

A Computational Measure of Heterogeneity on Mathematical Skills

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ABSTRACT

The educative fact is inherently multivariate, since there are lots of factors affecting each student and their performances. Due to this, both measuring of skills and assessing students are always complex processes. This is a well-known problem, and a number of solutions have been proposed by different specialists. But, in most of cases, it is clear that the different progress levels of students in the Mathematics classroom make also difficult the teaching work. We think that a measure of the heterogeneity of the different student groups could be interesting in order to avoid such difficulties, or to prepare some strategies to deal with this kind of problems.

The major aim of this work is to develop some new tools, complementary to the statistical ones that commonly are used for these purposes, to study situations related to education (mainly to the detection of levels on mathematical education) in which several variables are involved. These tools are thought to simplify and better understand these educational problems and, through this comprehension, to improve our teaching work.

Several authors in our research group have carried out some mathematical theoretic tools, to deal with multidimensional phenomena, and applied them in business models. These tools are based on multidigraphs. In this work, we implement all these tools by using symbolic computational software and apply them to study a specific situation related to the mathematical education.

Keywords

Assessment, Graph Theory, Homogeneity, Multivariate.