Chapter 14
Problem-Based Learning in DBMS for Non-CSE/IT Students

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ABSTRACT

The course database management is offered as a General elective subject for Non-CSE/IT students during the fifth semester. Some of the non-IT/CSE students will have good coding knowledge. To make others confident in solving real-world problems and writing queries, a problem-based learning technique is adopted for the DBMS course. In problem-based learning, students working in collaborative groups learn by resolving complex, realistic problems under the guidance of faculty. The students need to form a team and choose a real-world application such as turf booking system, bike sales management system, agriculture management system, theme park management system, etc. By using open-source software such as MySQL, the students need to create a database and execute simple and complex queries. This hands-on approach allows students to gain practical experience in database management and query execution. It also helps them develop problem-solving skills and apply theoretical knowledge to real-world scenarios

INTRODUCTION

Educators use different assessment methods or tools to evaluate the student's performance, progress made in learning, skill acquisition, and academic readiness. There are different types of assessments, such as formative assessment, summative

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assessment, work-integrated assessment, diagnostic assessment, etc. However, the main objective is to quantitatively assess the student's work. The best tool for doing this is a rubric. It contains a range of performances and degrees to which students meet the criteria.

Historical Development of Theoretical Foundations of Assessment Methods

Assessment methods have evolved significantly over time, influenced by changes in educational philosophy, psychology, and technology. Early forms of assessment were often based on oral exams or written essays, with a focus on memorization and recall. In the late 19th and early 20th centuries, the advent of standardized testing began to formalize assessment practices, particularly in the United States and Europe. This era saw the rise of multiple-choice and true-false questions as efficient ways to evaluate large numbers of students.

The mid-20th century brought about advancements in psychometrics, which provided a more scientific approach to assessment, focusing on reliability, validity, and fairness. Theories such as classical test theory and item response theory emerged during this period, offering frameworks to analyze test performance and improve assessment instruments.By the late 20th century and into the 21st century, there has been a shift towards more authentic and formative assessment methods. Formative assessment, in particular, gained prominence as educators recognized the importance of providing ongoing feedback to support student learning. This shift has been supported by advances in technology, which have enabled the development of computer-based assessments, simulations, and adaptive testing.

Theoretical Foundations of Assessment Methods

Originating in the early 20th century, behaviorism emphasized observable behaviors and reinforcement. Assessment methods aligned with behaviorism often focused on objective measures and observable outcomes.As cognitive psychology gained prominence, assessment began to focus on internal mental processes such as memory, problem-solving, and comprehension. This shift led to assessments that measure higher-order thinking skills and understanding.Constructivist theories highlight the active role of learners in constructing knowledge. Assessment aligned with constructivist principles often involves tasks that require students to apply knowledge in authentic contexts and demonstrate understanding through projects or portfolios.These perspectives emphasize the influence of social and cultural factors on learning and assessment. They highlight the importance of context, diversity, and equity in assessment practices.