

Chapter 26

School Performance Analysis From a Scholastic Learning Process

Judit Lacomba Masmiquel
La Salle Open University, Andorra

August Climent Ferrer
Universitat Ramon Llull, Spain

David Fonseca
Universitat Ramon Llull, Spain

ABSTRACT

In this study, the authors describe the design and use evaluation of a system that allows the academic behavior analysis of high school students using a data model based on business intelligence techniques. Based on the system data analysis information can be extracted and the right decisions taken in order to help and improve the student academic performance. From the design and implementation of the model, the relationship between the study habits of students and their academic performance is studied. More specifically, it aims to validate the initial hypothesis that there is a relationship between study habits of students and their academic performance. Based on the analysis it is concluded that the initial hypothesis is true. The proposed model also allows the extraction of information to other levels, where its primary objective is the application to improve the academic performance of students or to prevent situations of academic failure.

1. INTRODUCTION

Currently one of the main problems in schools, both in high-schools and professional training levels is the low academic performance and more worryingly, the school dropout. Multiple reports highlight this fact, especially in the Spanish educational system with indexes that are below the European average (Fernández, Mena y Riviere, 2010; Martín, 2007). In Spain, the percentage of the adult population

DOI: 10.4018/978-1-5225-2584-4.ch026

with a high school education, professional training or higher degrees is 54%, way below the European average (77%) and the average in OECD (76%). This is alarming since this education is key to acquire the knowledge and the abilities necessary to enter both the job market and university. The access rate to university education in Spain is also lower than the EU average. In Spain and in most EU and OECD countries, people with a high level of studies reach a higher rate of employment while people with a lower level of studies have a higher risk of unemployment.

On the other hand the public spending per student in Spanish educational institutions slightly exceeds (4%) the EU and OECD averages. Therefore, although there are many factors involved, it seems clear that the competitiveness of the Spanish educational system needs to be improved.

Even if it is a complex problem with many factors involved (political, social, demographic, teaching...), there is some possible changes for improvement. Once the problem has been identified, a set of actions can be proposed and implemented to minimize it or, if possible, solve it. For this reason, it is important to obtain as much information as possible related to the student's academic performance and its associated factors. This information and its subsequent analysis should allow both the verification of facts and the proposal of actions to maximize this performance.

With a business-oriented approach, the metric that allows to quantitatively measure the student's learning level is their qualification results. These are related to the rest of the system's variables. The present proposal uses a business data model in an educational environment based on Business Intelligence (BI) systems and Decision Support Systems (DSS).

2. BACKGROUND AND STATE OF THE ART

There are numerous examples from recent years of the incorporation of all types of applications and systems into classrooms at all educational levels to improve teaching, especially to improve student motivation. In preschool and early childhood education, the use of digital chalkboards and very basic web applications are enabling new ways to teach subjects such as math, languages, and science (Beauchamp & Parkinson, 2008; Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt & Wenderoth, 2014). In primary school, the increasingly complex use of computers and applications, which recently has even included the programming of robots, are innovations that directly impact the attention and comprehension levels of students, where the technological and social profiles of the student begin to illuminate the final answer (Volman, Eck, Heemskerk & Kuiper, 2005; Petre & Price, 2004). Beginning in secondary school, there is a challenge to incorporate mobile devices belonging to students, such as smartphones and tablets, into educational use through collaborative practices (and even gaming methods) that complement their social use (Leask and Pachler, 2013).

On the other hand, is easy to find multiple studies that analyze academic performance and the students learning process. These are based on different factors, personal variables and environment variables which are classified as external and internal factors (Mella y Ortiz, 1999). These factors could be personal and family-related which in some cases lead to school dropout in high school students (Díaz, 2003). This fact highlights the direct influence of the student's parent's academic level, the gender, the motivation and the social relationships as relevant external agents in the improvement of academic performance. Other studies (León, 2008) evaluate the students' concentration and attention as an internal factor that demonstrates the positive proportionality between concentration and performance.

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/school-performance-analysis-from-a-scholastic-learning-process/183526

Related Content

Cultural and Contextual Affordances in Language MOOCs: Student Perspectives

Carolyn Fuchs (2020). *International Journal of Online Pedagogy and Course Design* (pp. 48-60).

www.irma-international.org/article/cultural-and-contextual-affordances-in-language-moocs/248015

Autism Spectrum Disorders and Sexual and Gender Expansive Identities: Correlations and Treatment Considerations

Erin R. Donovan and Mollie Sheppard (2020). *Cases on Teaching Sexuality Education to Individuals With Autism* (pp. 128-144).

www.irma-international.org/chapter/autism-spectrum-disorders-and-sexual-and-gender-expansive-identities/248628

Collaborating Online: A Logic Model of Online Collaborative Group Work for Adult Learners

Eunjung Grace Oh and Thomas C. Reeves (2015). *International Journal of Online Pedagogy and Course Design* (pp. 47-61).

www.irma-international.org/article/collaborating-online/127037

Responding to the Learner: Instructional Design of Custom-Built E-Learning

Neil Carrick (2004). *Instructional Design in the Real World: A View from the Trenches* (pp. 10-28).

www.irma-international.org/chapter/responding-learner-instructional-design-custom/23932

Top Technologies for Integrating Online Instruction

Lawrence A. Tomei (2011). *International Journal of Online Pedagogy and Course Design* (pp. 12-28).

www.irma-international.org/article/top-technologies-integrating-online-instruction/51377