

A comprehensive review on Online Examination System

Minakshi Mittal¹, Neeru Verma²

Research Scholar, Bhagwant University, Ajmer (Rajasthan)

²Department of Education, Bhagwant University, Ajmer (Rajasthan)

Email: mrisminakshi@gmail.com; life21_win2007@rediffmail.com

Abstract:

This paper examine a comprehensive overview about online examination system. In today's world, many people are learning essential computer skills like using Windows, Microsoft Office, and networking. These skills are crucial for various courses and government work. Now, all university students must take a computer skills course, and government employees need to pass Computer Operating Exams. Even high school students are getting lessons in basic computer skills. Since the late 1990s, hundreds of thousands of people worldwide have taken part in computer education. To handle the needs of so many learners, it's important to have a Web-based system for learning and testing basic computer skills. This system makes it easier for a large number of people to learn and be evaluated in computer basics.

Keywords: Onlineexamination, Web, Microsoft Office, Computer.

Introduction

The system operates at a high level of efficiency, and both teachers and users associated with the system comprehend its advantages. It effectively addresses the specified requirements and solves the intended problem. Various examination methods are employed, including written examinations, oral examinations, and physical fitness examinations. In written examinations, one encounters multiple-choice questions, which can be further categorized into two subtypes. The first subtype, known as True/False, necessitates students to select all appropriate answers. True/False questions offer a binary choice, where a statement is either true or false. This method poses challenges, as depending on the number of questions, a significant number of candidates might achieve a perfect score through guesswork, averaging around fifty percent (50%). The second subtype is Best Answer questions, requiring students to choose the correct response from a provided list of options. Other question formats in written examinations include:

Matching items involve presenting a defined term and requiring the test taker to match it with the appropriate identifying characteristic. Fill-in-the-Blank items present students with identifying characteristics and task them

with recalling the correct term. In the Essay format, a topic or question is given to the student, requiring a written response to fulfil the item's requirements. Essay items are administratively efficient in terms of construction time. As an assessment tool, they can evaluate complex learning objectives and the processes employed to answer the question. Additionally, essay items offer a more realistic and generalized task for examination. Mathematical questions, often found in subjects like chemistry, physics, or economics, differ from the above formats. They typically present a question and require candidates to solve it, with more emphasis on the steps taken than the correct answer.

Oral Examination is a form of assessment where a student is evaluated based on their ability to face a panel and respond to questions verbally. Akanvi et al. (2012) examined the online essay based examination assessment model with the help of double blind marking method. The assessment focuses on the student's composure and articulation by Iyilade and Odekunle (2005); Gardner et al. (2002); Iyilade and Odekunle (2005); Wang et al. (2004). Physical Fitness Examination is a test designed to evaluate physical strength, agility, and endurance. Commonly incorporated into educational institutions as part of the physical education curriculum, in medicine for diagnostic testing, and as eligibility criteria in professions emphasizing physical abilities, such as the military or police. Online Examination Arrangement is a framework centered around Multiple Choice Questions for examinations Cluskey et al. (2011); Moten et al. (2013). It provides a convenient platform for both test conductors and students participating in the examination. The Online Examination System is a web application that facilitates communication between institutions and students by Zhaozong and Joan (2011); Zhenming et al. (2003). Institutions input the questions they want in the exam through the website.

Today, the Online Examination System is recognized as a rapidly evolving method of assessment, known for its precision and efficiency. Its implementation requires less manpower, making it a cost-effective solution for conducting various types of exams, including assessment tests, aptitude tests, psychometric tests, personality tests, entrance exams, and campus exams. The system enables organizations to easily monitor and track the progress of students during examinations, for open book by Boniface (1985); Ioannidou (1997). Moreover, it contributes to reducing the dependency on paper, aligning with environmentally friendly practices. The Online Examination System, developed in PHP, is a valuable tool for learning, meeting the current demands of educational assessments.

This system holds significant importance for educational institutions, streamlining the exam preparation process and saving valuable time and effort traditionally spent on grading papers and generating result reports. The online examination method eliminates the need for physical papers and pens, making it a swiftly growing and

popular approach. The key factors driving its popularity are the speed and accuracy integral to the backbone of this system.

Online Examination

The Web-based Examination System is like an online tool that helps evaluate what people have learned, especially in basic computer skills by Rashad et al. (2010). It uses a special framework and can handle different types of questions, like ones with definite answers and practical tasks such as programming. This system has been successfully used to check how well students can use computers, even for tests in high schools. The online examination system, operating through the internet or intranet, is presented as an effective solution for mass education evaluation. While acknowledging that examinations might not always reflect true knowledge, the system aims to restore confidence in the evaluation process. The historical context of standardized examinations is mentioned, highlighting their origins in ancient China and subsequent adoption by England in the 19th century for selecting candidates in civil service positions. The proposed online examination system draws inspiration from this history while incorporating modern technology to address contemporary challenges.

Students will connect to the test center's or school's internet for the commencement and completion of the testing process. The exam application is designed to withstand internet outages, ensuring that if a student encounters a drop in the internet connection during testing, they can continue without disruption. Even if a student's computer battery runs down, they can plug in, restart their device, and resume from where they left off—all their work will be saved, and no testing time will be lost. It's the students' responsibility to bring a fully charged device on the test day, considering the possibility of limited access to power outlets in the testing room.

To assess students' capabilities in engineering studies, the observation of their performance in specific assignments is essential. Relying solely on end-of-term written assignments may not effectively test students on all conceptual requirements of their field. In response, this research introduces an online examination system for Outcome-Based Education (OBE). The Online Examination System, an electronic application, allows the college or institution to assess students with questions having multiple options and one correct answer. The examination can be conducted online, and results can be reported in a short time. The examination office is responsible for creating secure question papers. The online examination system provides remote access to students, streamlining the exam process, answer sheet checking, and result generation—all handled by the system. Data is stored on the server, and clients (students) can access these databases to take exams.

The system follows a client-server model, where administrators provide access to instructors and students. Students with accounts on the system can take exams, with two types of exam sections: Practice and Real test.

After submitting the test, the result is generated, highlighting correct answers in different colors. The examination process is based on the result, and the results are sent to each student. In the context of Math, Physics, and Information Engineering, online examinations are essential components of online education, offering efficiency and resource reduction.

Examination system is developed based on web. This gives train particular rules to Blooming anatomy multiple-choice questions (MCQs) result of this study shows that the blooming anatomy tool can be helpful in education and their research in the anatomical sciences to help in adjusting eyewitness judgment on Bloom ordered levels and enhance consistency. Examination process is important activities for institutions to evaluate student's performance. Thus the quality of the exam questions would determine the quality of the students produced by the institutions, also preparing exam questions is challenges, tedious and time consuming for the instructors. Current technologies help instructors to store the questions banks in computer databases. The issue arise is how the current technologies would also help the instructors to auto generate the different sets of questions from time to time without concern about repetition and duplication from the pass exam while the exam bank growing.

The examination system is developed based on the web, providing specific guidelines for crafting Blooming anatomy multiple-choice questions (MCQs). The results of this study indicate that the Blooming anatomy tool can be beneficial in education and research in the anatomical sciences. It aids in aligning assessment questions with Bloom's taxonomy levels, thereby improving consistency in evaluation. The examination process is a crucial activity for institutions to assess students' performance. The quality of exam questions plays a pivotal role in determining the calibre of students produced by institutions. However, preparing exam questions poses challenges, is tedious, and consumes a considerable amount of time for instructors. To address these issues, the research proposes the development of an efficient online examination system. This system would allow examinations to be taken online, results to be computed and released immediately, and data to be stored centrally for documentation and future planning. Such a system would bring balance and harmony to the university system, enabling staff to utilize their time for research instead of manual tasks. It could also encourage students to take their studies more seriously. Current technologies offer a solution by allowing instructors to store question banks in computer databases.

Objective of Online Examination System

For a good computer exam system, it needs to have:

(i) Smart Question Storage

The system should store questions in a smart way that fits the overall exam structure.

(ii) Easy-to-Use Interface

The way you interact with the exam should be easy. You could either practice in a pretend environment (simulation) or do it in the real setting. The second option is better for learning actual computer skills.

(iii) Different Kinds of Questions

The system should have different types of questions, like multiple-choice, hands-on tasks, design questions, finding information, and maybe group tasks. This way, it can check various aspects of what you know about computers.

(iv) Safe and Trustworthy

Most importantly, the exam system must be safe and reliable. It should make sure that nobody cheats and that the results really show how much you understand about computers.

Numerous web-based learning and testing systems like WebCT, QUIZIT, ASSYST, and PILOT exist, with a focus on objective tests and quizzes for easy online evaluation. These systems typically handle yes/no questions, multiple-choice queries, and fill-in questions with simple answers. However, they fall short in grading richer answers and lack support for testing practical operating skills. Our web-based examination system stands out with the following features:

- (i) It covers not just objective questions but also operational questions involving Windows, MS Word, MS Excel, and Internet skills.
- (ii) The emphasis is on practical skill development, encouraging hands-on testing in the client machine's actual environment.
- (iii) Urgent development of an automatic grading system is needed to evaluate both operational and objective questions, a capability lacking in existing systems.

Our system, based on DCOM technology, comprises four main components: the examination preparation system, examination system (WOES), examination monitor system, and auto-grading system.

1. Examination Preparation System

- Manages question storage, assigns test IDs, and schedules tests.
- The open question database allows teachers to add questions by template, categorized by topics, keywords, complexity, and difficulty.

2. Examination System (WOES)

- Web-based testing interface for students with client-side control, time control, security measures, and auto-installation.
- Utilizes DCOM for convenient installation and updates.
- Ensures security through cryptography for student identification, real-time monitoring to prevent leaving the computer during the test, and data transmission encryption.

3. Examination Monitor System

- Manages the test process, performs test ID statistics, and collects answers.
- Ensures real-time monitoring with face tracking technology.

4. Auto-Grading System

- Incorporates fuzzy matching and macro programming technology for variable question types.
- Automatically grades answers collected from the examination system, simplifying the scoring process for teachers.
- Handles both objective questions (effective matching) and operational questions (challenging for simple matching technologies).

Our comprehensive examination system addresses the practical computer skills needed in universities, civil servant training, and high school nationwide examinations. Hundreds of thousands of users attest to its effectiveness in enhancing learning and testing efficiency. The online examination system is a web-based platform for conducting exams over the internet or intranet using computers. Research and comparison of different web examination systems in various fields have led to the proposal of a design model for a general examination platform applicable to colleges and universities. The study involves analysing key technologies, suggesting improvement schemes, and refining the system to enhance its functionality.

The use of online tools for teaching across disciplines has become increasingly popular, with assessment being a crucial element to achieve course objectives and enhance the teaching and learning process. Various educational taxonomies are employed to assess the effectiveness of evaluations in engineering learning by

aligning assessment tasks with intended learning outcomes and teaching activities. Designing and assessing learning outcomes can be challenging for engineering educators, and computer-based assessment has emerged as a common form of technology-enhanced assessment. Bloom's Taxonomy serves as a widely used classification scheme to identify different levels of cognitive competencies.

The Online Examination System presented here is a software solution that enables industries or institutes to organize, conduct, and manage examinations through an online platform. This system operates through the Internet/Intranet and/or Local Area Network environments. Manual examination systems often encounter delays in result processing, filing issues, difficulty in record filtering, a high risk of record loss, and challenges in record searching. Maintenance of such systems is also cumbersome and time-consuming. The proposed online examination system addresses these issues, providing an efficient, fast, and resource-saving solution for online education. The paper outlines the system's principles, highlights its main functions, and includes an evaluation by students.

The Manual Examination System is riddled with numerous problems, including cases of examination malpractice and unethical behaviour by students, leading to a decline in the quality of graduates. This compromises the nation's reputation and the university system's integrity, affecting the competitiveness of graduates in the global job market. Manual computation of results poses risks of errors and missing examination scripts during marking, contributing to inefficiency and time wastage.

Importance of Online Examination

The online examination system offers a convenient and environmentally friendly alternative for students, eliminating the need for paper and pens during exams. This forward-thinking approach aligns with the necessity for eco-conscious practices, considering the potential environmental crisis caused by climate change. Through this system, students develop values that prioritize sustainability throughout their education. Online exams prove to be effective and efficient, as students can quickly select the best answers provided, reducing time wastage. The system's notable feature is its robust data security, ensuring that question paper leaks are virtually impossible. The questions are securely stored and only accessible during the designated examination time.

The traditional process of setting up exams involves significant resource utilization, from teachers preparing the test to administrators managing the distribution of exam papers. The online examination system streamlines these procedures, reducing labour costs and positively impacting the educational institution's financial bottom line. One remarkable advantage of online exams is the immediate availability of scores post-exam. Students can take exams at their convenience, and result analysis is accessible at any time, facilitating continuous self-

improvement. Furthermore, the scalability of the online examination system allows for implementation over a broader geographic region.

Conclusion

In today's education world, tutors are focused on helping students reach the learning goals of their courses. Tutors strive to understand students' minds and explain course concepts effectively. We've developed an online examination system for Outcome-Based Education (OBE) in information technology education. Through this platform, we assess each student's level and pinpoint their weaknesses based on different levels of Bloom's taxonomy. This system benefits instructors by helping them create better questions and improve pedagogical design for students. It also guides students in assessing their knowledge levels and skills through learning outcomes. The aim is to contribute to ongoing research in popular examination systems, design common exams for the college platform, and provide an efficient way to organize various tests. The system's success can serve as a valuable reference for other colleges and universities.

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