An Extension of the Eindhoven Classification Model to the Educational Sector

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Abstract

This work presents an extension of the Eindhoven Classification Model to sort adverse events root causes for the Educational Sector. Extended Logic Programming was used for knowledge representation and reasoning with defective information, allowing for the modelling of the universe of discourse in terms of default data, information and knowledge. Indeed, a systematization of the evolution process of the body of knowledge in terms of Quality of Information (QoI) embedded in the Root Cause Analysis was accomplished, i.e., the knowledge representation and reasoning system proposed led to a process of QoI quantification that allowed the study of the event's root causes, on the fly.

Keywords: Eindhoven Classification Model; Knowledge Representation and Reasoning; Education; School Dropout.

1. Introduction

Education is a powerful driver of development and one of the soundest instruments for reducing countries poverty. Although there has been great progress in the last decade, a large number of young people that finish their education did it without acquiring basic skills necessary for work and life. This is particularly detrimental when unemployment is high and labour markets are demanding more skills than ever before [1].

The reasons why young people have poor skills when they finish their school careers are many and diverse. Solving this problem requires detailed knowledge of the causes that lead to this situation. The school dropout is one of those causes. It is a complex phenomenon, resulting in economic and social losses, either to the individual, family or the community to which the person belongs. If the school dropout is large in a country or in a developed region, the consequences will be mainly damaging in terms of economic competitiveness and social environmental degradation [2].

In 2012 Portugal had a dropout rate of 20.8%, according to data existing in the report of the official statistical office of the EU. Spain, with 24.9%, and Malta, with 22.6%, were the only European countries that in the past year had higher values. Despite the decrease (from 38.8% to 20.8% between 2005 and 2011), this rate is still far from the national goal of a 10% dropout from secondary schools, intended for 2020 [3].

The school is a complex and multifaceted system where varied types of adverse events occur. An adverse event may be defined as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim.