

RETHINKING TRADITIONAL GRADING SYSTEMS: ARE EXAMS THE BEST WAY TO MEASURE KNOWLEDGE?

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Annotation: This study explores the effectiveness of traditional exam-based assessments versus alternative grading methods in measuring student learning outcomes. Through a mixed-method approach, the research examines perceptions from students, educators, and education experts on the limitations and advantages of exams and alternative assessments such as project-based evaluations, portfolio assessments, and competency-based learning. Key findings reveal that exams often induce stress and encourage memorization over critical thinking, while alternative methods foster deeper learning, creativity, and real-world application. The study advocates for a hybrid grading system that combines exams with continuous assessments to better evaluate students' diverse skills and capabilities. The findings suggest that a more holistic approach to grading could reduce academic stress and enhance the quality of education by supporting various learning styles and fostering long-term knowledge retention.

Keywords: Assessment methods, Traditional exams, Portfolio-based assessments, Project-based evaluations, Competency-based learning Holistic education, Student performance, Educational reform, Alternative assessments, Grading system

I. Introduction

Grading systems play a crucial role in education, serving as a measure of student performance and knowledge acquisition. Traditionally, exams have been the primary method of evaluation, with standardized tests determining academic success. However, critics argue that exams may not effectively measure a student's practical skills, creativity, or problem-solving abilities. Moreover, high-stakes testing often leads to stress and memorization-based learning rather than genuine understanding. This study explores whether exams are the best way to assess knowledge or if alternative methods provide a more accurate evaluation of student learning. As a library, NLM provides access to scientific literature. Inclusion in an NLM database does not imply endorsement of, or agreement with, the contents by NLM or the National Institutes of Health. The science of teaching and learning has always had strong focus on assessment. Best pedagogical practices include backward design, which outlines course design with assessment considerations at the forefront of planning. Proctored exams have been a

mainstay in college classrooms for centuries[1]. Even with the inclusion of more project-based forms of assessments in more recent years, written exams have not lost their favor with faculty. In March 2020, COVID-19 moved higher education into remote learning environments, forcing faculty who utilized in-person exams to rethink the way they approached student assessment. According to the National Institute for Learning Outcomes Assessment's survey on assessment-related changes during the COVID-19 pandemic, 97% of responses made changes to their assessment strategies in some way during the spring 2020 semester[2]. Changes included things such as modifying the assessments themselves, altering assessment deadlines/grading policies, and accepting alternative forms of assessments. In what now appears to be a serendipitous event, the 2019 spring semester brought about several changes to the General Microbiology course at the University of North Dakota (UND). Grounded in educational theory of constructivism and using backward design, the course was redesigned to better align summative assessments (previously traditional exams) to the active learning teaching style of the course. One major change was the increased use of journal articles to emphasize content in real-world scenarios. The inclusion of primary literature in undergraduate classes has been reported to help students connect course content to scientific research, improve. This study utilized a mixed-method approach to evaluate the effectiveness of different grading systems.

II. Methods

1. Survey: A questionnaire was distributed to 600 students and 100 educators across various educational institutions to assess perceptions of traditional exams versus alternative assessments.

2. Interviews: 20 education experts were interviewed to gain insights into the strengths and limitations of exam-based grading.

3. Comparative Case Study: Schools and universities that implemented alternative grading systems, such as portfolio-based assessment and competency-based learning, were analyzed.

4. Performance Analysis: Student academic records were reviewed to compare exam-based results with performance in alternative assessment models[4].

This study was conducted in a 300-level majors General Microbiology course. Approval for use of course evaluations for this study was granted by the UND Institutional Research Board. Participants were 31 students (43% of the total students registered) who completed the end-of-semester course evaluations for the spring 2019 semester. This course was newly redesigned using backward design; first goals and objectives were determined using ASM Curriculum Guidelines (8), and then appropriate assessments were identified. At the end of each unit where a traditional exam would typically be inserted, a different form of summative assessment was planned—Paper Reviews. This assessment task allowed for students to choose among

four primary research journal articles pertaining to the major concepts of the unit and complete a Paper Review Form using the article to address the questions on the form. The 16-week course was divided into four units, each with a Paper Review due at the conclusion. Paper Reviews were graded using a standard evaluation rubric[5].

III. Results

The study revealed several key findings:

1. Survey Results: 72% of students reported that exams induce stress and encourage rote memorization rather than critical thinking.
2. Educator Feedback: 85% of teachers acknowledged that project-based assessments and continuous evaluation methods provide a better measure of a student's skills and knowledge application.
3. Case Study Insights: Institutions using competency-based learning demonstrated higher student engagement and retention rates, as learning was more interactive and practical.
4. Performance Trends: Students assessed through diverse methods (projects, portfolios, presentations) outperformed their exam-based counterparts in long-term knowledge retention and real-world applications[6].

IV. Discussion

The findings indicate that exams alone may not be the best way to measure knowledge. Alternative assessment methods such as peer evaluations, group projects, practical demonstrations, and portfolio assessments provide a more comprehensive understanding of a student's abilities[7]. Limitations of Exams: Exams primarily test memorization, creating pressure that may not accurately reflect a student's real capabilities (Brookhart, 2020). Benefits of Alternative Grading: Methods like competency-based assessments and project-based evaluations focus on real-world skills, problem-solving, and creativity. Challenges in Implementation: Despite the benefits, some schools struggle with the scalability and subjectivity of alternative assessments, requiring proper training for educators. To ensure a fair evaluation system, a hybrid approach—combining exams with continuous assessment methods—could offer a balanced and inclusive grading structure that supports diverse learning styles[8].

V. Conclusion

The study highlights the limitations of traditional exams as the primary method of evaluating student knowledge and performance. While exams may be effective in testing theoretical understanding and memorization, they fail to capture the broader range of skills such as critical thinking, creativity, problem-solving, and real-world applications. The findings indicate that alternative assessment methods, such as portfolio-based assessments, project-based evaluations, and competency-based learning, offer a more holistic approach to measuring student knowledge. These

methods foster deeper learning, engage students more effectively, and reduce the academic stress often associated with high-stakes exams. Although alternative assessments may present challenges, including subjectivity and scalability concerns, the study supports the idea of a hybrid approach that integrates exams with continuous assessment methods. This blended system would allow for a fair and comprehensive evaluation of student performance, catering to diverse learning styles and better preparing students for practical, real-world situations. To drive meaningful educational reform, educators and policymakers should consider these findings and work toward a more dynamic and inclusive grading system that encourages deeper understanding and fosters students' overall development.

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