Student Profiling and Grade Evaluation System (SPGES)

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Abstract: This study looked into the pre-enrollment transactions of the College of Computer Studies, Eastern Samar State University. Specifically, it aimed to develop and evaluate an integrated Student Profiling and Grade Evaluation System (SPGES). The system covers five modules: (1) student profiling; (2) student directory; (3) importation of grade sheets in excel form; (4) evaluation of student grades; and (5) generation of subject list. To test the quality of the system, ISO 9126 Software Quality Model (SQM) was used to evaluate the system. The SQM questionnaire focuses on 6 (six) software characteristics: (1) functionality; (2) reliability; (3) usability; (4) efficiency; (5) maintainability; and (6) portability. Evaluation results revealed that the SPGES is strongly acceptable in terms of these 6 (six) software characteristics.

1. Introduction

Eastern Samar State University recognizes the need for good quality data to provide accurate reporting to meet internal and external requirements. Echoing this understanding, Student Profiling and Grade Evaluation System (SPGES) for the College of Computer Studies was developed.

Profiling and grade evaluation of students are central to student registration system in Eastern Samar State University (ESSU). These processes are primarily done at the college level and are part of the pre-enrollment transactions in the registration process. Information acquired in these transactions serves as the baseline data for the university student database. It is therefore imperative that quality data should be acquired and captured in the system. Students’ information should be consistent, reliable, and accurate and that access to these information should be easy and instantaneous.

In the College of Computer Studies, students’ profiling and grade evaluation are still done manually. New students fill-up a profile form and provide a printed photo to complete their personal information. These records are kept in filing cabinets which require a huge amount of physical space. The bulk of data also result to inefficiency in the retrieval of student information because the person in-charge has to go through all the student profiles just to locate one student record. Grade evaluation also pose a problem since locating grades requires sifting through all the physical copy of the grade sheets to locate a student grade.

These problems along with the vision of the College of Computer Studies to digitize the processes in the University prompted the development of an integrated system for Student Profiling and Grade evaluation (SPGES). The system covered the following modules: (a) student profiling; (b) student directory; (c) importation of grade sheets in excel form; (d) evaluation of student grades; and (e) generation of subject list.

2. Materials and Methods

2.1. Software Development Model

The development of SPGES adapted the Rapid Application Development (RAD). RAD technique allows “rapid” application development for a minimum of 30 days and a maximum of 90 days (Kaatib, 2005). It is an object-oriented approach to systems development covering three broad phases: (1) requirements planning; (2) system design; and (3) system implementation (Kendal and Kendall, 2005).

2.1.1. Requirement Planning Phase. The activities of this phase are: (i) to establish a general understanding of the problems particularly on its development and eventual operation; (ii) to familiarize with the existing system and; (iii) to identify the different transactions involved that will be supported by the proposed application.

2.1.2. RAD Design Workshop. This phase is a design and refine that can be best characterized as a workshop. During this phase, users respond to actual working prototypes and analysts refine defined modules based on user responses.

2.1.3 Implementation Phase. This phase involves the deployment of the system to the clients for test run and implementation.
2.2. Software Evaluation

The descriptive statistics using the mean, frequency count and percentage were employed in this study. To evaluate the quality of SPGES, questionnaire based on ISO 9126 Software Quality Model Test was developed and used. Items included adapted the six quality software attributes as well as the item descriptors for each attribute as defined by the ISO 9126 Software Quality Model. The system was evaluated by the computer experts of the University.

3. Results and Discussion

This study aimed to develop and evaluate a Student Profiling and Grade Evaluation System (SPGES) for the College of Computer Studies. To determine the acceptability of the system in terms of existing standards for quality software, evaluation was conducted using the ISO 9126 Quality Software Metrics along six parameters (1) functionality; (2) reliability; (3) usability; (4) efficiency, and (5) maintainability; (6) portability.

Table 1. Distribution of Responses on SPGES Functionality (Mandatory Requirement).

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The system has a working profiling form</td>
<td>13</td>
<td>(100%)</td>
</tr>
<tr>
<td>The system has a complete student directory</td>
<td>13</td>
<td>(100%)</td>
</tr>
<tr>
<td>The system can import/export grades from excel</td>
<td>13</td>
<td>(100%)</td>
</tr>
<tr>
<td>The system has a working grade evaluation module</td>
<td>13</td>
<td>(100%)</td>
</tr>
<tr>
<td>The system can generate subject listings from evaluated grades</td>
<td>13</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

ISO 9126 Software Quality metrics defines functionality as a required system characteristic (ISO, 1991). This means that all components described must be present in the system, thus the dichotomous structure of describing the system. All evaluators agreed (100%) that system contained the following modules and components: (1) a working profiling form; (2) a complete student directory; (3) a facility import function grade sheets in excel spreadsheet format; (4) a working grade evaluation module; (5) subject list generation.

Table 2. Overall SPGES Mean Acceptability Rating (Non-Mandatory Requirements)

<table>
<thead>
<tr>
<th>SOFTWARE QUALITY METRICS</th>
<th>WEIGHTED MEAN</th>
<th>INTERPRETATION</th>
<th>RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintainability</td>
<td>4.57</td>
<td>Strongly Acceptable</td>
<td>4</td>
</tr>
<tr>
<td>Efficiency</td>
<td>4.63</td>
<td>Strongly Acceptable</td>
<td>3</td>
</tr>
<tr>
<td>Reliability</td>
<td>4.38</td>
<td>Strongly Acceptable</td>
<td>5</td>
</tr>
<tr>
<td>Portability</td>
<td>4.85</td>
<td>Strongly Acceptable</td>
<td>2</td>
</tr>
<tr>
<td>Usability</td>
<td>4.91</td>
<td>Strongly Acceptable</td>
<td>1</td>
</tr>
<tr>
<td>OVERALL MEAN</td>
<td>4.67</td>
<td>Strongly Acceptable</td>
<td></td>
</tr>
</tbody>
</table>

The overall acceptability rating based on ISO 9126 Software Quality Metrics is strong. SPGES is strongly acceptable on 4 quality characteristics, such as: (1) maintainability with a mean rating of 4.57, (2) efficiency with a mean rating of 4.63, (3) portability with a mean rating of 4.85, and (4) usability with a mean rating of 4.91 and is acceptable on reliability with a mean rating of 4.38. Furthermore, these software quality metrics were ranked based on their mean rating to identify the best feature of SPGES. Ranking revealed that usability is the best feature of the system followed by portability, efficiency, maintainability and reliability. Overall the system was found to adhere the quality standards of ISO 9126.

4. Graphical User Interface

Figure 1. SPGES Main Form

Figure 1 shows the main form of SPGES. The main form was developed in a way that all menus will be easily accessible by the administrator.

Figure 2. SPGES Student Profile Data Repository

Figure 2 shows the Student Profile Data Repository of SPGES, this contains sub modules for adding pertinent student data. It also contains a search box for easy retrieval of student record.

Figure 3. SPGES Grade Evaluation Form
Figure 3 shows the SPGES Grade Evaluation form. The module displays the grades of a particular student after student number, term and school year is entered.

5. Conclusion

In the light of the findings of the system evaluation, the following conclusions were drawn:
(1) The SPGES was developed and the following features were integrated in the system: (a) student profiling; (b) student directory; (c) importation of grade sheets in spreadsheet form; (d) evaluation of student grades; and (e) generation of subject list; and
(2) The performance of SPGES was strongly acceptable with an overall mean of 4.67. The strong acceptability rating implies that the system adheres to the Software Quality Metrics defined by ISO 9126. With these results, the following recommendations are forwarded:
(1) The SPGES be improved on areas rated as acceptable such as: (a) maintainability specially on the areas of changeability and testability and (b) reliability particularly on maturity and fault tolerance; (2) a beta testing or end-user testing must be done to have a further evaluation on the usability of the system at the end-user level; and (3) a system deployment plan may be carried out for the implementation of the system.

6. References


