A Review of Data Mining Methods for Educational Decision Support

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Data mining is a computer based information system which is devoted to scanning huge data repositories, generate information and discover knowledge. It attempts to uncover data patterns, organize information of hidden relationships, structure association rules and many more operations that cannot be performed using traditional computer based information systems. Therefore, data mining outcomes represent a valuable support for decisions making in various industries and education is one domain that can benefit from data mining. Application of data mining in education is living in its spring time and preparing for a hot summer season. Educational data mining emerges as a paradigm oriented to design models, tasks, methods, and algorithms for exploring data from educational settings. Educational Data Mining develops and adopts statistical methods, machine- learning and data mining methods to study educational data generated basically by students and educational instructors. The main goal of applying data mining in education is largely to improve learning by enabling data driven decision making for improve current educational practices and learning materials. Educational knowledge discovery, in data mining point of view can be seen as a similar process of applying the general knowledge discovery and data mining process and in experimental point of view, it can be seen as an iterative cycle of hypothesis formation, testing and refinement which not just turn data into knowledge but, also to filter the mined knowledge for decision making. There are many applications in education arena that have been resolved using data mining. There are more research studies have also been conducted under various educational problem categories and also there are a number of frequently used data mining methods use in Educational Data Mining. Various open source and commercial tools are available to apply data mining methods on the educational data. This study focuses on the identification of various educational problem domains where data mining methods can be applied and to study the suitability of the available data mining methods and the tools to perform Educational Data Mining in Sri Lankan Educational Institutes. The knowledge discovered by this review is expected to generate meaningful insight and provide guidance for important decisions made by educators.

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