Development and Evaluation of Eastern Samar State University-Can-avid Campus Website
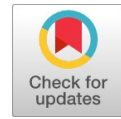
Janice Dyan G. Quiloña, Shoven M. Afable

*Abstract***:** *To provide an avenue for the university where it can share its profile, mission, vision, policies, achievements, capabilities, news and activities in the local, national and international arena of the academe, the IT Development Team of ESSU Can-avid Campus developed the website of the Campus using PHP and WordPress. A descriptive-developmental method of research was utilized to emphasize the development of the web application. Requirements Analysis was done to determine the important features that the website must contain per user definition. After development, the website was subjected to quality evaluation to describe the performance of the software through an evaluation survey questionnaire based on ISO/IEC9126 software quality standards. 303 direct end-users from among IT experts, employees and students of the campus were asked to evaluate the functionality and usability of the website. Evaluation results showed almost 100% compliance of the system requirements specified by the target clients and a highly usable software overall performance rating. The website, if regularly maintained will boast the organization valued image on the web and further increase clients and enrollees of the Campus.*

Keywords **:** *University Website, ISO 9126 quality website, Web Administration, Web Application Functionality and Usability*

I. INTRODUCTION

The Philippine government through its 1987 constitution recognizes the significant role of communication and information in nation-building. Hence, R.A. No. 10844 otherwise known as the "Department of Information and Communications Technology (DICT) Act of 2015" requires all government institutions to strategic, reliable, cost-efficient and citizen-centric information and communications technology (ICT) infrastructure, systems and resources as instruments of good governance and global competitiveness, and Executive Order No. 47 s. 2011 mandating the Department of Science and Technology (DOST) to provide an efficient information and communications technology infrastructure, information systems and resources to support an effective, transparent and accountable governance and, in particular, support the speedy enforcement of rules and delivery of accessible public services to the people.

Aside from accreditation and quality assurance requirements, these mandates urge the State Colleges and Universities (SUCs) of the country to develop and launch their own websites all aimed at showcasing and advertising the organization to the world of highly competitive academe. The power of the Web enabled anybody to share information. For universities, the use of web through automated management system has become an important instrument in modern education. Some institutions run online information systems aimed to achieve efficient processing of school data, student information and dissemination and publication of school policies, outputs and achievements. With all these data online, it would be a great help to the administrative personnel, faculty, stakeholders, parents and students in updating, retrieving and generating student data in an accessibly easier manner. (Bharamagoudar and Totad 2013). While almost all universities in the country has their website published and regularly maintained accessible 24/7, other universities maximize the web systems utilization to provide more online services to its clientele. Marrero (2009) in particular, conducted his study entitled "Student Information System for the University of the Cordilleras", an IS that deals with the generation, collection, organization, storage, retrieval, and dissemination of recorded knowledge. It is a collection of related components designed to support operations, management, and decision making in an organization. Information System supports people or users in making intelligent decisions based upon the information derived from reliable data.

The development and implementation of an online web application for Eastern Samar State University Can-avid Campus that can handle the data management system will be an avenue for the campus to share its information to the public. The university news and events, policies and guidelines, including its program offerings and enrollment requirements could be published for public information. Through the website, the university can also encourage prospective enrollees by posting the university achievements and profiles which could assure the public on the capability of the campus to produce employable graduates.

II. METHODOLOGY

A. System Development

This study used descriptive-developmental research design following the Rapid Application Development (RAD) Model of system development, shown in figure 1 below, where development process returns back to the analysis and design processes, if a missing requirement or system features were identified after the development.

Janice Dyan G. Quiloña, College of Computer Studies, Eastern Samar State University, Can-avid, Philippines.
Shoven M. Afable, College of Computer Studies, Eastern Samar State University, Can-avid, Philippines.

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The website was developed by the IT Development Team and students of the College of Computer Studies of the campus using PHP programming language and MySQL database. The interface was designed using WordPress Content Management System. Upon approval of the Campus Administrator, the website will be uploaded to the web with the web address http://canavid.essu.edu.ph under the main campuses' web host lease.
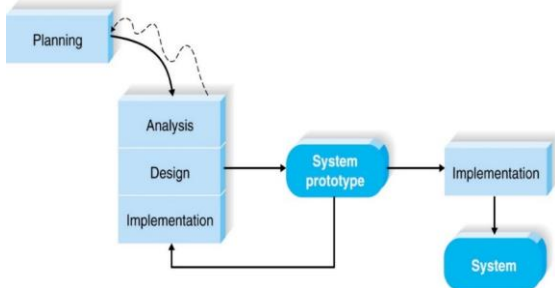

Fig 1: Rapid Application Development Model (John Wiley & Sons, Inc., 2011)

B. System Evaluation

After the system has been developed, the website was submitted for evaluation using ISO 9126 software quality metrics to test the quality of the software product. The software evaluation comprises system testing with alpha test and beta test. The alpha testing is a software evaluation process involving IT System Experts to evaluate the system using a software quality assessment questionnaire. While the beta testing involves the point-of-view of the direct system end-users to evaluate the overall performance of their expected software application.

The evaluation covers functionality and usability tests. Functionality includes all user identified requirements as resulted during data gathering. These requirements are considered as checklist to accomplish by the software developer. This part comprised with boolean (yes/no) questions to measure compliance of the system to cover all the clients' requirements. While the optional parameters uses the Likert scale, as shown below to get the users opinions on the specified parameters.

5 - Strongly Agree
4 - Agree
3 - Neutral
2 - Disagree
1 - Strongly Disagree

Software evaluation covers both external and internal views. External evaluation collects the ideas of the experts on the software product while internal evaluation gathers the opinion of the end users. For alpha testing, eight (8) IT experts from the College of Computer Studies evaluated the system while beta testing randomly selected employees and students of the campus to comprise the internal evaluators. Table 1 shows the frequency distribution of the system evaluators.

Respondents	Population	Sample
System Experts	8	8
Direct End-Users:		
• Employees	112	88
• CCS Students	397	199
	Total	295

Table 1: Respondents

Results of the evaluation were computed using weighted mean. Using the Quality Likert Chart shown below, results of the evaluation were given based on specified interpretation.

Range	Interpretation
4.2 – 5.0	Highly Usable
3.4 – 4.1	Usable
2.6 – 3.3	Neither Usable nor No Usable
1.8 – 2.5	Not Usable
1 – 1.7	Highly Not Usable

III. RESULTS AND DISCUSSION

A. The ESSUC Website

The website was developed using WordPress Content Management System (CMS) and PHP programming language because the researchers believe in its simplicity and robustness to cater the needs of its clients in accordance with the system requirements specified. After the development, the researchers came up with the following output.

Fig 2: The Website Homepage
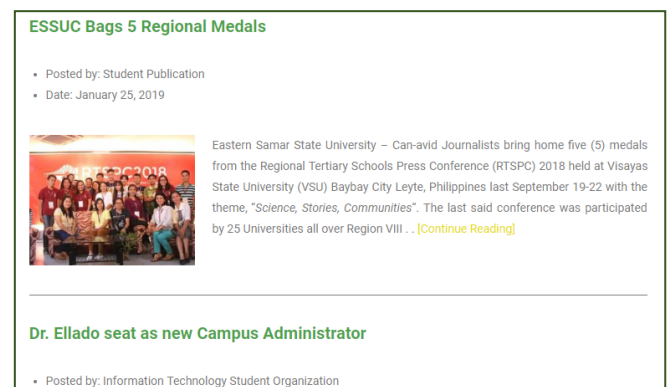

Fig 3: Links to Campus Updates

Fig 4: Campus News Articles on Display

Access to the different campus updates can also be found within the homepage shown in figure 3, where contents of each article can be seen in full by clicking the Read More link shown in figure 4.

Figure 2 below shows the Home Screen of the website, with the menu list containing admission policies, program offerings, research and extension services. Each menu contains relevant submenu where specific information can be found like announcements, events, enrollment schedules and others.

B. System Evaluation Results

The evaluation survey instrument was designed to measure the software quality standard of the system. The instrument was divided into functional and non-functional criteria. Both alpha test and beta test used the same questionnaire to measure opinions both from experts and the end-users qualifying similar software metrics.

B.1 Alpha Testing Results

Table 2 shows that the mandatory parameter (functional requirements) identified in the first part of the software quality evaluation tool has a 100% compliance evaluated by the 8 IT expert-respondents. This entails that the functionality of the system is appropriate for the campus and that all the requirements identified was absolutely complied by the system.

Table II: Functional Requirements Scores – Alpha Test

Parameter	N	Frequency (f) Yes	Frequency (f) No	Percentage
Appropriateness	8	8	-	100%
Display of the following:				
• News and events of ESSU-C	8	8	-	100%
• Mission, Vision, Goals, Objectives and Quality Policy	8	8	-	100%
• Program Offerings and Admission and Enrolment Procedures	8	8	-	100%
• University Directory of Officials	8	8	-	100%
• Research and Extension Activities	8	8	-	100%
• Calendar of Activities	8	8	-	100%
• Class Schedule	8	8	-	100%
Availability of downloadable quality forms and documents	8	8	-	100%
User-friendly and informative interface	8	8	-	100%
Easier maintenance and administration	8	8	-	100%
Security of data	8	8	-	100%

On the second part of the instrument, respondents had the following five choices when answering each question: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. Strongly disagree was coded as one point, whereas strongly agree was coded as five points. The usability test has 12 items, hence the minimum score possible was 12 and the maximum score possible was 60. Given that 4 as an acceptable software usable quality overall rating, scores ranging from 48 to 60 would indicate a greater level of usability on the degree of accomplishment of the system than those ranking below 48.

For the weighted mean, the majority of the IT expert-respondents agreed that the system display performance quality and therefore consent high level of usability (M = 4.35) based on the overall scores in the optional parameter section of the instrument (Table III).

**Table III. Usability Requirement Scores – Alpha Test**

Software Quality Metrics (Usability Test)	5	4	3	2	1	Weighted Mean
The information provided with this system is clear.		5	3	-	-	3.63
It is easy to find the information I needed.		7	1	-	-	3.88
The information provided for the system is easy to understand.	4	4		-	-	4.50
The organization of information on the system screens is clear.	8			-	-	5.00
I feel comfortable using this system.	6	2		-	-	4.75
It was easy to learn to use this system.	7	1		-	-	4.88
Whenever, I make a mistake using the system, I recover easily and quickly.	2	3	3	-	-	3.88
It was simple to use this system	8			-	-	5.00
The interface of this system is pleasant.	4	4		-	-	4.50
I like using the interface of this system.	5	3		-	-	4.63
The system has all the functions and capabilities I expect it to have.	1	3	4	-	-	3.63
Overall, I am satisfied with the system.	2	4	2	-	-	4.00
Total	29	18	5	0	0	
Overall Score	52					
Overall Rating						4.35
Adjectival Rating						Highly Usable

B.2 Beta Testing Results

Tables IV to V below contains the result of functional and non-functional parameters identified for beta testing. It also contains the scores interpretation per questions indicated in the questionnaire. It shows that majority of the software quality items specified were of quality output considering performance of the website, with an overall score of 4.42 interpreted as Excellent.

Table IV: Functional Requirements Scores – Beta Test

Parameter	N	Frequency (f) Yes	Frequency (f) No	Percentage
Appropriateness	295	295	-	100%
Display of the following:				
• News and events of ESSU-C	295	295	-	100%
• Mission, Vision, Goals, Objectives and Quality Policy	295	295	-	100%
• Program Offerings and Admission and Enrolment Procedures	295	295	-	100%
• University Directory of Officials	295	295	-	100%
• Research and Extension Activities	295	295	-	100%
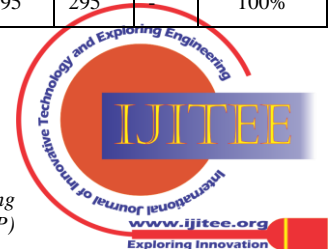
	5	4	3	2	1	
• Calendar of Activities	295	295	-			100%
• Class Schedule	295	295	-			100%
Availability of downloadable quality forms and documents	295	293	2			99.3%
User-friendly and informative interface	295	295	-			100%
Easier maintenance and administration	295	295	-			100%
Security of data	295	295	-			100%

Table V. Usability Requirement Scores – Beta Test

Software Quality Criteria (Usability Test)	RESPONSES (f)					Weighted Mean
	5	*4*	*3*	*2*	*1*	
The information provided with this system is clear.	122	95	78	-	-	4.15
It is easy to find the information I needed.	57	192	46	-	-	4.04
The information provided for the system is easy to understand.	85	115	95	-	-	3.97
The organization of information on the system screens is clear.	110	162	23	-	-	4.29
I feel comfortable using this system.	215	80		-	-	4.73
It was easy to learn to use this system.	49	195	51	-	-	3.99
Whenever, I make a mistake using the system, I recover easily and quickly.	222	73	-	-	-	4.75
It was simple to use this system	290	5	-	-	-	4.98
The interface of this system is pleasant.	290	5	-	-	-	4.98
I like using the interface of this system.	295	-	-	-	-	5.00
The system has all the functions and capabilities I expect it to have.	108	82	105	-	-	4.01
Overall, I am satisfied with the system.	55	240	-	-	-	4.19
Total	32	17	4	0	0	
Overall Score	53					
Overall Rating						4.42
Adjectival Rating						Highly Usable

IV. CONCLUSION

A website for ESSUC was developed and displayed the university's profile, and capabilities per user requirements specifications. The website was subjected to software quality evaluation and results showed almost 100% compliance of the requirements checklist identified by the client. With an excellent overall performance for both alpha and beta tests on usability metric, the system will be able to enhance information dissemination process to its clients.

By using the website, the campus will be able to provide an avenue for the school to share its profile, mission, vision, policies, achievements, and capabilities locally and worldwide. Continuous improvement of the website will maintain the organization valued image on the web and further increase clients and enrollees of the Campus and acquire better performance during accreditation visits.

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AUTHORS PROFILE

Janice Dyan Grata-Quiloña is a faculty of Eastern Samar State University Can-avid Campus, Philippines. She graduated her Master's Degree in Information Technology at ADFC Tacloban City, and completed her academic requirements in Master of Science in Computer Science at the University of the Philippines Los Baños Laguna. Currently, she is on her 3rd year of Doctor in Information Technology Program at Cebu Institute of Technology – University, Cebu City Philippines. She has completed several research studies that focused on IT, education, and the environment, where she won best research paper including her research project on a Decision Support System for Mangroves Restoration in Eastern Samar, and Employers Perception on the Graduates of Eastern Samar State University.

Shoven M. Afable is a faculty of Eastern Samar State University Can-avid Campus, Philippines with Master's Degree in Teaching Vocational Education major in Information and Communication Technology. At present, he is designated as Program Head of the university's BS Information Technology program. Concurrently, he works as Planning Officer as well as the Head of the IT Solutions Division of the Campus.