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Research Article

Development and Implementation of Online Student Evaluation for Teachers (OSET): An Assessment Tool in Measuring the Faculty Teaching Performance

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ABSTRACT

Student evaluation for teachers is a way to assess the educators' teaching meth-ods, communication skills, subject mastery, and classroom management. It is deemed necessary to address areas needing improvement and to enhance the teaching quality of faculty members. The traditional paper-based evaluation pro-cess is time-consuming and cumbersome. It is also prone to human errors, which may compromise the accuracy and credibility of the results. Therefore, this study focuses on the development and implementation of an online student evaluation for teachers at a State University in the Philippines. Its aim is to streamline the collection, storage, and processing of students' feedback and to generate students' evaluation reports. The Rapid Application Development model was used to de-velop each module of the web system. The graphics were designed using Adobe Photoshop and Canva. The web system's functions and modules were developed using PHP, JavaScript, and CSS, while the database was created using MySQL. The developed system was integrated into the University's web student portal. Each function of the web system was thoroughly tested, and the initial results of alpha testing revealed promising results, suggesting continued implementation of the technology. The study proved that OSET is functional and capable of generat-ing real-time reports, which are crucial in improving teaching quality and foster-ing educational excellence.

Keywords: Student Evaluation for Teachers, Rapid Application Development, Assessment Tool, Measuring Faculty Teaching Performance.

INTRODUCTION

Evaluating teacher's performance is one way to assess the quality of teaching effec-tiveness. Assessing teaching effectiveness involves the systematic evaluation of teachers' performance in their primary responsibilities, which include facilitating stu-dent learning and fostering positive classroom environments. It is a comprehensive process aimed at determining the extent to which teachers are successfully carrying out their instructional duties and creating an atmosphere conducive to student growth and development [1]. As such, it is important because it helps teachers comprehend their strengths and weaknesses and recognize areas for improvement [2].

In Cavite State University-CCAT Campus, student evaluation for teachers (SET) had been the basis for promotion and rehiring of its faculty members. The SET is normal-ly distributed to student in a hardcopy format where facilitators conduct random sampling in selecting students who will evaluate their teachers. This method of sam-pling provide inaccurate result of teacher's evaluation since not all students were able to evaluate all their teachers and not all teachers were evaluated by their students. This process is very rigid, time-consuming and takes a lot of

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effort. In spite of care-fulness in doing it, the process is still prone to human errors which may compromise the accuracy and credibility of the result.

As a higher education institution (HEI), CvSU is committed to the continual en-hancement of teachers' performance. Recognizing that teachers play a crucial role in ensuring access and quality in education, they are considered a key driving force behind sustainable global development [3]. As technology continues to advance, CvSU strives for constant improvements in its services by integrating the latest tech-nology. This allows for innovation and the development of a more systematic and reliable approach to assess teachers' teaching performance. Online student evaluation for teachers is a new method employed to gather and collect students' assessments of their teachers. This approach utilizes an online platform and can be executed con-veniently anytime and anywhere, providing greater flexibility and accessibility for students.

The development of the CvSU-CCAT online student evaluation for teachers (OSET) was grounded in a comprehensive review of various research studies. These studies played a crucial role in shaping and refining the OSET system, ensuring its effective-ness and reliability. At the College of Computing Studies, Information and Commu-nication Technology of Isabela State University, they developed and implemented a web-based paperless student evaluation for teachers to address the issues on security, confidentially and anonymity of data [4]. Also, a study was conducted to determine the response rate of students when evaluating their teachers. The findings of the study revealed that high response rates can be achieved for online student evalua-tions of teachers in face-to-face classes when faculty effectively communicate the significance of these evaluations through both their words and actions. This empha-sizes the importance of clear communication and highlighting the value of student evaluations to ensure active student participation [5]. And lastly, a paper that used ASP.net and SQL server technology was used in the design of an online teaching evaluation system. The system is divided into students operating and backstage management, compared with similar systems, it does not usually need to have a large amount of data management and maintenance [6].

All these literature sources have significantly contributed to the development and successful implementation of the CvSU-CCAT online student evaluation for teachers (OSET). This innovative system was designed to address the challenges encountered during manual evaluation processes. By introducing the online student evaluation for teachers, it ensures that every student has the opportunity to evaluate their teachers. The OSET system has been seamlessly integrated into the student portal, making it a mandatory requirement for students before they can access their grades. This ap-proach not only improves the evaluation process but also encourages active student participation and engagement.

METHODOLOGY

During the development of the OSET, a comprehensive set of features and functions were meticulously designed and developed to provide its end-users with a convenient and effective evaluation system. To achieve this, developers employed the highly successful Rapid Application Development (RAD) model, known for its emphasis on rapid prototyping and iterative delivery [7]. The RAD methodology is characterized by its focus on quick prototyping and iterative development, ensuring that the pro-ject's requirements are met efficiently. The primary objective of RAD is to minimize development time and costs by promptly delivering a functional prototype to the client for feedback and iterative improvements [8]. This approach allowed the devel-opers to leverage the knowledge and insights gained during the development process itself, enabling to shape the system's design and even pivot its direction if necessary. By utilizing the rapid application development method, the developers are able to aggressively utilize knowledge and discoveries gleaned during the development pro-cess itself to shape the design and or alter the evaluation system direction entirely.

REQUIRMENTS PLANNING

In the project's initial stage, the developers meticulously defined the project scope, identified the challenges prevalent in the previous teacher evaluation process, and determined the essential hardware and software requirements crucial for the success-ful development of the evaluation system. The foundation for the evaluation data interpretation was based on the approved SET (Student Evaluation of Teaching) instrument used by the University.

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The SET instruments consisted of four key aspects: commitment, knowledge of the subject, teaching for independent learning, and management of learning. These as-pects were assessed using a rating scale ranging from 5.00, denoting outstanding per-formance, to 1.00, indicating poor performance. A rating of 4.00 represented a very satisfactory level, 3.00 indicated a satisfactory level, and 2.00 denoted a fair level of performance.

Table 1. SET rating scale

Rating Scale	Descriptive Rating
5.00	Outstanding
4.00-4.99	Very Satisfactory
3.00-3.99	Satisfactory
2.00-2.99	Fair
1.00-1.99	Poor

USER DESIGN

In this phase, rapid prototyping was employed to create mock-ups or prototypes of the system. These working prototypes were presented to the target users to elicit feed-back from them. The goal was for users to interact with the application early in the development process in order to ensure that the software addresses real user needs. The prototype was continuously refined with the collaboration of the users until the final design was realized.

CONSTRUCTION

During this phase, the actual coding of the system takes place based on the refined prototypes and design specifications outlined in the previous phase. The developers created the graphics using Adobe Photoshop and Canva. The web system's functions and modules were created using PHP, JavaScript, and CSS, while its database was built using MySQL. The collaborative effort of the development team in coding and integrating these elements led to the successful construction of the system, aligning it with the user requirements and project objectives.

CUTOVER

The web system is now prepared for full deployment and release to end-users. It has been seamlessly integrated into the existing student web portal of the university, en-hancing convenience and encouraging greater student participation in the evaluation process.

RESULTS

USER DESIGN DESCRIPTION OF TECHNOLOGY

It is a web-based system that facilitates the collection of students' feedback and as-sesses the performance of teachers. The system offers several advantages over tradi-tional paper-based evaluations, including convenience, anonymity, and streamlined data collection and analysis. Moreover, it efficiently gathers feedback from a larger number of students, allowing for a more comprehensive assessment of teaching ef-fectiveness.

The web system consists of an electronic student evaluation form that collects quan-titative feedback from students on faculty members' commitment, subject knowledge, teaching for independent learning, and learning management. It also gathers qualitative feedback in the form of open-ended comments and suggestions. The system is integrated into the university's web student portal. Once the administra-tor sets the evaluation period, students must complete the evaluation before they can view their grades in the student portal (Fig 1). Student responses are processed in real-time, and administrators can view the results based on filter options. The web system can analyze the aggregate results of teacher evaluations, grouping them per depart-ment, to identify areas of strength and improvement in each academic unit. These results can be viewed in bar graphs, line graphs, or tabular format. The system also provides a

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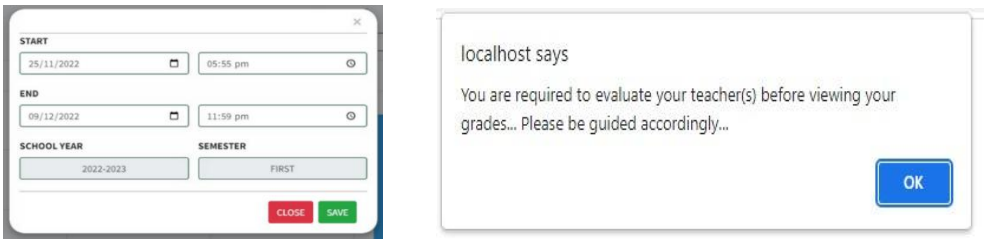
comprehensive set of evaluation data for each faculty member, including numerical ratings for each key performance areas, raw scores, and student comments (Fig 2).

Another valuable feature of the system is trend visualization (Fig 3). It presents his-torical data from multiple semesters or academic years, allowing administrators to capture trends and track the progress or changes in teaching effectiveness for indi-vidual faculty members or specific academic units. Additionally, the system offers customizable reporting options, generating printable reports such as overall, depart-mental, and evaluation results for each faculty member (Fig 4). The comments and suggestions provided by students can also be viewed and printed. These reports serve as valuable feedback for the institution to enhance the delivery of instruction.



(a) (b)

Fig 1. Evaluation Setup: (a) administrator setup; (b) prompt redirecting to SET elec-tronic evaluation form

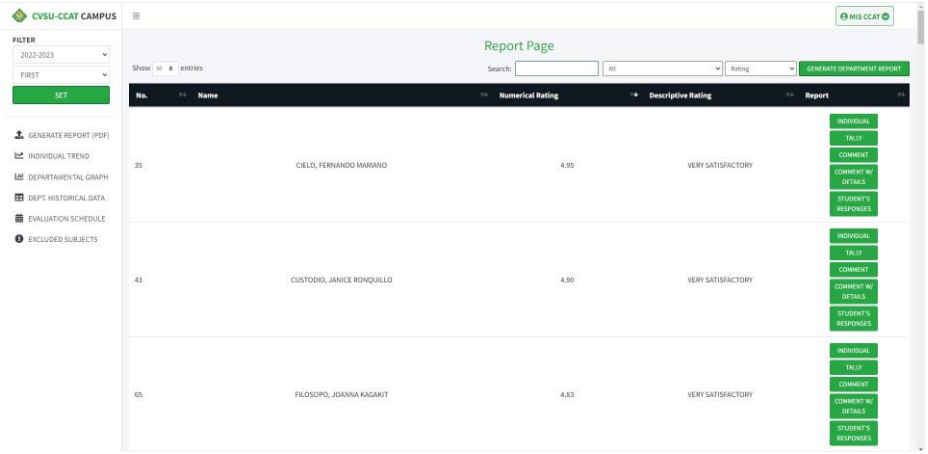


Fig 2. Viewing of SET results

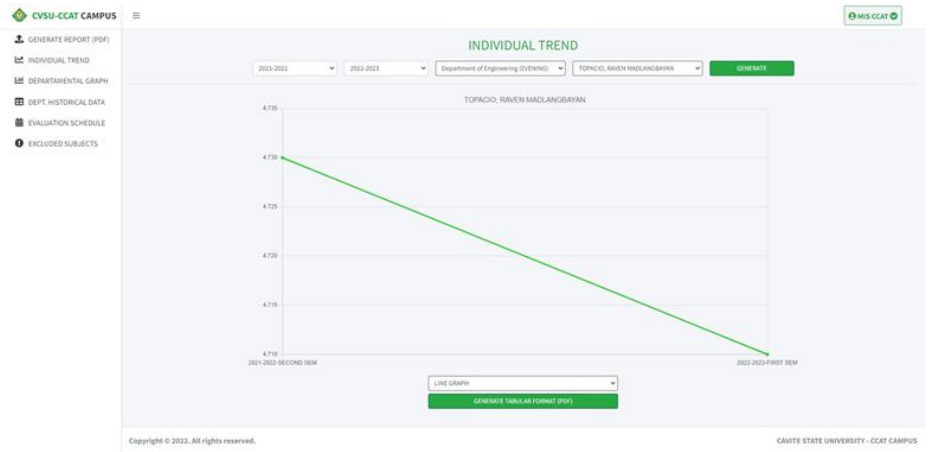


Fig 3. Visualize Trends

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Fig 4. Generated Reports

Test Results

The researchers conducted alpha testing on the software, and the results revealed that application complies with the specified requirement (Table 2). This successful testing ensures that the software meets its functional requirement and performs as intended.

Table 2. Functional Testing Results

FUNCTIONALITY	TC ID	REQUIREMENT	RESULT
Students			
Activation of SET evaluation form based on the administrator setup	TC-001	SET evaluation activates from the starting to the ending date of the evaluation set by the admin	Passed
Data entry and saving of the Students' Evaluation Form	TC-002	The evaluation form requires complete and correctly formatted data. The data is stored correctly in the database.	Passed
Enabling the viewing of grades after evaluation	TC-003	Viewing of student grades is disabled not until the evaluation for teachers is made.	Passed
Administrator			
The computation of the evaluation rating	TC-004	The system generates accurate evaluation results.	Passed
Viewing and Filtering of SET results	TC-005	The evaluation results can be viewed in a bar, line, or tabular format. Overall, departmental and individual evaluation results can be filtered.	Passed

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View trends and historical data	TC-006	The patterns or changes in evaluation data over time of a specific faculty member or department can be viewed in the system. The system can also filter and view the evaluation results of a specific semester and academic year.	Passed
Reports Generation	TC-007	Reports such as the evaluation of the faculty, tally of ratings, and students' comments are being generated. These can be downloaded and printed.	Passed

CONCLUSION AND RECOMMENDATIONS

By transitioning from traditional paper-based evaluation to an online platform, stu-dents can easily provide feedback from their own devices, and the academic institu-tion can effectively collect, store, and analyze evaluation data. The integration of the process of student evaluation for teachers into the Cavite State University-CCAT web portal could bring higher reinforcement for the students to participate in the evaluation process. This, in turn, could lead to a higher response rate, resulting in in-creased reliability and validity of the results. The developed system also eliminates the problems of accuracy and delays in preparing the evaluation reports experienced in traditional paper-based evaluation. The system allows faster data collection, data retrieval, and real-time generation of customized reports, which are deemed essential in enhancing teaching quality and promoting excellence in education. The alpha testing conducted by the researchers revealed promising results, suggesting a contin-ued implementation of the technology. It is further recommended that the system could perform sentiment analysis on the collected qualitative data. With this, the sentiments, such as positive, negative, neutral, or any other emotion, could be ex-tracted using natural language processing technique.

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