Chapter 49
Educational Data Mining and Indian Technical Education System: A Review

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ABSTRACT

Educational Data Mining (EDM) is emerged as a powerful tool in past decade and is concerned with developing methods to explore the unique types of data in educational settings. Using these methods, to better understand students and the settings in which they learn. Different unknown patterns using classification, Clustering, Association rule mining, decision trees can be discovered from this educational data which could further be beneficial to improve teaching and learning systems, to improve curriculum, to support students in the form of individual counseling, improving learning outcomes in terms of students' satisfaction and good placements as well. Therefore a literature survey has been carried out to explore the most recent and relevant studies in the field of data mining in Higher and Technical Education that can probably portray a pathway towards the improvement of the quality education in technical institutions.

INTRODUCTION

Technical Educational institutions as a regular operation collect lots of information and data produced from day to day educational activities:

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- Details of the courses offered,
- Students' enrollment data:
  - Course chosen,
  - Gender,
  - Age,
  - Father's name, and
  - Family details.
- Students' continuous assessment data:
  - Marks statement and grades.
- Teachers data viz.
  - Personal details,
  - Qualifications,
  - Courses taught, and
  - Student feedback.
- Placement data and many other similar ones which can be mined using Data mining tools and techniques.

Educational Data Mining (EDM) which is emerged as a powerful tool in last decade, is concerned with developing methods to explore the unique types of data in educational settings and, using these methods, to better understand students and the settings in which they learn (Baker and Yacef, 2009). Different unknown patterns using classification, Clustering, Association rule mining, decision trees can be discovered from this educational data which could further be beneficial to improve teaching and learning systems, to improve curriculum, to support students in the form of individual counseling, improving learning outcomes in terms of students' satisfaction and good placements as well (Naeimeh et al., 2005). Since Indian Technical Education system with an increased participation of unaided Private sector is dealing with improvement in the employability of trained graduates and postgraduates, coming out of these technical institutions, therefore a literature survey has been carried out to explore the most recent and relevant studies in the field of data mining in Higher and Technical Education that can probably portray a pathway towards the improvement of the quality education in technical education.

This chapter is organized as follows, a description of the technical education growth in India followed by including challenges emerging with increased unaided private sector participation in Technical education. Afterward, several related work in the field of data mining in higher/technical education were included. Finally, a discussion of the future possibilities of applying data mining in technical education system for the improved learning outcomes was carried out.

BACKGROUND

Data Mining has proved to be beneficial in extracting data in the field of education and thus reaching conclusions, assisting improvements in curriculum, predicting student's performance so as to take steps in order to receive desired results, and to determine factors affecting enrolments, dropping-out ratios, or the low placement rates.

Some work done in the field of education using data mining are discussed below.