campus Arrosadia, 31006 Pamplona, Spain; jaione.abaurrea@unavarra.es
3 Institute of Advanced Materials and Mathematics, INAMAT^2, Universidad Pública de Navarra, Campus Arrosadia, 31006 Pamplona, Spain
4 Department of Forestry and Environmental Engineering and Management, Universidad Politécnica de Madrid, 28040 Madrid, Spain; concepcion.gonzalez@upm.es (C.G.-G.); esperanza.ayuga@upm.es (E.A.-T.)
* Correspondence: ilizasoain@unavarra.es

Abstract: Sustainable decisions in education are those which pursue long-term achievements for students. In many cases, the principals of the schools are those who must make these decisions. In this paper we explore some of the factors that influence the students' long-term development by means of an analysis of the correlation between certain organizational aspects of the schools which directly depend on the principals and the scores that their students have obtained in the International Assessment PISA 2018 in mathematics, reading and science. The results point to a better long-term student achievement when the organizational decisions are designed to enhance interpersonal relationships (teacher-teacher, teacher-student and student-student), responding to the specific needs of each person and based on trust. Conversely, it seems that when the organizational decisions are merely made to control academic life, they either bear upon academic achievement in a negative way or do not significantly affect it. The results suggest that carefully attending to interpersonal relationships is the key factor behind all the educational decisions which generate sustainable socio-personal development.

Keywords: PISA results; school organizational decisions; sustainable development; interpersonal relationships

1. Introduction

The objectives outlined by the UN in the 2030 Agenda for Sustainable Development [1] have paved the way for the political decisions in education throughout the world over the coming decades. Sustainable decisions in education are those which seek to achieve long-term outcomes in students, and as such they are decisions which are not only taken by the political institutions but also by the principals of the schools.

Research literature has already demonstrated that school principals' actions cannot be separated from student outcomes, from academic achievement to social and emotional development [2]. Moreover, school principals are critical actors in encouraging teachers to be involved in professional evaluation processes and in fostering their professional development [3], which indirectly influences students' development. Jarl et al. [4] show that school performance is the result of human behavior and relationships. It can be affected and changed by the actions of individual teachers and principals as well as by policy-makers. The authors explain how success is fostered by an organizational dynamic that both encourages and reproduces cooperation and support among colleagues as well as a shared vision of teachers and principals acting on behalf of the learning of all students. In this regard, Intxausti et al. [5] consider the action of school leaderships as crucial in achieving effectiveness in education.

A primary goal of this paper was to explore some of the factors that influence students' long-term development by means of an analysis of the statistical correlation between the organizational aspects of the schools which depend on the principal and the scores that they have obtained in the international assessments PISA 2018 (OECD's programme for International Student Assessment aimed to measure 15-year-olds' ability to use their reading, mathematics and science knowledge and skills to meet real-life challenges) of competence in mathematics, reading and science, as well as in global competence.

Global competence has been defined as the capacity to examine local, global and intercultural issues, to understand and appreciate the perspectives and world views of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for collective well-being and sustainable development [6]. The students' assessment in global competence in PISA 2018 was carried out by means of indicators of specific socio-emotional skills and attitudes towards global and intercultural issues, as well as by measuring some reasoning and argumentation skills related to these issues [7].

However, we have noticed that the answers to the students' PISA 2018 questionnaire about global competence have been significantly incomplete. Some participant schools have only partially completed them and others have not answered them at all. For this reason, we have decided not to include the students' assessments in global competence in our study. Even so, certain issues related to global competence have been considered in our study because, in the PISA 2018 school questionnaire addressed to the principals of the schools [8], they are asked about specific organizational aspects particularly relevant to global competence, such as the carrying out of practices related to multicultural learning in their school, the inclusion of some multicultural aspects in the formal curricula of their countries (communicating with people from different cultures, knowledge of these cultures, respect for cultural diversity, openness towards intercultural experiences, foreign languages, critical thinking skills, etc.) or the inclusion in the official curricula of topics such as climate change and global warming, global health, migration and international conflicts, hunger or malnutrition in different parts of the world, causes of poverty or equality between men and women in different parts of the world.

The questionnaire addressed to the school principals also includes questions about other issues related to the principals' way of understanding education, whether as a mere question of skills to be acquired ([9,10]) or as a process which also includes personal and social development [11]; their perspectives on, for instance, how to approach the career guidance of their students, the use of digital devices of social networks in teaching, the criteria for grouping students into different classes (by ability or otherwise), how the assessments of students are used (to classify them into categories or to guide students' learning and adapt teaching to students' needs); the way that the school use the external or internal evaluations and so on.

The diverse perspectives of understanding education have been related by Orón et al. [12] to three models of understanding human development [13]: (1) the autonomous self model (AS), which conceives of human growth as driven by cognition, and achieved as a result of individual productive activity aimed at mastering the environment, according to the wishes of the individual; (2) the personal self model (PS), which also understands the action as driven by cognition, whilst also giving value to human relationships in the pursuit of individual growth; (3) the inter-processual self (IPS), a social model of human interpersonal development which considers that personal growth cannot occur without the individual attending to personal relationships, looking for others' growth at the same time as one's own development.

Following the IPS approach [13], acting for the common good does not necessarily occur as a consequence of merely focusing on skills acquisition. Rather, such socio-personal development occurs when human action proceeds from one's interiority and is oriented towards the overall growth of specific others as much as one's own growth [13,14]. Moreover, this model does not conceive of leadership in education as successfully applying

specific methodologies but rather as knowing how to make sense of education and promote cooperation among colleagues [11,15] and students [12,16].

In order to delimit the study, we have a priori classified the questions addressed to the school principals in the PISA 2018 study into three categories: those about structural aspects of the school, such as its location or its public or private status, which the principals have no power to influence; objective questions about organizational aspects over which the principal has the power to make decisions, such as grouping the students in accordance with their ability, for instance; and finally, subjective questions about issues that the school principal cannot directly act on, such as teachers' perceptions or opinions. We have analyzed the answers which have been given to the entire second group of questions, as well as those to some questions in the first group, with the aim of identifying those variables which correlate with the students' achievement in mathematics, reading and science as well as determining which organizational decisions the principals could make in order to enhance sustainable student development.

The results point to a better long-term achievement on the part of the students when the organizational decisions are based on trust [17] and oriented to enhance interpersonal relationships (teacher-teacher, teacher-student and student-student) in response to the specific needs of each person. This attitude is inseparable from a growth mindset [18], on the part of both school principals and teachers, which believes in the possibility of the growth of all the educational actors, without classifying them in accordance with their performance. Conversely, it seems that the decisions designed merely to control academic life either bear upon academic achievement in a negative way or do not significantly affect it. On the whole, we find out that carefully attending to the interpersonal relationships is the key factor which is behind all the educational policies which generate personal and social development in a sustainable way.

2. Materials and Methods

The Program for International Student Assessment (PISA) is a research project, conducted by the Organization for Economic Co-operation and Development (OECD), which evaluates the knowledge and skills gained by 15-year-old students over three-year periods. For the analysis, we have used the answers which were given to the PISA 2018 questionnaires throughout the world [19]. The files available on [19] include the background questionnaires and the data files (from 2000 to 2018) which enable the processing of the data.

The analytical frameworks of the theory underlying PISA surveys, as well as the assessments, can be found in [20]. Since 2000, the design of the questionnaires has been progressively reviewed in order to improve the cross-country comparability of the measured issues [21–23]. This paper focuses on analyzing the correlation between the students' outcomes in mathematics, science and reading (dependent variables) and the answers given by the school principals (independent variables).

The questions addressed to the school principals [8] have been classified into three categories: those about structural aspects of the school; objective questions about organizational aspects over which the principal has the power to make decisions; and subjective questions about issues which the school principal cannot directly act on. For the sake of objectivity, we have only taken the responses given to the entire second group of questions, as well as those to some questions in the first group, as independent variables (a total of 128 variables), distinguishing between the quantitative variables (where the answer is a percentage, a number or an ordinal), shown in Table 1, and the qualitative ones (where the principal is asked to indicate which category the school belongs to), which are shown in Table 2. The first column in each table shows the coding and description of the questions, while the second and third columns show the items (regarded as independent variables) which are dealt with in each question (coding and description). These codes have been taken from the "School questionnaire for PISA 2018. Main survey version" [8].

Table 1. Independent quantitative variables.

Question	Variable Code	Variable Description
SC016 About what percentage of your total funding for a typical school year comes from the following sources?	SC016Q01TA	Percentage of the funding sources: government
	SC016Q02TA	Percentage of the funding sources: students' families
	SC016Q03TA	Percentage of the funding sources: benefactors/donations
	SC016Q04TA	Percentage of the funding sources: other
SC002 What was the total school enrolment (number of students)?	SC002Q01TA	Number of boys
	SC002Q02TA	Number of girls
SC048 Please estimate the percentage of students in <national modal grade for 15-year-olds> in your school who have the following characteristics	SC048Q01NA	Percentage of students with a native language different from the official one
	SC048Q02NA	Percentage of students with special needs
	SC048Q03NA	Percentage of students from economically disadvantages homes
SC004 The goal of the following set of questions is to gather information about the student-computer ratio for students in the <national modal grade for 15-year-olds> at your school.	SC004Q01TA	Number of 15-years-old students in the school
	SC004Q02TA	Number of computers available for15-years-old's students for educational purposes
	SC004Q03TA	Number of 15-years-old's computers connected to the internet
	SC004Q04NA	Number of 15-years-old's portable computers
	SC004Q05NA	Number of interactive whiteboards in the school
	SC004Q06NA	Number of data projectors in the school
	SC004Q07NA	Number of computers (connected to the internet) available for teachers
SC018 How many of the following teachers are on the staff of your school?	SC018Q01TA01	Number of full-time teachers on the staff
	SC018Q01TA02	Number of part-time teachers on the staff
	SC018Q02TA01	Number of fully certified fulltime teachers
	SC018Q02TA02	Number of fully certified part-time teachers
	SC018Q05NA01	Number of full-time teachers with a bachelor's degree
	SC018Q05NA02	Number of part-time teachers with a bachelor's degree
	SC018Q06NA01	Number of full-time teachers with a master's degree
	SC018Q06NA02	Number of part-time teachers with a master's degree
	SC018Q07NA01	Number of full-time teachers with a doctor's degree
	SC018Q07NA02	Number of part-time teachers with a doctorate

Table 1. *Cont.*

Question	Variable Code	Variable Description
SC025 During the last three months, what percentage of teaching staff in your school has attended a programme of professional development?	SC025Q01NA	Percentage of teachers who have participated in courses of professional development
SC003 What is the average size of <test language> classes in <national modal grade for 15-year-olds> in your school?	SC003Q01TA	Average number of 15-years-old students per classroom
SC164 In the last full academic year, what proportion of students in your school's final grade left school without a <certificate>?	SC164Q01HA	Percentage of students who leave school without a certificate
SC064 During <the last academic year>, what proportion of students' parents participated in the following school- related activities?	SC064Q01NA	Percentage of parents who discuss their child's progress with a teacher on their own initiative
	SC064Q02NA	Percentage of parents who discuss their child's progress on the initiative of a teacher
	SC064Q03NA	Percentage of parents who participate in local school government
	SC064Q04NA	Percentage of parents who voluntarily participate in school activities
SC016 About what percentage of your total funding for a typical school year comes from the following sources?	SC016Q01TA	Percentage of the funding sources: government
SC016 About what percentage of your total funding for a typical school year comes from the following sources?	SC016Q02TA	Percentage of the funding sources: students' families
	SC016Q03TA	Percentage of the funding sources: benefactors/donations
SC002 As of <February 1, 2018>, what was the total school enrolment (number of students)?	SC016Q04TA	Percentage of the funding sources: other
	SC002Q01TA	Number of boys
SC002 As of <February 1, 2018>, what was the total school enrolment (number of students)?	SC002Q02TA	Number of girls
SC048 Please estimate the percentage of students in <national modal grade for 15-year-olds> in your school who have the following characteristics.	SC048Q01NA	Percentage of students with a native language different from the official one

Table 1. *Cont.*

Question	Variable Code	Variable Description
SC048 Please estimate the percentage of students in \<national modal grade for 15-year-olds\> in your school who have the following characteristics. SC004 The goal of the following set of questions is to gather information about the student-computer ratio for students in the \<national modal grade for 15-year-olds\> at your school	SC048Q02NA	Percentage of students with special needs
	SC048Q03NA	Percentage of students from economic disadvantages homes
	SC004Q01TA	Number of 15-years-old students in the school
SC004 The goal of the following set of questions is to gather information about the student-computer ratio for students in the \<national modal grade for 15-year-olds\> at your school SC018 How many of the following teachers are on the staff of your school?	SC004Q02TA	Number of computers available for15-years-old's students for educational purposes
	SC004Q03TA	Number of 15-years-old's computers connected to the internet
	SC004Q04NA	Number of 15-years-old's portable computers
	SC004Q05NA	Number of interactive whiteboards in the school
	SC004Q06NA	Number of data projectors in the school
	SC004Q07NA	Number of computers (connected to the internet) available for teachers
	SC018Q01TA01	Number of full-time teachers on the staff
SC018 How many of the following teachers are on the staff of your school? SC025 During the last three months, what percentage of teaching staff in your school has attended a programme of professional development?	SC018Q01TA02	Number of part-time teachers on the staff
	SC018Q02TA01	Number of fully certified fulltime teachers
	SC018Q02TA02	Number of fully certified part-time teachers
	SC018Q05NA01	Number of fulltime teachers with a bachelor's degree
	SC018Q05NA02	Number of part-time teachers with a bachelor's degree
	SC018Q06NA01	Number of fulltime teachers with a master's degree
	SC018Q06NA02	Number of part-time teachers with a master's degree
	SC018Q07NA01	Number of full-time teachers with a doctor's degree
	SC018Q07NA02	Number of part-time teachers with a doctorate
	SC025Q01NA	Percentage of the teachers that have participated in courses of professional development
SC003 What is the average size of \<test language\> classes in \<national modal grade for 15-year-olds\> in your school?	SC003Q01TA	Average of number of 15-years-old students per classroom

Table 1. *Cont.*

Question	Variable Code	Variable Description
SC164 In the last full academic year, what proportion of students in your school's final grade left school without a <certificate>?	SC164Q01HA	Percentage of students who leaves school without a certificate
SC064 During <the last academic year>, what proportion of students' parents participated in the following school- related activities?	SC064Q01NA	Percentage of the parents who discusses their child's progress with a teacher on their own initiative
SC064 During <the last academic year>, what proportion of students' parents participated in the following school- related activities?	SC064Q02NA	Percentage of the parents who discusses their child's progress on a teacher's initiative
	SC064Q03NA	Percentage of the parents who participates in local school government
	SC064Q04NA	Percentage of the parents who voluntarily participates in the school activities

Table 2. Qualitative independent variables.

Question	Variable Code	Variable Description
SC001 Which of the following definitions best describes the community in which your school is located?	SC001Q01TA	Location of the school: hamlet, village, small town, town, city or large city
SC013	SC013Q01TA	Public or private school
SC161 Is your school a private or a public school?	SC161Q01SA	Career guidance for students is not available in the school
	SC161Q02SA	All teachers share the responsibility for career guidance
	SC161Q03SA	Specific teachers have special responsibility for career guidance
	SC161Q04SA	Career guidance: counsellors are employed at the school
	SC161Q05SA	Career guidance: counsellors regularly visit the school
SC162 If career guidance is available at your school, which of the statements below best describes the situation for students in <national modal grade for 15-year-olds>?	SC162Q01SA	Is there formally scheduled career guidance? (a negation is understood as career guidance sought voluntarily by students)

Table 2. *Cont.*

Question	Variable Code	Variable Description
SC156 Does your school have any of the following?	SC156Q01HA	The school has its own written statement on the use of digital resources
	SC156Q02HA	There are digital resources (for instruction)
	SC156Q03HA	Use of digital resources for specific subjects
	SC156Q04HA	There are meetings of teachers on the use of digital devices
	SC156Q05HA	There is a specific programme to prepare students for responsible internet behavior
	SC156Q06HA	There is a specific policy about using social networks in teaching and learning
	SC156Q07HA	There is a specific programme to promote collaboration on the use of digital devices among teachers
	SC156Q08HA	There is scheduled time for teachers to meet in order to share, evaluate or develop instructional materials and approaches that employ digital devices
SC011 Which of the following statements best describes the schooling available to students in your location?	SC011Q01TA	How many other schools are available in your location?
SC012 How often are the following factors considered when students are admitted to your school? (never/sometimes/always)	SC012Q01TA	A student's record of academic performance is considered for their admission
	SC012Q02TA	Recommendation of feeder schools is considered for students' admission
	SC012Q03TA	Parents' endorsement of the philosophy of the school is considered for students' admission
	SC012Q04TA	Whether the student requires or is interested in a special programme is considered for their admission
	SC012Q05TA	Admission preference is given to family members of current or former students
	SC012Q06TA	Admission preference is given to students who reside in a particular area
	SC012Q07TA	Other criteria for the admission of students
SC042 What is your school's policy about this for students in <national modal grade for 15-year-olds>?	SC042Q01TA	Students are grouped by ability into different classes
	SC042Q02TA	Students are grouped by ability within their classes

Table 2. *Cont.*

Question	Variable Code	Variable Description
SC154 In your school, are assessments of students in <national modal grade for 15-year-olds> used for any of the following purposes?	SC154Q01HA	Assessments of students are used to guide students' learning
	SC154Q02WA	Assessments of students are used to inform parents about their child's progress
	SC154Q03WA	Assessments of students are used to make decisions about students' retention or promotion
	SC154Q04WA	Assessments of students are used to group students for instructional purposes
	SC154Q05WA	Assessments of students are used to compare the school to district or national performance
	SC154Q06WA	Assessments of students are used to monitor the school's progress from year to year
	SC154Q07WA	Assessments of students are used to make judgements about teachers' effectiveness
	SC154Q08WA	Assessments of students are used to identify aspects of instruction or the curriculum that could be improved
	SC154Q09HA	Assessments of students are used to adapt teaching to the students' needs
	SC154Q10WA	Assessments of students are used to compare the school with other schools
	SC154Q11HA	Assessments of students are used to award certificates to students
SC036 In your school, are achievement data used in any of the following <accountability procedures>?	SC036Q01TA	Achievement data are posted publicly (e.g., in the media)
	SC036Q02TA	Achievement data are tracked over time by an administrative authority
	SC036Q03NA	Achievement data are provided directly to parents
SC037 Do the following arrangements aimed at quality assurance and improvements exist in your school and where do they come from?	SC037Q01TA	Internal evaluation/Self-evaluation of the school
	SC037Q02TA	External evaluation of the school
	SC037Q03TA	Written specification of the school's curricular profile and educational goals
	SC037Q04TA	Written specification of student performance standards
	SC037Q05NA	Systematic recording of data such as teacher or student attendance and professional development
	SC037Q06NA	Systematic recording of student test results and graduation rates
	SC037Q07TA	Seeking written feedback from students (e.g., regarding lessons, teachers or resources)
	SC037Q08TA	Teacher mentoring
	SC037Q09TA	Regular consultation with experts over a period of at least six months (aimed at school improvement)

Table 2. *Cont.*

Question	Variable Code	Variable Description
	SC037Q10NA	A standardized policy for reading subjects (including staff development)
SC165 Do the following statements reflect teachers' practices for multicultural learning in your school?	SC165Q01HA	Students learn about the histories of diverse cultural groups living in their country
	SC165Q02HA	Students learn about the histories of diverse cultural groups living in other countries
	SC165Q03HA	Students learn about the cultures (e.g., beliefs, norms, values, customs, or arts) of diverse groups living in their country
	SC165Q04HA	Students learn about different cultural perspectives on historical and social events
	SC165Q05HA	Activities that encourage students' expression of diverse identities are supported
	SC165Q06HA	An exchange programme with schools in other countries is offered
	SC165Q07HA	Multicultural events are organized
	SC165Q08HA	Festivities from other cultures are celebrated
	SC165Q09HA	Students are encouraged to communicate online with people from other cultures
	SC165Q10HA	Different approaches to educate students about cultural differences are adopted
SC167 Is there any formal curriculum for the following in <national modal grade for 15-year-olds>?	SC167Q01HA	Formal curriculum includes communication with people from different cultures or countries
	SC167Q02HA	Formal curriculum includes knowledge of different cultures
	SC167Q03HA	Formal curriculum includes openness to intercultural experiences
	SC167Q04HA	Formal curriculum includes respect for cultural diversity
	SC167Q05HA	Formal curriculum includes foreign languages
	SC167Q06HA	Formal curriculum includes critical thinking skills
SC158 Is there any formal curriculum for the following topics in <national modal grade for 15-year-olds>?	SC158Q01HA	Formal curriculum includes climate change and global warming
	SC158Q02HA	Formal curriculum includes global health (epidemics)
	SC158Q04HA	Formal curriculum includes migration
	SC158Q07HA	Formal curriculum includes international conflicts
	SC158Q08HA	Formal curriculum includes hunger or malnutrition around the world
	SC158Q09HA	Formal curriculum includes causes of poverty
	SC158Q12HA	Formal curriculum includes equality between men and women around the world

Table 2. *Cont.*

Question	Variable Code	Variable Description
SC159 Does your school host visiting teachers from other countries?	SC159Q01HA	The school hosts visiting teachers from other countries
SC053 <This academic year>, which of the following activities does your school offer to students in the <national modal grade for 15-year-olds>?	SC053Q01TA	The school offers a band, orchestra or choir to students
	SC053Q02TA	The school has performed a school play or musical
	SC053Q03TA	The school creates a school year-book, newspaper or magazine
	SC053Q04TA	The school offers volunteering or service activities to students
	SC053Q12IA	The school offers a book club to students
	SC053Q13IA	The school offers debating activities to students
	SC053Q09TA	The school offers art activities to students
	SC053Q10TA	The school offers sporting activities to students
	SC053Q14IA	The school offers lectures or seminars by guest speakers
	SC053Q15IA	The school offers collaboration with local libraries
	SC053Q16IA	The school offers collaboration with local newspapers
SC150 Does your school offer any of the following options to students in <national modal grade for 15-year-olds> whose <heritage language> is not the <test language>?	SC150Q01HA	The students with a native language different from the official one receive instruction aimed at developing skills in the official language
	SC150Q02HA	The students with a native language different from the official one attend a preparatory programme aimed at developing skills in the official language
	SC150Q03HA	The students receive some instruction in school subjects through their own language before transferring to regular classes
	SC150Q04HA	The students receive a significant amount of instruction in their own language aimed at developing proficiency in both languages
	SC150Q05HA	Class size is reduced to attend to students with a native language different from the official one
SC152 Does your school offer additional <test language> lessons apart from <test language> lessons offered during the usual school hours?	SC152Q01HA	Additional lessons in the official language are offered out of regular school hours

Table 2. *Cont.*

Question	Variable Code	Variable Description
SC160 What is the purpose of these additional <test language> lessons?	SC160Q01WA	Which is the purpose of the additional lessons on the official language (enrichment or remedial)
SC052 For 15-year-old students, does your school provide the following study help?	SC052Q01NA	Room(s) where the students can do their homework
	SC052Q02NA	Staff help with homework
	SC052Q03HA	Peer-to-peer tutoring

The goal is to identify which of these variables bear on the students' outcomes in mathematics, science and reading (dependent variables) in order to know how sustainable improvement might be achieved by the principal of a school.

As dependent variables we have taken the mean values of the scores obtained by the school in the general skills evaluated in each competence (mathematics, science and reading [19]), which have been obtained as a result of computing the average of the marks achieved by the students in each of the ten values collected in the test for each discipline. After eliminating the schools with less than nine respondents, we have considered a total of 17,995 schools (some of them with questionnaires only partially completed) located in 79 countries (with an average of around 228 schools per country). Luxemburg is the country with the minimum number of participating schools (40), while Spain has the maximum number (1011). We have estimated that a total of 564,282 students have been considered in the study.

In order to identify the variables that might bear upon the marks obtained in the tests (in mathematics, reading and science) we carried out two kinds of analyses.

For each quantitative variable in Table 1, a Pearson correlation coefficient was computed (in Table 3) to measure the strength of a linear association between this quantitative variable and the mean values of the scores in each competence (mathematics, science and reading). Correlations between 0.1 and 0.3 will be regarded as "weak correlations" and correlations higher than 0.3, as "intermediate" correlations. These benchmarks are also taken as significant in other papers [24,25].

Each qualitative variable (in Table 2) classifies the schools into several categories (public or private, for instance). For each qualitative variable, a one-way ANOVA test was carried out to analyze if there are any statistically significant differences between the means of the scores in each competence corresponding to different categories (the null hypothesis being that there are no differences between these mean values). The large size of the sample enabled most of the analyses to accept that these differences are statistically significant even when there is a relatively low significance level. We decided to regard the influence of a variable as statistically significant whenever the differences between the averages corresponding to different categories of the variable were over 4% of the average score (around 420 points), i.e., over 20 points. These values correspond to an effect of the Cohen size of $d = 0.2$. These benchmarks have been recently established by Kraft [26], who argues that, in an educational context, it may be more justified than in others to interpret respectively $d < 0.05$, $d < 0.20$ and $d > 0.50$ as "small", "medium" and "large" effect sizes.

In this paper, the analysis was carried out with Statgraphics Centurion XVII software (2014, Statpoint Technologies, Inc., The Plains, VA, USA).

3. Results

The correlation between the marks obtained in each pair of disciplines is very high: 0.9407 between Mathematics and Reading; 0.9642 between Mathematics and Science; and 0.9725 between Reading and Science.

Table 3 shows the Pearson correlation coefficients between the variables in Table 1 and the averages of the values obtained in Mathematics, Reading and Science.

Table 3. Pearson correlation coefficients between the numerical variables and the dependent ones.

Variable Code	Variable Description	Maths Mean	Science Mean	Reading Mean
SC016Q01TA	Percentage of the funding sources: government	−0.0367	−0.0539	−0.0526
SC016Q02TA	Percentage of the funding sources: students' families	0.0778	0.0927	0.0935
SC016Q03TA	Percentage of the funding sources: benefactors/donations	−0.0790	−0.0655	−0.0727
SC016Q04TA	Percentage of the funding sources: other	−0.0366	−0.0362	−0.0363
SC002Q01TA	Number of boys	0.1214	0.1208	0.0898
SC002Q02TA	Number of girls	0.1351	0.1520	0.1604
SC048Q01NA	Percentage of students with a native language different from the official one	−0.0762	−0.1076	−0.1290
SC048Q02NA	Percentage of students with special needs	0.0226	0.0067	0.0167
SC048Q03NA	Percentage of students from socioeconomically disadvantaged homes	−0.4449	−0.4171	−0.4017
SC004Q01TA	Number of 15-years-old students in the school	0.0978	0.1160	0.0992
SC004Q02TA	Number of computers available for 15-years-old students for educational purposes	0.2599	0.2669	0.2480
SC004Q03TA	Number of computers connected to the internet available for 15-years-old students	0.2821	0.2909	0.2726
SC004Q04NA	Number of portable computers available for 15-years-old students	0.1993	0.274	0.2203
SC004Q05NA	Number of interactive whiteboards in the school	0.2161	0.2114	0.1993
SC004Q06NA	Number of data projectors in the school	0.4079	0.4034	0.3868
SC004Q07NA	Number of computers (connected to the internet) available for teachers	0.3443	0.3427	0.3169
SC018Q01TA01	Number of full-time teachers on the staff	0.2274	0.2169	0.1909
SC018Q01TA02	Number of part-time teachers on the staff	−0.0102	0.0052	0.0168
SC018Q02TA01	Number of fully certified full-time teachers	0.3128	0.3002	0.2647
SC018Q02TA02	Number of fully certified part-time teachers	0.0131	0.0335	0.0498
SC018Q05NA01	Number of full-time teachers with a bachelor's degree	0.1662	0.1798	0.1492
SC018Q05NA02	Number of part-time teachers with a bachelor's degree	−0.0565	−0.0246	−0.0077
SC018Q06NA01	Number of full-time teachers with a master's degree	0.2882	0.2581	0.2495
SC018Q06NA02	Number of part-time teachers with a master's degree	0.1387	0.1352	0.1432
SC018Q07NA01	Number of full-time teachers with a doctorate	0.1208	0.1110	0.1118
SC018Q07NA02	Number of part-time teachers with a doctorate	0.0423	0.0441	0.0493
SC025Q01NA	Percentage of teachers who have participated in courses of professional development	0.1235	0.1363	0.1267

Table 3. *Cont.*

Variable Code	Variable Description	Maths Mean	Science Mean	Reading Mean
SC003Q01TA	Average number of 15-years-old students per classroom	−0.1119	−0.0664	−0.0673
SC164Q01HA	Percentage of students who leave school without a certificate	−0.1699	−0.1428	−0.1392
SC064Q01NA	Percentage of parents who discuss their child's progress with a teacher on their own initiative	0.1214	0.0971	0.0906
SC064Q02NA	Percentage of parents who discuss their child's progress on the initiative of a teacher	0.1264	0.1065	0.0989
SC064Q03NA	Percentage of parents who participate in local school government	−0.2151	−0.23	−0.2381
SC064Q04NA	Percentage of parents who voluntarily participate in school activities	−0.0829	−0.1043	−0.1192

The positive correlations have been highlighted in orange. This means that the higher the variable value is, the higher the average of the marks is in the corresponding discipline. A light orange means that the correlation is weak (between 0.1 and 0.3). A dark orange shows an intermediate correlation (over 0.3). The negative correlations are shown in blue. This means that the higher the variable is, the lower the average of the marks is in the corresponding discipline. The weak correlations (with values between −0.1 and −0.3) are highlighted in light blue. A dark blue is used to show correlations lower than −0.3, which have an intermediate intensity. Results which are not statistically significant are shown in green.

The variables with a weak positive correlation with all three disciplines are: number of girls, number of computers available for teaching, how many of them are connected to the internet, how many of them are portable; number of interactive whiteboards, number of full-time teachers on the school staff, number of full-time teachers with a bachelor's degree, number of full-time teachers with a master's degree, number of part-time teachers with a master's degree, number of full-time teachers with a doctorate and percentage of teachers who have participated in professional development courses in the previous three months.

The variables with a positive intermediate correlation are: number of projectors in the school and number of computers connected to the internet for teachers. The number of full-time teachers with a degree shows positive correlations of intermediate intensity with both mathematics and science, while showing a positive weak correlation with reading.

The variables with a negative weak correlation with the three disciplines are: percentage of student dropouts and percentage of parents who participate in local school government. Other variables with a negative weak correlation with only two disciplines are: percentage of students with a native language different from the official one and percentage of parents who voluntarily participate in the activities of the school.

The variable with a negative intermediate correlation with all three disciplines is the percentage of students from socioeconomically disadvantaged homes.

Table 4 shows the F-ratio of the ANOVA analysis which has been carried out for each qualitative variable. Each qualitative variable divides the schools into several categories. The higher the F-ratio is, the higher the differences are between the means in a discipline corresponding to the different categories. For instance, the differences between the means corresponding to private or public schools are statistically significant.

In Table 4 the qualitative variables which bear upon the average marks (in a certain discipline) have been colored in blue. The rest are colored in green. A dark blue has been used to highlight the differences between the average marks corresponding to the different categories of the independent variable when they are higher than 20 points (at least between two of the levels). Table 5 explains which category gives the best scores in each case (colored in blue).

Table 4. F-ratio del test ANOVA between each qualitative variable and the dependent ones.

Variable Code	Variable Description	Maths Mean	Science Mean	Reading Mean
SC001Q01TA	Location of the school: hamlet, village, small town, town, city or large city	242.18	335.08	284.07
SC013Q01TA	Public or private school	434.13	473.99	452.64
SC161Q01SA	Career guidance of students is not available in the school	156.59	163.20	98.00
SC161Q02SA	All teachers share the responsibility for career guidance	208.51	237.47	305.28
SC161Q03SA	Specific teachers have special responsibility for career guidance	59.72	52.71	24.68
SC161Q04SA	Career guidance: counsellors are employed at school	651.51	744.88	747.83
SC161Q05SA	Career guidance: counsellors regularly visit the school	48.28	9.49	8.77
SC162Q01SA	Is there scheduled career guidance?	84.36	126.53	99.71
SC156Q01HA	The school has its own written statement on the use of digital resources	595.94	578.71	510.08
SC156Q02HA	There are or are not digital resources (for instruction)	112.61	98.39	71.46
SC156Q03HA	Use of digital resources for specific subjects	88.04	68.05	29.16
SC156Q04HA	There are or are not meetings of teachers on the use of digital devices	13.12	5.50	3.90
SC156Q05HA	There is or is not a specific programme to prepare students for responsible internet behavior	617.98	503.33	416.39
SC156Q06HA	There is or is not a specific policy about using social networks in teaching and learning	164.37	169.01	143.76
SC156Q07HA	There is or is not a specific programme to promote collaboration on the use of digital devices among teachers	46.20	35.59	14.67
SC156Q08HA	There is or is not scheduled time for teachers to meet to share, evaluate or develop instructional materials and approaches that employ digital devices	16.24	1.74	0.55
SC011Q01TA	How many schools are available in the same area of the school	138.00	143.24	136.96
SC012Q01TA	Student's record of academic performance is considered for their admission	47.15	20.45	8.00
SC012Q02TA	Recommendation of feeder schools is considered for students' admission	41.44	62.51	89.81
SC012Q03TA	Parents' endorsement of the philosophy of the school is considered for students' admission	13.96	14.59	19.74
SC012Q04TA	Whether the student requires (or is interested in a special programme) is considered for their admission	11.81	19.41	21.81

Table 4. *Cont.*

Variable Code	Variable Description	Maths Mean	Science Mean	Reading Mean
SC012Q05TA	Admission preference is given to family members of current or former students	0.42	1.16	2.06
SC012Q06TA	Admission preference is given to students who reside in a particular area	52.11	47.63	46.86
SC012Q07TA	Other criteria for the admission of students	29.08	28.83	23.33
SC042Q01TA	Students are grouped by ability into different classes	199.36	236.92	251.15
SC042Q02TA	Students are grouped by ability within their classes	171.47	158.33	151.17
SC154Q01HA	Assessment of students are used to guide students' learning	3.85	4.18	2.52
SC154Q02WA	Assessments of students are used to inform parents about their child's progress	19.51	11.77	10.23
SC154Q03WA	Assessments of students are used to make decisions about students' retention or promotion	104.87	137.99	146.23
SC154Q04WA	Assessments of students are used to group students for instructional purposes	21.54	28.25	49.43
SC154Q05WA	Assessments of students are used to compare the school to district or national performance	28.89	41.84	35.32
SC154Q06WA	Assessments of students are used to monitor the school's progress from year to year	116.77	126.32	113.68
SC154Q07WA	Assessments of students are used to make judgements about teachers' effectiveness	224.96	304.27	397.18
SC154Q08WA	Assessments of students are used to identify aspects of instruction or the curriculum that could be improved	17.05	19.61	23.14
SC154Q09HA	Assessments of students are used to adapt teaching to the students' needs	2.12	0.13	0.51
SC154Q10WA	Assessments of students are used to compare the school with other schools	10.97	34.23	47.47
SC154Q11HA	Assessments of students are used to award certificates to students	0.01	0.56	3.04
SC036Q01TA	Achievement data are posted publicly (e.g., in the media)	12.16	6.92	19.05
SC036Q02TA	Achievement data are tracked over time by an administrative authority	146.63	104.74	84.18
SC036Q03NA	Achievement data are provided directly to parents	314.82	287.62	262.26
SC037Q01TA	Internal evaluation/Self-evaluation of the school	61.40	59.66	52.86
SC037Q02TA	External evaluation of the school	5.02	6.18	12.69

Table 4. *Cont.*

Variable Code	Variable Description	Maths Mean	Science Mean	Reading Mean
SC037Q03TA	Written specification of the school's curricular profile and educational goals	26.04	17.55	14.58
SC037Q04TA	Written specification of student performance standards	102.75	86.84	85.31
SC037Q05NA	Systematic recording of data such as teacher or student attendance and professional development	60.49	38.07	25.22
SC037Q06NA	Systematic recording of student test results and graduation rates	88.19	66.81	50.87
SC037Q07TA	Seeking written feedback from students (e.g., regarding lessons, teachers or resources)	173.90	151.90	153.64
SC037Q08TA	Teacher mentoring	90.67	76.32	71.25
SC037Q09TA	Regular consultation with experts over a period of at least six months (aimed at school improvement)	382.26	334.48	315.92
SC037Q10NA	A standardized policy for reading subjects (including staff development)	218.38	220.08	238.77
SC165Q01HA	Students learn about the histories of diverse cultural groups living in their country	17.67	2.50	4.01
SC165Q02HA	Students learn about the histories of diverse cultural groups living in other countries	32.82	55.75	56.58
SC165Q03HA	Students learn about the cultures (e.g., beliefs, norms, values, customs, or arts) of diverse groups living in their country	3.79	0.01	0.56
SC165Q04HA	Students learn about different cultural perspectives on historical and social events	2.67	25.31	20.70
SC165Q05HA	Activities that encourage students' expression of diverse identities are supported	7.66	0.19	0.00
SC165Q06HA	An exchange programme with schools in other countries is offered	1833.00	1676.68	1535.92
SC165Q07HA	Multicultural events are organised	36.38	13.48	2.46
SC165Q08HA	Festivities from other cultures are celebrated	25.99	22.34	23.53
SC165Q09HA	Students are encouraged to communicate online with people from other cultures	238.31	200.46	155.98
SC165Q10HA	Different approaches to educate students about cultural differences are adopted	26.82	16.98	11.03
SC167Q01HA	Formal curriculum includes communication with people from different cultures or countries	47.89	30.05	12.45
SC167Q02HA	Formal curriculum includes knowledge of different cultures	24.64	37.19	24.10

Table 4. *Cont.*

Variable Code	Variable Description	Maths Mean	Science Mean	Reading Mean
SC167Q03HA	Formal curriculum includes openness to intercultural experiences	64.54	55.52	30.89
SC167Q04HA	Formal curriculum includes respect for cultural diversity	1.10	5.94	2.52
SC167Q05HA	Formal curriculum includes foreign languages	139.39	135.05	167.00
SC167Q06HA	Formal curriculum includes critical thinking skills	16.20	23.33	16.12
SC158Q01HA	Formal curriculum includes climate change and global warming	111.45	174.46	132.89
SC158Q02HA	Formal curriculum includes global health (epidemics)	18.04	42.52	30.08
SC158Q04HA	Formal curriculum includes migration	85.77	136.79	113.26
SC158Q07HA	Formal curriculum includes international conflicts	175.91	273.58	249.52
SC158Q08HA	Formal curriculum includes hunger or malnutrition around the world	50.94	87.07	69.53
SC158Q09HA	Formal curriculum includes causes of poverty	37.22	80.80	64.56
SC158Q12HA	Formal curriculum includes equality between men and women around the world	7.53	25.55	18.43
SC159Q01HA	The school hosts visiting teachers from other countries	1270.08	1042.34	917.99
SC053Q01TA	The school offers a band, orchestra or choir to students	1048.20	1200.48	1171.58
SC053Q02TA	The school has performed a school play or musical	316.82	370.28	400.17
SC053Q03TA	The school creates a school year-book, newspaper or magazine	594.98	508.11	391.46
SC053Q04TA	The school offers volunteering or service activities to students	166.25	155.72	106.01
SC053Q12IA	The school offers a book club to students	2.15	4.21	13.79
SC053Q13IA	The school offers debating activities to students	75.98	98.99	108.87
SC053Q09TA	The school offers art activities to students	49.38	73.47	51.29
SC053Q10TA	The school offers sporting activities to students	5.28	7.29	2.0
SC053Q14IA	The school offers lectures or seminars by guest speakers	788.34	745.64	739.34
SC053Q15IA	The school offers collaboration with local libraries	42.77	3.12	2.21
SC053Q16IA	The school offers collaboration with local newspapers	73.42	24.37	15.78
SC150Q01IA	The students with a native language different from the official one receive instruction aimed at developing skills in the official language	330.34	237.28	227.88
SC150Q02IA	The students with a native language different from the official one attend a preparatory programme aimed at developing skills in the official language	71.09	47.21	28.26

Table 4. *Cont.*

Variable Code	Variable Description	Maths Mean	Science Mean	Reading Mean
SC150Q03IA	The students receive some instruction in school subjects through their own language before transferring to regular classes	82.70	99.30	139.32
SC150Q04IA	The students receive a significant amount of instruction in their own language aimed at developing proficiency in both languages	257.37	326.19	418.55
SC150Q05IA	Class size is reduced to attend to students with a native language different from the official one	0.58	1.04	3.33
SC152Q01HA	Additional lessons on the official language are offered out of regular school hours	19.88	0.03	3.38
SC160Q01WA	Purpose of the additional lessons on the official language (enrichment or remedial)	9.33	10.41	12.73
SC052Q01NA	Room(s) where the students can do their homework	1037.11	1043.96	1024.59
SC052Q02NA	Staff help with homework	281.88	217.75	181.36
SC052Q03HA	Peer-to-peer tutoring	0.04	0.09	1.86

Table 5. Averages of the dependent variables corresponding to significant differences between levels of the qualitative factor.

Variable	Variable	Category	Maths Mean	Science Mean	Reading Mean
SC001Q01TA	Which of the following definitions best describes the community in which your school is located?	A village, hamlet or rural area (fewer than 3000 people)	419.933	419.363	409.476
		A small town (3000 to about 15,000)	448.396	448.595	441.701
		A town (15,000 to about 100,000)	459.337	459.341	455.315
		A city (100,000 to about 1,000,000)	468.135	468.718	465.787
		A large city (with over 1,000,000)	482.758	484.925	483.161
SC013Q01TA	Is your school a public or a private school?	A public school	451.053	451.865	446.784
		A private school	480.997	482.046	477.687
SC161Q02SA	All teachers share the responsibility for career guidance	Non	467.331	467.543	464.452
		Yes	450.584	450.312	443.953
SC161Q04SA	We have one or more specific career guidance counsellors employed at school	Non	449.751	449.453	444.53
		Yes	478.634	479.175	475.835
SC156Q01HA	Its own written statement about the use of digital devices	Yes	470.787	470.787	466.152
		Non	443.323	443.323	440.343
SC156Q05HA	A specific programme to prepare students for responsible internet behaviour	Yes	471.55	470.38	465.688
		Non	443.882	446.239	442.544

Table 5. *Cont.*

	Variable	Category	Maths Mean	Science Mean	Reading Mean
SC042Q01TA	Students are grouped by ability into different classes.	For all subjects	437.699	437.652	429.544
		For some subjects	474.021	475.313	471.206
		Not for any subjects	458.478	458.153	454.543
SC042Q02TA	Students are grouped by ability within their classes.	For all subjects	436.62	437.918	432.229
		For some subjects	469.337	468.428	463.585
		Not for any subjects	459.406	460.304	457.024
SC154Q07WA	Are assessments of students used to make judgements about teachers' effectiveness	Yes	453.976	453.412	447.689
		Non	470.863	472.315	470.306
SC036Q03NA	Achievement data are provided directly to parents	Yes	455.95	456.575	452.269
		Non	483.915	482.352	478.171
SC037Q07TA	Seeking written feedback from students for aimed quality assurance (e.g., regarding lessons, teachers or resources)	Yes, this is mandatory	441.631	444.121	439.14
		Yes, based on school initiative	464.119	464.016	459.124
		No	460.055	460.211	457.791
SC037Q09TA	Regular consultation aimed at school improvement with one or more experts over a period of at least six months	Yes, this is mandatory	437.85	440.634	435.591
		Yes, based on school initiative	461.404	461.036	456.243
		No	467.386	467.374	463.91
SC037Q10NA	Implementation of a standardised policy for reading subjects	Yes, this is mandatory	444.368	445.222	439.58
		Yes, based on school initiative	465.189	465.192	461.278
		No	471.622	471.671	468.572
SC165Q06HA	Our school offers an exchange programme with schools in other countries.	Yes	481.83	480.422	477.425
		Non	433.111	435.766	431.389
SC167Q05HA	Is there any formal curriculum for the foreign languages	Yes	457.282	457.488	454.345
		Non	434.021	435.57	428.266
SC158Q07HA	Is there any formal curriculum for the international conflicts	Yes	459.602	460.715	457.05
		Non	440.738	438.348	434.203
SC159Q01HA	Does your school host visiting teachers from other countries?	Yes	485.041	482.387	477.695
		Non	444.746	446.989	442.675
SC053Q01TA	Activities which your school offer to students: Band, orchestra, or choir	Yes	476.33	476.981	473.375
		Non	440.831	440.478	435.516
SC053Q02TA	Activities which your school offer to students: School play or school musical	Yes	468.996	469.566	466.086
		Non	448.851	448.591	443.217

Table 5. *Cont.*

	Variable	Category	Maths Mean	Science Mean	Reading Mean
SC053Q03TA	Activities which your school offer to students: School yearbook, newspaper or magazine	Yes	473.767	472.64	467.563
		Non	446.911	448.634	445.384
SC053Q14IA	Activities which your school offer to students: Lectures and/or seminars	Yes	470.196	469.875	466.06
		Non	435.327	437.135	431.847
SC150Q01IA	The students whose native language is not the official one attend regular classes and receive additional periods of instruction aimed at developing official language skills	Yes	471.352	469.425	465.773
		Non	450.813	452.582	448.414
SC150Q03IA	Before transferring to regular classes, the students whose native language is not the official one receive some instruction in school subjects through their native language	Yes	447.842	446.934	439.56
		Non	463.286	463.256	459.856
SC150Q04IA	The students whose native language is not the official one receive significant amounts of instruction in their native language aimed at developing proficiency in both languages	Yes	439.498	437.534	429.205
		Non	465.044	465.234	462.094
SC052Q01NA	The school provide room(s) where the students can do their homework	Yes	473.362	473.22	469.453
		Non	436.593	437.664	432.421

The qualitative variables that bear upon all three disciplines, with differences higher than 20 points between categories, are: whether the school is public or private (with higher marks in the private case), whether the achievement data of the students are provided directly to parents (with better scores in the negative case), whether there are counsellors employed by the school for the career guidance of students, whether there are digital devices for a general use, whether there is a specific programme to educate students in responsible internet behavior, whether an exchange programme with schools in other countries is offered, whether the school hosts visiting teachers from other countries, whether group musical activities are offered, whether a school play or musical has been organized, whether there is a school newspaper or magazine, whether lectures or seminars are offered and whether the school has rooms where the students can do their homework. In all these cases, the positive answers to the question give higher marks in the three disciplines.

There are other qualitative variables which give lower differences between categories for the three analyzed subjects, such as the location of the school (the larger the town is, the higher the marks are), whether the school offers an exchange programme with schools in other countries, resulting in an improvement in marks, or whether the students are grouped by ability either into different classes or within their classes, with the lowest marks in the case of their being grouped for all the subjects. However, if they are grouped for only some subjects, the marks are even higher than in the case of no grouping at all. Another factor which gives differences between levels lower than 20 points are whether written feedback (regarding lessons, teachers or resources) is sought from the students compulsorily, and with less differences (vis-à-vis the case of no feedback) when the school carries out this feedback on their own initiative. Finally, whether there is a regular consultation with experts aimed at school improvement bears upon the marks of the three disciplines in a negative way, the same as whether the students whose native language is not the official one receive instruction in their native language aimed at developing proficiency in both languages or if there is not a standardized policy for reading subjects (including staff development). However, if this policy is an initiative on the part of the school, there appear intermediate differences in the marks corresponding to the three disciplines vis-à-vis the case of no policy for reading subjects.

Other variables bear upon the reading subject only (with differences of over 20 points between levels of the factor) in a negative way (i.e., leading to lower marks), such as all teachers sharing the responsibility for the career guidance of the students, or the students' assessments being used to make judgements about teachers' effectiveness. In the case of the students with a native language different from the official one, the only practice that has a positive influence on the marks (and this only in mathematics) is offering the students additional periods of instruction aimed at developing skills in the official language, at the same time as their attending regular classes.

Finally, whether the formal curriculum includes the topic of international conflicts is significant in improving the results in both science and reading.

4. Discussion

The analysis of the results aims to identify a common denominator for the factors which correlate with good academic scores in the three disciplines which have been considered in the study. Our thesis is that this common denominator is a careful attention to interpersonal relationships (teacher-teacher, teacher-student, student-student and also student-families) as opposed to a merely cognitive educational perspective or a desire to control the educational process. This means that relationships based on trust seem to result in improved academic scores. This interpretation is aligned with the study known as the McKinsey report, which analyses twenty educational systems around the world by means of the data provided by several international assessment tests (PISA, PIRLS, TIMSS, etc.). According to this report, systems with the same economic investment in education obtain diverse results. The conclusion of the report is that the differences in terms of quality are

not attributable to the investment, but rather to the teachers: "The quality of an educational system cannot exceed the quality of its teachers" [27].

In order to enhance the quality of teachers, it is clear that attending to interpersonal relationships is one of the main objectives to consider. However, enhancing interpersonal relationships is not the same as working on socio-emotional skills. In fact, the complexity of the educational reality cannot be addressed by means of the inclusion of a programme of emotional skills in the school curricula, as some authors have suggested, arguing that the school is excessively focused on cognitive skills. As will be seen, the research into non-cognitive skills has produced diverse results.

On the one hand, a meta-analysis which reviews the papers published between 2013 and 2017 on this topic [28] asserts that the correlation between students' achievement in non-cognitive skills and their academic performance is relatively low and also diverse; working on non-cognitive skills has had a positive effect on some students, a negative effect on others, and no effect on the remainder.

On the other hand, another meta-analysis in 2017 [29] showed that socio-emotional learning is effective in the acquisition of certain socio-emotional skills and some particular attitudes. For instance, this analysis concluded that there is a correlation between working on these skills and attitudes during youth, and such factors as academic success or safe sexual behavior.

A third meta-analysis which has been considered [30] concludes that emotional intelligence is the third predictor of academic performance, after cognitive intelligence and conscientiousness, but only with a percentage of between 0.7 and 3.6 of the variance, which is regarded as a low significance.

Although there are unresolved questions regarding how to interpret and evaluate the influence of emotional factors on academic performance, what does seem to be clear is the impact of interpersonal relationships on academic results. Comprehensive reviews of this topic can be seen in [31,32]. This suggests that it is the interpersonal relationships, and not the emotional skills, which are decisive when it comes to offering an educational experience that enhances sustainable personal and social growth.

An analysis of the results obtained in our study supports this argument. Firstly, we find some specific non-personal factors which correlate with good academic outcomes, such as the number of data projectors or the number of computers for the teachers' use. Rather than presuppose that the impact on student achievement is due to their presence per se, we recognize that the impact in question might be attributable to a more fruitful interaction between the teacher and the students when a computer or a projector is being used in the classroom.

Similarly, although the socioeconomic situation of the families significantly bears upon the academic outcomes, it is surprising that other economic variables, such as the funding sources (parents, government or benefactors) or the area of the town in which the families reside, are not relevant in this regard. This suggests that the significant aspect is the family experience of the students, rather than the economic factor.

In addition, there are some striking organizational aspects which may be interpreted along the same lines. The average number of students per classroom is not significant for academic achievement (only weakly significant in the case of the scores in mathematics). However, grouping the students by ability (into different classrooms or within the same classroom) has diverse effects. If they are grouped for all the subjects, the results are lower than if they are not grouped. If they are grouped only for some subjects, however, the achievement is better. Better results are also obtained when students with a native language different from the official one attend regular classes at the same time as receiving additional periods of instruction aimed at developing their skills in the official language. What is relevant here is that all the specific needs of the students can be attended to without losing the natural reference group of the students, their classroom. The same occurs when it comes to grouping students by ability. The best results are obtained when this grouping is only carried out for some specific subjects.

The presence of full-time teachers is significant, preferably if they have a degree and the school provides them with effective resources for teaching. However, the correlation of these factors with the students' performance in the case of part-time teachers is either not significant or is only weakly significant. These data lead us to think that the presence of full-time teachers enhances a trust relationship with the students, close relations arising naturally. Moreover, a full-time contract allows the teacher to engage with the students in a deeper, more personal way.

In addition, the positive influence of an internal counsellor who is employed by the school (rather than an external service being contracted) supports the idea that personal interaction enhances career guidance.

As regards the use of digital devices, the results are inconsistent. This fact seems to suggest that it is not their use per se which is significant, but rather their role in the relationship experience.

It is notable that the existence of given programmes, policies and curricula per se does not guarantee a better performance, which reinforces the idea that all these structural aspects need to be implemented in conjunction with careful attention to personal relationships. This does not imply that suitable programmes, policies and curricula are not important, but rather that special attention should be paid to the way in which they are implemented in the classroom. For instance, we find that the existence of curricula related to multicultural topics (cultural diversity, perspectives on historical and social events, expression of diverse identities, planet conservation, equality between men and women or causes of poverty) does not bear upon academic results, while sharing experiences with people from other cultures (by means of exchange programmes with other countries, hosting foreign teachers or inviting external people to give lectures or seminars) does have a clear positive influence on results. In all cases, a personal face-to-face interaction, not by digital means, takes place. Another action which improves outcomes is that of generating living spaces for the students, such as bands, choirs, newspapers or magazines, or performances of plays or musicals, as well as providing the students with a room where they can do their homework.

Although it is surprising that not all extra-curricular collective activities bear positively upon academic achievement, it is not easy to say why some have a positive impact and others not. Perhaps it depends on the kind of relationships which the activities foster, although further research is needed to explore this issue.

Regarding the relationships with the families, there are two factors which weakly bear on academic results in a negative way, namely, whether the parents voluntarily participate in school activities or whether they take part in local school government. Another variable, whether or not the achievement data are communicated directly to the parents, has a significant negative influence on the students' academic performance. The only variable which has a positive influence on the students' achievement is the percentage of the parents who discuss their child's progress on the initiative of a teacher. These data may suggest that the relationships between teachers are parents are beneficial when they are oriented to cooperatively helping students during their learning process rather than merely giving the parents a "final sentence" on their child's achievement.

This kind of study should analyze not only the variables which bear upon academic achievement in a positive way, but also what correlates negatively or does not correlate at all with academic results. Observing what all these factors share, we suggest that decisions focused on a merely cognitive view or a desire to control the educational process hinder student performance. We find that the principals' day-to-day tasks usually address the legal and organizational dimensions in which the principal assumes the role of a manager trying to achieve certain standards of production and efficiency centered on skill acquisition [33]. In fact, the self concept of the principal as manager is what teaching staff typically criticize [34]. They tend to feel controlled by bureaucracy, which is behind the burn-out phenomenon [35]. Both the principals' behavior and the intentions behind them are decisive for both the relationships between principals and teaching staff and also

between teachers and students. If these relationships are perceived as attempts of control it bears upon the educational process in a negative way [36].

It is surprising that the use which the school gives to the students' assessments or the inclusion of certain topics related to global competence in the curricula do not influence the academic performance, while other issues bear upon it in a negative way, such as grouping the students by ability in all subjects, a compulsory evaluation on the part of the students of both the teachers and the school, and using student achievements to evaluate the teachers or asking for external evaluations of the school performance. We can hypothesize that these actions are being experienced as control processes rather than as educational challenges aimed to enhance sustainable growth.

5. Conclusions

We have found that the attention to interpersonal relationships can be regarded as a common denominator in the organizational aspects of the schools which bear upon a sustainable achievement on the part of the students. This interpretation of the results leads us to recommend that principals of the schools make certain decisions related to the organizational aspects of the school. Dealing with personal and social aspects as a question of knowledge and working on socio-emotional skills is not sufficient for sustainable development to be enhanced. In particular, we find that the organizational aspects particularly relevant to global competence, such as working on critical thinking skills or the inclusion of multicultural aspects or topics such as climate change, global health or migration do not significantly bear upon student long-term achievement, while sharing face-to-face experiences with people from other cultures has a clearly beneficial impact. This finding indicates that personal and social issues should be dealt with in a living and experiential way.

In addition, other issues which reflect principals' way of understanding education, such as their visions of how to approach the career guidance of their students, the criteria for grouping students into different classes, or how the assessments of students and teachers are used, have a significant influence on students' long-term development, as is reflected in the PISA scores which have been analyzed. In particular, the results point to some decisions which the school principal could make in order to generate sustainable changes in their school, some of them not requiring more than an academic year to be implemented.

For instance, the specific needs of the students should be particularly attended to, but without their losing their natural reference group, their classroom. Student-student relationships should be enhanced also by the organization of collective activities, such as a play or a choir, which contribute to cooperation and trust. Moreover, in order to enhance teacher-students relationships, resources to employ full-time teachers should be allocated, preferably if these teachers have a degree and the school provides them with effective resources for teaching. In addition, it is beneficial to allocate specific resources for the employment of career guidance staff.

Regarding the relation of the school with the students' families, face-to-face interaction between teachers and parents should be promoted, but not at the moment of teachers communicating the students' achievement data, but rather during the process of learning, on the initiative of the teacher, with the goal of cooperatively helping the students' progress.

Finally, it is important that both teachers and students do not perceive the use of achievement data and students' feedback about teaching and school as an instrument of control, oriented to discover their weaknesses. Control of processes is necessary, but it should not ignore interpersonal relationships. A cooperatively designed process of evaluating and attending to teachers and students' needs, based on trust, offers a better option than that of appealing to the application of external control processes. The perspective of attending to personal relationships in education has also been considered in several educational treatises (which criticize an approach excessively centered on skills acquisition [16,37]) as well as in philosophical reflections [38], pedagogical discussions [39] and intervention proposals centered on interpersonal relationships [40–42].

Although only the influence of the organizational decisions on the marks in three disciplines has been analyzed, further indicators should be studied in order to establish clearly which organizational decisions foster a genuine personal and social growth. The students' assessment in global competence could be a way of evaluating the socio-personal growth of students in future editions of PISA, whenever the collected data are solid enough to be included in a serious study.

References

1. UN General Assembly. Transforming Our World: The 2030 Agenda for Sustainable Development, 21 October 2015, A/RES/70/1. Available online: https://www.refworld.org/docid/57b6e3e44.html (accessed on 1 July 2021).
2. Blazar, D.; Kraft, M.A. Teacher and teaching effects on students' attitudes and behavior. *Educ. Eval. Policy Anal.* **2017**, *39*, 146–170. [CrossRef]
3. Donaldson, M.L.; Woulfin, S. From tinkering to going "rogue": How principals use agency when enacting new teacher evaluation systems. *Educ. Eval. Policy Anal.* **2018**, *40*, 531–556. [CrossRef]
4. Jarl, M.; Andersson, K.; Blossing, U. Organizational characteristics of successful and failing schools: A theoretical framework for explaining variation in student achievement. *Sch. Eff. Sch. Improv.* Available online: https://www.tandfonline.com/doi/full/10.1080/09243453.2021.1903941 (accessed on 24 March 2021).
5. Intxausti, N.; Joaristi, L.; Lizasoain, L. Educational leadership as best practice in highly effective schools in the Autonomous Region of the Basque Country (Spain). *Educ. Manag. Adm. Leadersh.* **2015**, *44*, 397–419. [CrossRef]
6. OECD Programme for International Student Assessment. PISA 2018 Global Competence. Available online: https://www.oecd.org/pisa/innovation/global-competence/ (accessed on 1 July 2021).
7. OECD Teaching and Learning International Survey (TALIS). Questions Related to the Global Competence in the Student Questionnaire. Available online: https://www.oecd.org/pisa/PISA-2018-Global-Competence-Questionnaire.pdf (accessed on 1 July 2021).
8. OECD Teaching and Learning International Survey (TALIS). Principal Questionnaire. Available online: https://www.oecd.org/education/school/43081362.pdf (accessed on 1 July 2021).
9. Lundie, D. Authority, autonomy and automation: The irreducibility of pedagogy to information transactions. *Stud. Philos. Educ.* **2016**, *35*, 279–291. [CrossRef]
10. Giroux, H. Neoliberalism, youth and the leasing of higher education. In *Global Liberalism and Education and Its Consequences*; Hill, D., Kumar, R., Eds.; Routledge: New York, NY, USA, 2008; p. 24.
11. Sambell, K.; McDowell, L. The construction of the hidden curriculum: Messages and meanings in the assessment of student learning. *Assess. Eval. High. Educ.* **1998**, *23*, 391–402. [CrossRef]
12. Orón, J.V.; Akrivoú, K.; Escalzo, G. Educational Implications that arise from differing models of human development and their repercussions on social innovation. *Front. Educ.* **2019**, *4*, 139. [CrossRef]
13. Akrivoú, K.; Orón, J.V.; Escalzo, G. *The Inter-Processual Self. Towards a Personalist Virtue Ethics Proposal for Human Agency*; Cambridge Scholars Publishing: Cambridge, UK, 2008.
14. Simkins, T. Leadership in education: 'What works or what makes sense'? *Educ. Manag. Adm. Leadersh.* **2005**, *33*, 9–26. [CrossRef]
15. Orón, J.V.; Scalzo, G.; Akrivou, K. Anthropological Foundations for Innovation in Organizations. *Am. J. Manag. Dev.* **2021**, *21*, 157–165.

16. Semper, J.V.O.; Blasco, M. Revealing the hidden curriculum in higher education. *Stud. Philos. Educ.* **2018**, *37*, 481–498. [CrossRef]
17. Chetty, R.; Friedman, J.N.; Rockoff, J.E. Measuring the impacts of teachers I: Evaluation bias in teacher value-added estimates. *Am. Econ. Rev.* **2014**, *104*, 2593–2632. [CrossRef]
18. Scott, D.; Dweck, C. Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educ. Psychol.* **2012**, *47*, 302–314. [CrossRef]
19. OECD. PISA 2018 Data Base. Available online: https://www.oecd.org/pisa/data/2018database/ (accessed on 30 June 2021).
20. OECD 2019. PISA 2018 Assessment and Analytical Framework. Available online: https://www.oecd-ilibrary.org/docserver/85 0d0ef8-en.pdf?expires=1628509480&id=id&accname=guest&checksum=D0104928ADF63F1EB9E141132EB576C4 (accessed on 9 August 2021).
21. Avvisati, F.; Le Donné, N.; Paccagnella, M. A meeting report: Cross-cultural comparability of questionnaire measures in large-scale international surveys. *Meas. Instrum. Soc. Sci.* **2019**, *1*, 8. [CrossRef]
22. Van de Vijver, F.; Avvisat, F.; Davidov, E.; Eidiv, M.; Foxv, J.-P.; Donné, N.L.; Lekv, K.; Meulemanv, B.; Paccagnella, M.; van de Schootvi, R. *Invariance Analyses in Large-Scale Studies*; OECD Education Working Papers; No. 201; OECD Publishing: Paris, France, 2019.
23. OECD. PISA 2018 Technical Report. Available online: https://www.oecd.org/pisa/data/pisa2018technicalreport/ (accessed on 30 June 2021).
24. Rozgonjuk, D.; Täht, K.; Vassil, K. Internet use at and outside of school in relation to low- and high-stakes mathematics test scores across 3 years. *Int. J. STEM Educ.* **2021**, *8*, 27.
25. Çoban, Ö. Relationships between Students' Socioeconomic Status, Parental Support, Students' Hindering, Teachers' Hindering and Students' Literacy Scores: PISA 2018. *World J. Educ.* **2020**, *10*, 45. [CrossRef]
26. Kraft, M.A. Interpreting effect sizes of education interventions. *Educ. Res.* **2020**, *49*, 241–253. [CrossRef]
27. Mckinsey Company. Reseña. Informe Mckinsey. 2011, pp. 89–92. Available online: https://studylib.es/doc/4741806/rese%C3 %B1a.-informe-mckinsey (accessed on 30 June 2021).
28. Smithers, L.G.; Sawyer, A.C.P.; Chittleborough, C.R.; Davies, N.M.; Davey, S.G.; Lynch, J.W. A systematic review and meta-analysis of effects of early life non-cognitive skills on academic, psychosocial, cognitive and health outcomes. *Nat. Hum. Behav.* **2018**, *2*, 867–880. [CrossRef] [PubMed]
29. Taylor, R.D.; Oberle, E.; Durlak, J.A.; Weissberg, R.P. Promoting Positive Youth Development through School-Based Social and Emotional Learning Interventions: A Meta-Analysis of Follow-Up Effects. *Child Dev.* **2017**, *88*, 1156–1171. [CrossRef]
30. MacCann, C.; Jiang, Y.; Brown, L.E.R.; Double, K.S.; Bucich, M.; Minbashian, A. Emotional intelligence predicts academic performance: A metaanalysis. *Psychol. Bull.* **2020**, *146*, 150–186. [CrossRef]
31. Wubbels, T.H.; den Brok, P.; van Tartwijk, J.; Levy, J. (Eds.) *Interpersonal Relationships in Education. An Overview of Contemporary Research*; Sense Publishers: Rotterdam, The Netherlands; Boston, MA, USA; Taipei, China, 2012.
32. Zandvliet, D.; den Brok, P.; Mainhard, T.; van Tartwijk, J. (Eds.) *Interpersonal Relationships in Education. From Theory to Practice*; Sense Publishers: Rotterdam, The Netherlands; Boston, MA, USA; Taipei, China, 2014.
33. Agudo, J.L.B. Funciones de los directores escolares una nueva función pública hacia el gerencialismo. *Forum Aragón Rev. Digit. FEAE-Aragón Sobre Organ. Gestión Educ.* **2014**, *12*, 18–26.
34. Rodriguez, F.M.G. La mirada de los otros. El director escolar visto por el profesorado. *Aula Abierta* **2006**, *88*, 151–178.
35. Rodríguez, J.A.; Guevara, A.; Viramontes, E. Síndrome de burnout en docentes. *IE Rev. de Investig. Educ. REDIECH* **2017**, *8*, 45–67. [CrossRef]
36. Blase, J. Some Negative Effects of Principals' Control-Oriented and Protective Political Behavior. *Am. Educ. Res. J.* **1990**, *27*, 727–753. [CrossRef]
37. Irena, P. Between Rationality and Emancipation: (De)Constructing Competency-Based Education. In *W: A. Stopińska-Pająk (Red.), "Between History and the Theory of Education: Methodology, Traditions, Quest" (S. 111–130)*; Wydawnictwo Uniwersytetu Śląskiego: Katowice, Poland, 2015.
38. Biesta, G. *Beyond Learning: Democratic Education for a Human Future*; Paradigm: Boulder, CO, USA, 2006.
39. Robinson, S. *Connections-Based Learning. A Framework for Teaching and Learning in a Connected World*; Connections-Based Learning: Port Coquitlam, BC, Canada, 2017.
40. Anson, A.; Cook, T.D.; Habib, F.; Grady, M.K.; Haynes, N.; Comer, J.P. The Comer School Development Program: A Theoretical Analysis. *Urban Educ.* **1991**, *26*, 56–82. [CrossRef]
41. Orón, J.V. *Encuentro Interprocesual. Por un Mundo Para el Crecimiento Interpersonal*; ICCE: Madrid, Spain, 2020; ISBN 978-84-121543-1-3.
42. Orón, J.V. Nueva propuesta de educación emocional en clave de integración y al servicio del crecimiento. *Metafísica Pers.* **2016**, *16*, 91–152, ISSN digital: 1989-4996.