

System Proposal & Feasibility Analysis

Systems Proposal:

The proposed solution for "Enhancement of Performance Display on Blackboard" is intended to transform the way students interact with and comprehend their academic performance. This project aims to redesign the current Blackboard grade display system into a more comprehensive and user-friendly interface, thereby improving the overall educational experience at UMBC.

Overview of the Proposed Solution:

Our solution involves developing an advanced software module that integrates seamlessly with the existing Blackboard framework. This module will provide a dynamic dashboard for students, featuring interactive visualizations like pie charts and bar graphs to illustrate the weight and significance of different assessments in their overall grade calculation.

Key Features:

- **Interactive Grade Visualizations:** Using graphics to represent grades and their significance.
- **Notifications and Alerts:** Keeping students up to date on grade changes and upcoming deadlines.
- **User Assistance Features:** Tooltips and help icons are available to assist new users in understanding the grading system.
- **Detailed Performance Breakdown:** Providing a clear picture of how each task contributes to the overall grade.

This software solution will necessitate knowledge of software engineering, data visualization, and user experience design. We intend to use agile methodology to ensure flexibility, regular stakeholder engagement, and timely delivery of a high-quality product.

Impact on the Organization:

The implementation of this improved performance display system on Blackboard will be extremely beneficial to UMBC. It will improve students' academic planning and preparation, foster a more proactive learning environment, and contribute to educational transparency.

Organizational Benefits:

- **Enhanced Student Understanding:** Enabling students to strategize their studies more effectively.
- **Increased Academic Engagement:** Encouraging a more interactive and informed approach to academic performance.
- **Positive Learning Environment:** Contributing to student satisfaction and success.

Feasibility Analysis:

We conducted an in-depth analysis to assess the feasibility and effectiveness of this proposed solution, taking into account factors such as software development requirements, hardware compatibility, and the overall impact on students and faculty.

Development and Implementation:

- **Software Development Requirements:** Analysis of the technical requirements for the project.
- **Hardware Compatibility:** Ensuring the solution works seamlessly with the existing Blackboard infrastructure.
- **Time Frame and Budget:** Planning for a realistic timeline and budget to ensure timely and cost-effective implementation.
- **Stakeholder Training:** Preparing educational materials and sessions for students and faculty to familiarize them with the new system.

Economic Feasibility Analysis:

The economic feasibility analysis for the Blackboard Performance Enhancement project was based on a thorough examination of the anticipated costs and benefits. The financial aspects of developing and implementing the enhanced performance display system within Blackboard are considered in this analysis.

1. Costs:

a) Development Cost:

The development cost includes expenses related to software engineering, design, and integration with the existing Blackboard system.

Estimated Cost: \$100,000, covering software developers' salaries, development tools, and associated costs.

b) Hardware Cost:

This covers any additional servers or hardware upgrades necessary to support the new features.

Estimated Cost: \$20,000, for enhancing the current infrastructure to support advanced data processing and visualization.

c) Training Cost:

Training costs encompass the preparation and delivery of training sessions for faculty and students to familiarize them with the new system.

Estimated Cost: \$10,000, for developing training materials and conducting workshops.

d) Maintenance Cost:

Ongoing maintenance and updates to the software and hardware infrastructure.

Estimated Annual Cost: \$25,000, for regular system updates and technical support.

2. Benefits:

a) Improved Academic Planning and Performance:

Students can plan their studies more effectively with detailed insights into their grades, potentially leading to improved academic performance.

Estimated Benefit: Enhanced student success rates and retention.

b) Enhanced User Experience:

Students and faculty will benefit significantly from the interactive and user-friendly interface. Estimated Benefit: Increased satisfaction and engagement with the Blackboard platform.

c) Increased Institutional Efficiency:

The grade display process can be automated and streamlined to reduce administrative workload.

Estimated Benefit: Improved operational efficiency within the educational institution.

d) Intangible Costs and Benefits:

The project may face initial opposition or require time for user adaptation, which could result in temporary disruptions.

On the other hand, the enhanced system will bolster the institution's reputation for embracing innovative educational technology.

e) Confidence Level in Estimates:

While the estimated costs and benefits are based on extensive research and analysis, there is some uncertainty. Technological advancements, user adoption rates, and maintenance challenges could all have an impact on the actual costs and benefits.

A sensitivity analysis is recommended to assess the economic feasibility under various scenarios and to prepare for potential variances.

Technical Feasibility Analysis:

1. Data Analytics and Visualization Integration:

Requirement: Development of advanced data analytics and visualization capabilities to display academic performance in a user-friendly manner.

Implementation: This will involve integrating tools and software that can process and present complex data sets, such as grades and assessment weights, in an intuitive format like graphs and charts.

2. Database Management and Enhancement:

Requirement: Upgrading and managing the database to support the enhanced performance display features.

Implementation: This includes expanding the current database's capacity and optimizing it for faster and more efficient data retrieval, essential for real-time performance updates.

3. User Interface (UI) and Experience (UX) Design:

Requirement: Designing a user interface that is both visually appealing and easy to navigate.

Implementation: Involves employing UI/UX designers to create an interface that effectively presents the new data visualization tools and simplifies the user interaction with the platform.

4. Cloud Hosting and Scalability:

Requirement: Ensuring the enhanced system is hosted on a robust cloud platform to guarantee scalability and reliability.

Implementation: This includes selecting a suitable cloud hosting service that offers the necessary resources and security measures to support the enhanced Blackboard system.

5. Technical Expertise and Development Strategy:

Requirement: A team with expertise in data analytics, database management, UI/UX design, and cloud hosting.

Implementation: The project may involve training current staff, hiring new talent, or outsourcing certain aspects of development to specialized third-party vendors.

6. System Compatibility and Integration:

Requirement: The enhanced features must be seamlessly integrated with the existing Blackboard system without disrupting current functionalities.

Implementation: Careful planning and testing are required to ensure that the new features do not conflict with existing system components and are compatible with the broader IT infrastructure of the educational institution.

Organizational Feasibility Analysis:

A thorough organizational feasibility analysis is required to ensure the successful implementation of the enhanced performance display on Blackboard. This analysis takes into account a number of factors, including the timeline, internal politics, change management, legal concerns, and overall functionality.

1. Schedule:

Implementation Timeline: To minimize disruptions to educational activities, the deployment of the new system must be carefully planned. Coordination with academic and administrative personnel is required to develop a feasible timeline.

Timeline Consideration: The new system's implementation period is estimated to be 6-12 months. This includes development, testing, and deployment phases, as well as academic calendars, exam periods, and holidays.

2. Politics:

Stakeholder Engagement: The implementation of the new system may have an impact on the dynamics of the educational institution. The change may cause concern among faculty, administrators, and IT personnel.

Communication and Involvement: All stakeholders must be involved in the decision-making process, and the benefits of the new system must be clearly communicated. Addressing concerns and creating a welcoming environment are critical to the project's success.

3. Change Management:

Changes in Operations: The new system will significantly alter how students and faculty interact with Blackboard. This includes adjusting to the new interface and taking advantage of the enhanced features.

Training and Support: It is critical to provide comprehensive training and support to all users. This includes transitional training sessions, user manuals, and a responsive support system.

4. Legal Concerns:

Compliance with Regulations: The improved system must adhere to educational standards, data privacy legislation, and intellectual property rights.

Legal Review and Compliance: Collaboration with legal experts within the institution is required to ensure that the new system complies with all applicable laws and institutional policies.

5. System Functionality and Contingency Planning:

Reliability and Effectiveness: There is always the possibility that the new system will encounter unexpected difficulties. To identify and resolve potential issues, rigorous testing is required prior to full-scale implementation.

Backup and Contingency Plans: Creating backup plans for potential system failures or malfunctions is critical. This includes backup processes for displaying grades and tracking performance.

Improving the performance display on Blackboard requires careful planning, stakeholder involvement, change management strategies, legal compliance, and effective contingency planning. The project aims to improve the educational experience at the institution while ensuring a smooth transition to the new system by addressing these issues.

Alternative Solution 1: In-Person Academic Advising

This alternative involves increasing the availability and training of academic advisors to assist students in understanding their academic performance and planning their studies effectively.

Alternative Solution 2: Standardized Performance Reports

Under this alternative, UMBC would generate and distribute standardized reports on students' academic performance at regular intervals, without enhancing the Blackboard system.

Criterion 1: Time Management : This criterion assesses how effectively the solution manages and utilizes time, both in terms of implementation and ongoing usage. It considers the efficiency of the solution in providing timely services or information to users.

In-Person Academic Advising:

Low Rating (1): Could lead to long waiting times for consultations and scheduling difficulties.

High Rating (5): Efficient if managed well, with enough advisors to meet student demand.

Standardized Performance Reports:

Low Rating (1): Delayed or infrequent reports could impede timely academic planning.

High Rating (5): Regular, automated reports offer timely insights into academic performance.

Criterion 2: Customer Dissatisfaction : This criterion evaluates the user experience, ease of use, and the solution's ability to meet user expectations and needs.

In-Person Academic Advising:

Low Rating (1): High student-to-advisor ratios could lead to generalized advice, not meeting specific student needs.

High Rating (5): Personalized, direct advice could greatly enhance student satisfaction.

Standardized Performance Reports:

Low Rating (1): Generic reports may not address individual student queries or concerns.

High Rating (5): Consistent, clear communication on performance could be positively received.

Criterion 3: Error Handling : This criterion examines the solution's capacity to handle and minimize errors. It includes the system's ability to accurately process and present information, as well as its robustness in avoiding technical glitches.

In-Person Academic Advising:

Low Rating (1): Human errors in advising or misinterpretation of data could occur.

High Rating (5): Advisors with access to accurate data can provide reliable guidance.

Standardized Performance Reports:

Low Rating (1): Risk of data misrepresentation or technical errors in report generation.

High Rating (5): Automated systems, if well-designed, ensure accuracy and consistency in reports.

Criterion 4: Costs : This criterion looks at the financial implications of implementing and maintaining the solution. It includes initial development costs, ongoing operational expenses, and potential long-term financial benefits or savings.

In-Person Academic Advising:

Low Rating (1): Potentially high costs due to the need for more staff, training, and resources.

High Rating (5): Long-term benefits in student performance could justify the initial investment.

Standardized Performance Reports:

Low Rating (1): Development costs for a new reporting system could be substantial.

High Rating (5): Over time, the automated system may prove cost-effective due to reduced manual workload.

Criterion 5: Adaptability to Changes in Educational Trends : This criterion evaluates how well the solution can adapt to evolving educational practices and technologies. It considers the flexibility of the solution to incorporate new teaching methods, learning styles, and technological advancements.

In-Person Academic Advising:

Low Rating (1): Limited ability to quickly adapt to changing educational trends due to the reliance on traditional advising methods.

High Rating (5): Advisors continually update their knowledge and methods, allowing the service to evolve with educational trends effectively.

Standardized Performance Reports:

Low Rating (1): The standardized format might be slow to reflect changes in educational trends and technologies.

High Rating (5): The system is designed to be flexible, with reports easily updated to align with new educational methodologies and technologies.

Criterion 6: Impact on Academic Performance : This criterion assesses the potential impact of the solution on students' academic performance. It looks at how the solution may influence students' understanding of their academic progress, motivation, and overall learning outcomes.

In-Person Academic Advising:

Low Rating (1): If not effectively managed, personal advising could fail to significantly impact students' academic performance.

High Rating (5): Tailored advice and direct interaction significantly improve student understanding and performance.

Standardized Performance Reports:

Low Rating (1): Generic reports might not sufficiently address individual student needs, having minimal impact on improving academic performance.

High Rating (5): Regular, comprehensive reports provide students with clear insights into their performance, positively influencing their academic outcomes.

An Alternative Matrix:

| Criteria | Weight | Enhanced Blackboard Display | Score (1-5) | Weighted Score | In-Person Academic Advising | Score (1-5) | Weighted Score | Standardized Performance Reports | Score (1-5) | Weighted Score |
|------------------------------------|-------------|-----------------------------|-------------|----------------|-----------------------------|-------------|----------------|----------------------------------|-------------|----------------|
| Time Management | 20% | High | 5 | 1 | Moderate | 3 | 0.6 | Moderate | 3 | 0.6 |
| Customer Dissatisfaction | 15% | Low | 2 | 0.3 | High | 4 | 0.6 | High | 4 | 0.6 |
| Error Handling | 15% | High | 5 | 0.75 | Moderate | 3 | 0.45 | High | 5 | 0.75 |
| Costs | 20% | High | 2 | 0.4 | Low | 4 | 0.8 | Low | 4 | 0.8 |
| Adaptability to Educational Trends | 10% | High | 5 | 0.5 | Low | 2 | 0.2 | Moderate | 3 | 0.3 |
| Impact on Academic Performance | 20% | High | 5 | 1 | Moderate | 3 | 0.6 | Low | 2 | 0.4 |
| Total | 100% | | | 3.95 | | | 3.25 | | | 3.45 |

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