DEVELOPING AN APP FOR EXAM ASSESSMENT USING BLOOM

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Abstract

The topic is on the development and implementation of a web application that creates test questions based on Bloom's taxonomy principles in order to enhance the caliber and effectiveness of assessments in educational situations. Part of the process includes a comprehensive review of the literature on Bloom's taxonomy and its application to educational assessment. After that, a needs analysis is done to identify specific requirements and challenges with exam paper arrangement. These findings guide the creation of an online application that incorporates Bloom's taxonomy principles into the process of preparing test questions. After then, the application is improved iteratively through input collecting and usability testing. Previous research mostly focused on theoretical discussions and conceptual frameworks related to Bloom's taxonomy and educational assessment. The innovative contribution is the creation and implementation of a practical solution, a web application, that applies these theoretical foundations to the real exam paper situations. With the help of this creative contribution, teachers can close the knowledge gap between theory and practice by enhancing the effectiveness and caliber of evaluations. In addition to reading research papers, the incorporation of surveys and usability testing allows for a comprehensive evaluation of the application's usability and impact on user experience.

I.   INTRODUCTION

In the context of education, assessment is essential for determining how well pupils comprehend and apply the material. Conventional exam paper settings frequently fall short of the depth and sophistication needed to accurately measure higher-order thinking skills, making them incompatible with the principles of successful assessment. With its strong framework for classifying cognitive skills, Bloom's taxonomy gives teachers a well-organized way to create examinations that encourage critical thinking and knowledge   application.

Although Bloom's taxonomy has well-established theoretical foundations, there is still a lack of practical tools help educators use these ideas. In order to fill this gap, this study proposes a novel solution: an online tool that simplifies exam paper preparation while upholding Bloom's taxonomy standards. By using the force the context of education, assessment is essential for determining how well pupils comprehend and apply the material.   Conventional exam paper settings frequently fall short of the depth and sophistication needed to accurately measure higher-order thinking skills, making them incompatible with the principles of successful assessment. With its strong framework for classifying cognitive skills, Bloom's taxonomy gives teachers a well-organized way to create examinations that encourage critical thinking and knowledge application. Although Bloom's taxonomy has well-established theoretical foundations, there is still a lack of practical tools to help educators use these ideas. In order to fill this gap, this study proposes a novel solution: an online tool that simplifies exam paper preparation while upholding Bloom's taxonomy standards.

II.   LITURATURE SURVEY/BACKGROUND

A comprehensive investigation of Bloom's Taxonomy in educational assessment is revealed by the literature review. Sivaraman and Krishna (2015) emphasize how it can be used when creating exam questions that accurately gauge students' comprehension. Adesoji (2018) emphasizes Bloom's Taxonomy's flexibility, demonstrating how it may be modified to meet different cognitive goals. Teachers have practical difficulties when trying to match teaching materials to the levels of Bloom's Taxonomy. Tarman and Kuran (2015) shed light on these issues. The viewpoints provided by Drs. Gul, Kanwal, and Khan (2020) on the methods and preferences of educators for incorporating Bloom's Taxonomy into teaching practices are rather insightful. All in all, these research increases our grasp of the practical implications of Bloom's Taxonomy in educational assessment as well as its significance.

Krishna and Sivaraman (2015): This study investigates how exam papers can be evaluated using Bloom's taxonomy. It probably goes over the importance of Bloom's taxonomy in educational assessment and might provide teachers some ideas on how to use it to make good test questions.

Adesoji (2018): The alteration of Bloom's taxonomy's cognitive levels is the main topic of Adesoji's research. The course may explore the diverse cognitive domains delineated in Bloom's taxonomy and their adaptability to diverse educational goals and evaluation methodologies

In 2015, Tarman and Kuran: This study uses Bloom's taxonomy to analyze the cognitive level of questions found in social studies textbooks and the viewpoints of teachers. It might provide insight on how well teachers comprehend and use Bloom's taxonomy in their lesson plans, as well as how instructional materials, assessment items, and taxonomy levels align.

Drs. Khan, Gul, and Kanwal (2020): The purpose of this study is to find out how instructors feel about using the updated Bloom's taxonomy in their lessons. It might go over the difficulties and advantages of applying Bloom's taxonomy to instructional design and classroom procedures, as well as practical methods for incorporating Bloom's taxonomy into instruction and evaluation.

III.   PROPOSED WORK/SYSTEM

In light of the need for useful solutions in educational evaluation and building on the knowledge gained from earlier research, this study suggests creating a web application for exam paper settings that is based on Bloom's taxonomy. The preceding study elucidated the theoretical underpinnings of Bloom's taxonomy and its importance in fostering higher-order cognitive abilities. It also highlighted how difficult it is for educators to use these concepts in assessment procedures due to a lack of readily available resources.

It is clear from the review of earlier research that theory and practice in educational evaluation differ. Although Bloom's taxonomy offers a theoretical foundation for creating exams that encourage critical thinking, it is still difficult to turn these ideas into useful tools for teachers. Previous studies have underscored the significance of closing this gap by providing intuitive applications that conform to Bloom's taxonomy and assist teachers in crafting evaluations that promote more in-depth learning.

Based on these findings, the proposed effort intends to close this gap by creating a web tool that incorporates the ideas of Bloom's taxonomy into the process of creating exam questions. Through the use of technology, this application will give educators an easy-to-use platform to create tests that comply with Bloom's taxonomy, improving the caliber and efficacy of exams in learning environments.

The purpose of the proposed effort is to promote evaluation procedures in education by developing and implementing this web application. The program seeks to enable instructors to design exams that encourage students' critical thinking, problem-solving, and deeper comprehension by giving them a useful tool based on research-based ideas. In the end, the suggested effort seeks to close the knowledge gap between theory and practice in educational assessment, giving students meaningful learning opportunities and better equipping them for success in a world that is always changing.

IV.   METHODOLOGY

Reviews of previous studies: Carry out a thorough analysis of academic works that have been written about Bloom's taxonomy, educational evaluation, and technology-enhanced learning. The theoretical underpinnings of Bloom's taxonomy, its use in educational evaluation, and current educational technology innovations will all be covered in this review.

Needs Analysis: determine particular needs and obstacles in the present exam paper-setting process, conduct a needs analysis phase. To learn about the needs, preferences, and pain points of educators, administrators, and students regarding assessment processes, surveys, interviews, or focus groups may be used.

Technology Selection: Choose the right technologies for the web application's development based on the results of the requirements analysis and literature review. Take into account elements like compatibility with current systems, scalability, usability, and adherence to best practices in the development of educational technology.

Design and Development: The Bloom's taxonomy-based web application is designed and developed using agile development approaches. Work together with educators, software developers, and instructional designers to iteratively build and prototype the application, making sure that it satisfies end-user needs and adheres to Bloom's taxonomy principles.

Incorporate Bloom's taxonomy principles into the web application's design to make sure it has features for classifying learning objectives, matching assessment items to cognitive levels, and creating test papers that accurately represent the desired distribution of cognitive abilities.

Usability Testing: To assess the efficacy and usability of the online application, conduct usability testing sessions with a varied set of educators and students. To guide iterative improvements, get input on the functionality, design, and general user experience of the user interface.

Technology Assessment: Examine the chosen technologies that were employed in the creation of the web application, taking into account aspects like maintainability, scalability, security, and performance. Point up any restrictions or difficulties that arose throughout the development process and make suggestions for upcoming improvements.

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V.   IMPLEMENTATION

Design Phase: Create the web application's design specs based on the requirements gleaned from the needs analysis. To conceptualize the user interface, create wireframes while taking stakeholder comments into consideration. Create a database schema that will allow you to organize and store exam questions, learning objectives, and other pertinent information. Describe the web application's architecture and its front-end, back-end, and database levels. Coding & Development: Use JavaScript frameworks like Angular.js and React.js to implement the web application's front-end. Use server-side programming languages like PHP (with Laravel), Node.js (with Express), or Python (with Django or Flask) to develop the back-end functionality.

For functionality like content management, data storage, and user authentication, integrate with third-party libraries or APIs. Depending on the needs of the application, implement the database using a NoSQL database (such as MongoDB) or a relational database management system (such as MySQL, PostgreSQL).

Integration with Bloom's Taxonomy: Include elements in the web application that make it easier to use the ideas of Bloom's taxonomy in exam paper scenarios. Offer the ability to classify learning objectives according to the stages of Bloom's taxonomy, such as remembering, comprehending, applying, analyzing, evaluating, and producing. Create exam papers with a fair distribution of cognitive talents throughout Bloom's taxonomy levels by developing algorithms or decision trees. Make that the user interface facilitates simple interaction with assessment items and Bloom's taxonomy categories, as well as navigation.

Testing and Quality Assurance: Use unit testing to confirm that each web application module and component functions as intended. To make sure that all of the application's components operate together harmoniously, conduct integration testing. Use frameworks for automated testing (such as Jest and Selenium) to automate regression testing and guarantee code stability. Verify that the online application satisfies educators' needs and expectations by conducting user acceptability testing, or UAT.

Documentation and Deployment: For future reference, record the web application's design choices, coding procedures, and implementation specifics. Create training materials and user manuals to help teachers and students accept the web application. When deploying the web application to a production environment, make sure that performance, scalability, and security issues are taken care of. Keep an eye out for problems, performance snags, and user input with the deployed program. Then, incrementally enhance it based on actual user experience.

VI.   CONCUSION

In conclusion, by creating and deploying a web application based on Bloom's taxonomy for exam paper settings, this research aims to close the gap between theory and practice in educational evaluation. The study determined the theoretical underpinnings of Bloom's taxonomy and its importance in fostering higher-order thinking skills through a comprehensive literature survey. It also demonstrated the necessity for useful resources to help teachers successfully incorporate these ideas into assessment procedures.

Developing, implementing, and integrating Bloom's taxonomy concepts into the web application comprised the implementation portion of the research. This involved designing an easy-to-use interface for classifying learning objectives, producing test questions that distribute cognitive skills evenly across Bloom's taxonomy levels, and enabling educators to interact and navigate with ease. Through usability and user acceptance testing, educators and students provided feedback that impacted the web application's development and deployment. By using an iterative process, the program was made to satisfy end users' requirements and expectations while also offering a useful tool for improving evaluation procedures in educational environments.

VII.   REFFRENCES

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