Learning Context in Portugal during Covid-19 Pandemic – An Exploratory Study

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Abstract

All over the world educational systems had face difficulties and challenges in guarantee the learning of their students and at the same time the health safety of all. During 2020, Portugal closed all schools and sent all students home to finish the school year thought at a distance learning strategies. During a period of more than 3 months students and teachers had to change completely and in some cases reinvented the way classes were taught.

As OECD says in a recently report [3] "The crisis has exposed the many inadequacies and inequities in our school systems - from the broadband and computers needed for online education, through the supportive environments needed to focus on learning, up to the failure to enable local initiative and align resources with needs." (OECD, 2021).

At the beginning of this year, the Portuguese institute responsible for the student external assessment implemented an online assessment for students enrolled in 3rd, 6th and 9th grades. This diagnostic study had as main goal the assessment of the current state of learning, through the assessment, in a transversal and integrated way, of scientific, reading and mathematics literacies [1]. As part of this study the sampled students of each grade had to take a test with a combination of items from each domain and to answer a context questionnaire. The context questionnaire addressed the following dimensions of analysis: support provided to students at home; students' perceptions of their learning; resources used for learning; difficulties in using learning resources; main activities promoted by teachers; support provided by the school to students. The preliminary results seem to indicate that are significant differences in the learning outcomes of students from the different grades and in the different domains. And it seems that these learning outcomes are also affected by the socioeconomic background of students and their gender. The school and teachers strategies seem also to have an impact of the learning outcomes of students [2].

Keywords: *Learning opportunities, learning context.*

1. Introduction

During 2020, Portugal closed all schools and sent all students home to finish the school year thought at a distance learning strategies. And at the beginning of this year, the Portuguese institute responsible for the student external assessment, the Educational Assessment Institute implemented an online assessment to a representative sample of students enrolled in 3rd, 6th and 9th grades.

This study recognized the importance of characterizing the context of the teaching and learning process, the environment and school practices, as well as the individual and family circumstances of students during the confinement period.

2. The assessment

2.1 What was assessed?

A literacy concept was adopted and defined as the knowledge and skills that students should have in order to allow them selecting information, giving it some meaning and analyzing it critically, in order to actively participating in everyday situations, solving problems, making decisions and communicating in different contexts.

This diagnostic study had as main goal the assessment of three major domains: scientific literacy, reading literacy and mathematics literacy[1]. The following tables describe what students should be able to do in each of the four proficiency levels established for each literacy. The descriptors of the proficiency levels predicted for each literacy are common and cross the three grades included in the study, as the object of assessment is also cross-sectional. The greater complexity must be read in terms of the adequacy of what is expected for the proficient performance of students in each school year, by reference to the corresponding age groups [1].

Table1. Reading literacy proficiency levels

Level	Identify / Reorganize / Mobilize implicit and explicit information	Synthesize / Analyze / Evaluate information, language and logical relationships
4	Mobilize explicit and implicit information in two or more texts of different genres to analyze content relationships between them	Assess the adequacy of the language of a text or of the logical relationships established in it to fulfill its purpose or construct its meaning
3	Retrieving information implicit in a text	Recognize / reconstitute logical relationships established in a text
2	Reorganize explicit information in a text	Identify the subject of a text
1	Identifying explicit information in a text	Identify the subject of a specific part of a text

Table2. Scientific literacy proficiency levels

Level	Scientific explanations	Data analysis and interpretation	Scientific process
4	Formulate explanatory hypotheses and make predictions for complex phenomena and events, drawing on various sources of scientific knowledge	Critically analyze the conclusions reached, using evidence and linking them with other scientific knowledge, contributing to their generalization	Design a complex experimental procedure, evaluating ways to scientifically explore a problem, identifying limitations to data interpretation
3	Selecting and articulating scientific knowledge from various sources to explain natural or everyday phenomena and events	Present valid conclusions from the analysis and interpretation of data provided	Draw an experimental procedure, distinguishing scientific from non-scientific issues
2	Use scientific knowledge to explain natural or everyday phenomena and events	Interpret and analyze data or results of scientific research	Design a simple experimental procedure
1	Use scientific knowledge to describe or classify natural or everyday entities, phenomena and events	Identify scientific information from diverse sources such as texts, tables, graphs and images	Recognize elementary characteristics of a simple research/experimental procedure

Table3. Mathematics literacy proficiency levels

Level	Mobilize procedures, techniques, concepts, properties and mathematical relationships	Solve problems	Reasoning based on data or evidence
4	Mobilize procedures, techniques, concepts, properties and mathematical relationships in solving complex situations	Solve a variety of non-routine problems involving different areas of mathematics and/or multiple steps	Assess, analyze and mobilize data or evidence to produce complex reasoning

3	Mobilize procedures, techniques, concepts, properties and mathematical relationships in solving moderate complexity situations	Solve routine problems involving different areas of mathematics and/or two or three steps	Analyze and mobilize data or evidence to produce simple reasoning
2	Mobilize procedures, techniques and concepts in solving situations of reduced complexity situations	Solve routine problems involving an area of mathematics and/or a step	Interpret and mobilize data or evidence to produce simple reasoning
1	Mobilize procedures, techniques and concepts in solving elementary situations	Solve routine problems that involve only one area of mathematics and a step in which the question is clearly explained	Reading and interpreting data to produce simple reasoning

This study aims to assess whether students can mobilize their skills in the three areas of literacy to solve situations in different contexts but it takes as a reference two legal documents that guide the implementation of the curriculum in Portugal:

- The Profile of Students upon Leaving Mandatory Schooling
- Essential Learnings

To guide the preparation of the assessment tasks and the subsequent analysis and dissemination of results, an assessment device was designed and as a reference definition for each of the literacies included the analysis categories (evaluation parameters) and the performance indicators.
The study was administrated online through an electronic platform and each student completed three tasks, each lasting 30 minutes. Each task corresponds to one of the three literacies assessed and all tasks combined allowed to assess, in an articulated way, skills that require increasing cognitive complexities (4 levels)[1].
Students also answered a student questionnaire to collect information about the students' main characteristics, the support provided at home to students, the students' perceptions of their learning, the resources used for learning, the difficulties in using resources for learning, the main activities promoted by teachers and the support provided by the school to students.

2.2 Who was assessed?

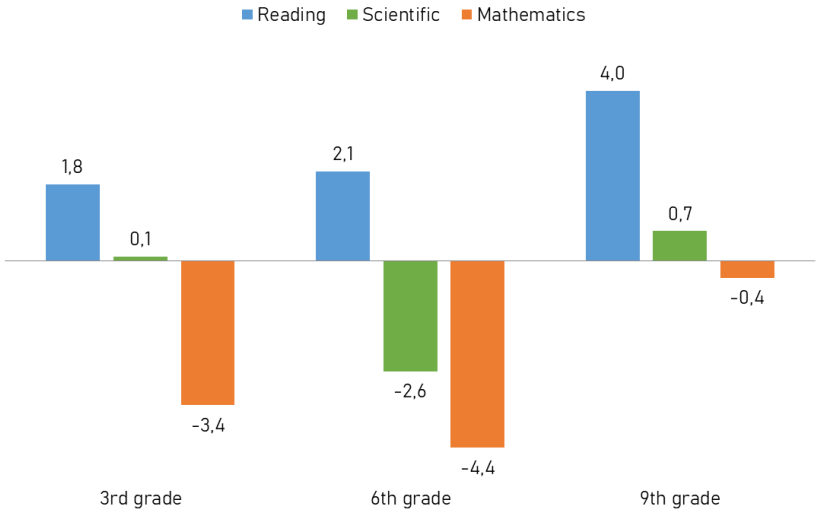
This study assessed a sample of Portuguese students attending the 3rd, 6th and 9th grades of basic education. The sample was stratified by grade (3rd, 6th and 9th), by the nature of the establishment education (public and private), by access to the School Social Action (Beneficiary and non-Beneficiary) and by regions (NUTSII – North, Centre, Lisbon Metropolitan Area, Alentejo, Algarve, the Autonomous Region of the Azores and the Autonomous Region of Madeira). The schools were selected randomly, in order to meet the stratification criteria. In relation to the sample initially foreseen, the final sample considered valid for the present study was 7,604 (68%) 3rd grade students, 8,415 (76%) 6th grade students and 7,319 (67%) 9th grade students, in a total of 23,338 (approx. 70%) students.
A total of 313 schools (grouped and non-grouped) participated in the study, in a total of 1,338 classes. It is important to mention that in some schools the study was administrated to more than one grade and that the responses were collected between the 6th and 21st of January 2021.

3. Some results

The analysis of the differences in results between students from public and private schools should be carried out taking into account not only the context in which the schools are located, but also the socioeconomic context of their school population. On average students from private schools tend to perform better than students from public schools. The difference between the results of students from private and public schools is even more expressive in the 9th grade (more 10,6%), considering the three literacies together.
"Socioeconomic status is considered an important predictor of students' academic success. It is, therefore, essential that, in a study on the development of student learning, possible differences in performance can be assessed taking this factor into account." [2]

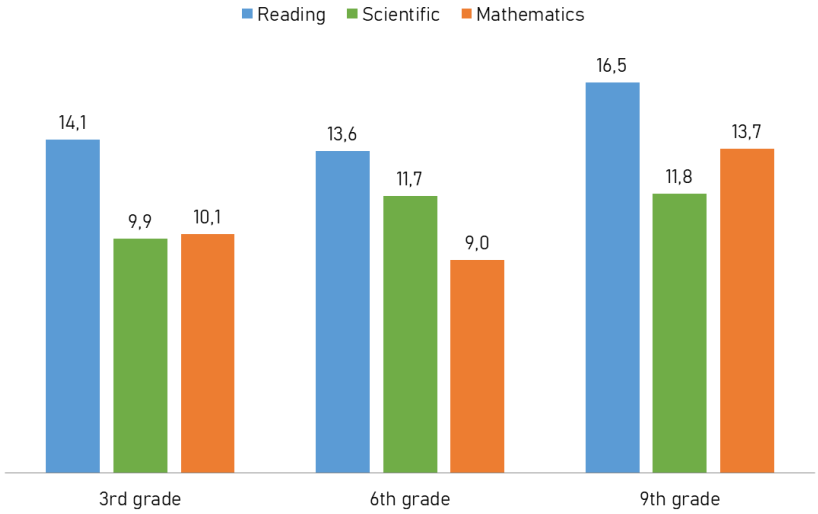
In this study, the ASE was used as a proxy indicator of the socio-economic status of students, considering that the students benefiting from ASE are, on average, those who live in more disadvantaged socio-economic contexts. It should be noted that the public schools in the sample house a very significant percentage of students who benefit from School Social Support (ASE), compared to the percentage of students with ASE who attend private schools. The results of students without ASE are always higher than those of students with ASE, in all literacies, in all grades and at all levels of proficiency. It is in the 6th grade that we can observe the greatest difference. It should also be noted that, in mathematical literacy, the difference between the results of students without ASE and students with ASE increases throughout schooling, reaching the highest value in the 9th grade.
Girls perform better than boys in reading literacy in all grades and boys perform better than girls in mathematics literacy in all grades. As Fig. 1 shows, the gender gap is bigger in mathematics literacy in grade 6 in favor of the boys and in reading literacy in grade 9 in favor of the girls.

Fig. 1. Average differences in performance of students, in percentage points, by gender and grade



The data collected in this study also shows that the number of students with one or more retention gradually increases throughout schooling, and it is in the 9th grade that there is a higher percentage of students who have already registered at least one retention throughout their school career. Boys have a higher percentage of retention than girls in all three grades. When analyzing the performance of students with one or more retention we can conclude that these students performed lower than students with no retentions.
In a distance learning context, it is essential that students have access to technological resources that allow them to attend synchronous and asynchronous lessons, have access to information and work sharing platforms, as well as search the Internet and carry out autonomous work [3].
Technological resources, such as computer, tablet, smartphones, broadband Internet, among others are pedagogically useful in any classroom but in distance learning contexts, they are fundamental resources, without which access to the teaching and learning process cannot occur.
The data collect in the student questionnaire allowed to analyze the impact of resource availability on student performance. Students who reported not having access to any of technological resources at all seem to have consistently obtained lower levels of performance when compared to other students, even when it comes to those who have to share their technological resources with other members of their family as showed in figure 2.

Fig. 2. Average differences in performance of students' systematic access to technological resources and students without any access at home, in percentage points, by literacy and by grade



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