

# **DEVELOPING STATISTICAL LITERACY IN PRIMARY LEVEL: RESULTS OF A TEACHING UNIT<sup>1</sup>**

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*This poster reports a classroom based study involving exploration tasks focus on the construction, reading and interpretation of statistical data represented in tables and graphs aiming to analyze grade 3 students' growth of statistical literacy during a teaching unit as well as to identify their difficulties.*

*Statistical literacy, primary students, graphical representations*

Recent mathematics curriculum orientations (ME, 2007; NCTM, 2000) stress the importance of the development of students' statistical literacy at different school levels due to its recognized role in the general education of citizens. In Portugal, this importance is reflected in the new mathematics syllabus for basic education, which is being in use since 2010 and presents more demanding learning objectives for statistics, in primary level. The major aspect of curricular orientations at this level is the development of the ability to collect and organize data concerning students' everyday life phenomena and to adequately represent them in tables and graphs (ME, 2007). However, there is plenty of evidence in literature and from my own experience that many students can read and understand tables, charts and graphs, and perform the procedures to find statistical measures, but they miss the conceptual abilities to interpret and draw conclusions from graphs, or to make decisions on which calculation is appropriate to study a particular situation (Shaughnessy, 2007).

In this context it is pertinent to conduct a study aiming to analyse the level of understanding and the capacity of interpretation of data represented in graphs and tables by grade 3 students, before, during and after a teaching unit, as well as to identify the difficulties shown, with the purpose of improving the teaching and the learning.

The study followed a qualitative and interpretative methodology and involved 25 grade 3 students of a primary school in Portugal. The teaching unit included a sequence of 7 exploratory tasks focus on the construction, reading and interpretation of statistical data represented in tables and graphs and was conducted during the academic year of 2011/2012. The tasks were designed taking into account the comprehension levels of Curcio (1989) and proposed to the students as a means to promote their contact with several statistical representations developing their ability in reading, interpreting and constructing them, to stimulate their informal reasoning and to support them learning statistical concepts and procedures. During the exploration of each task, in the

classroom, the students worked in pairs or small groups. Upon finishing their exploration, the students presented their work orally to the class. These discussions provided the opportunity to respond to students' questions, to ask them to explain their reasoning, to progressively introduce new representations and probing the students' understanding of representations. Data collection methods included participant observation and the written documents produced by students (task resolutions and tests).

The preliminary results point to several difficulties regarding the construction and interpretation of statistical representations which are consistent with those found in previous investigations with students from different scholar levels. Concerning the construction of statistical graphs, the students made mistakes related to the choice of an appropriate graphic to the situation presented in the tasks and to the main elements in its construction. Concerning the reading and interpretation of statistical graphs and taking Curcio (1989) levels of graph comprehension as a reference, it was found that students show few difficulties in level 1 questions, but regarding levels 2 and 3 questions, the students show they lack the capacity to explain their reasoning. As the teaching unit went on, the students evolve positively, gradually become aware of the several statistical representations that they could use to represent data, increase their levels of responses to tasks involving the interpretation being able to better explain their reasoning and be attentive to all details of the graphs, developing, this way, their statistical literacy.

The poster begins with a presentation of the study including the aims, context and the qualitative methodology used. The focus then is on examples and analysis of students' work in interpreting and representing statistical data to document the results of the study.

## NOTES

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