THE FRAMEWORK OF ECAMPUS AND ITS EFFECTIVENESS IN DISTANCE LEARNING

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ABSTRACT

In the 21st century, technology management has been implemented in various sectors to advance the efficiency of societies worldwide. For example, traditionally one has to go to the bank in order to conduct banking activities. However, today, one no longer has to travel out as we have the option to use e-banking system which enables around the clock access to banking services, seven days a week. Additionally, social networking platforms, like Facebook, have changed the way people interact across the globe. The application of social networking tools in education has enabled the implementation of an effective learning platform across the global community. Distance learning programs have gone online, improving quality and efficiency of world-class programs worldwide, while bringing the best instructors to the global community. Although the concept of the virtual campus framework was introduced successfully, its effective implementation must be ensured in order to guarantee its success as an instructional framework and to improve efficiency from the perspective of technology management. In this study, an eCampus framework was built based on several important aspects of the virtual campus framework. One aspect to assure quality was the gathering of feedback using a questionnaire composed of nine questions related to efficiency of the e-classroom, e-learning support features, e-journal, social support features, and a simulation campus graphical user interface. The eCampus was implemented at a conventional distance learning university, to obtain feedback on the comparison between the conventional distance learning method and the eCampus framework. The survey data concludes that the implementation of technology management in distance learning significantly affects the learning process.

Keywords: *open and distance learning, eCampus, e-learning, virtual campus*

INTRODUCTION

The Internet has changed the way we live. Last year, it celebrated its 25th birthday and it has accomplished a lot by the middle of its twenties. According to Qualman (2012), an estimated 2.4 billion people go online each day; 600 million websites are online; and 500 million Tweets are sent every day. The internet has completely transformed the way people live their lives and gather. Consequently, educational institutions are moving in this direction (Toffler, 1971). This fact was emphasized in the UNESCO Report 2009 for the World Conference on Higher Education whereby one of the most significant transformations is the

introduction of e-education, as it has made learning more efficient through the development of e-learning platforms, such as Moodle and Blackboard. As of 31 August 2014 Moodle had a user-base of 88,070 registered sites with a total of 76,675,352 users in 8,324,096 courses in 241 countries (https://moodle.net/stats/; Cited: 13 Jan 2015). On the other hand, the market share for the Blackboard product appears to be declining compared to Moodle (http://mfeldstein.com/author/jim-farmer/; Cited: 13 Jan 2015), as shown in Figure 1.

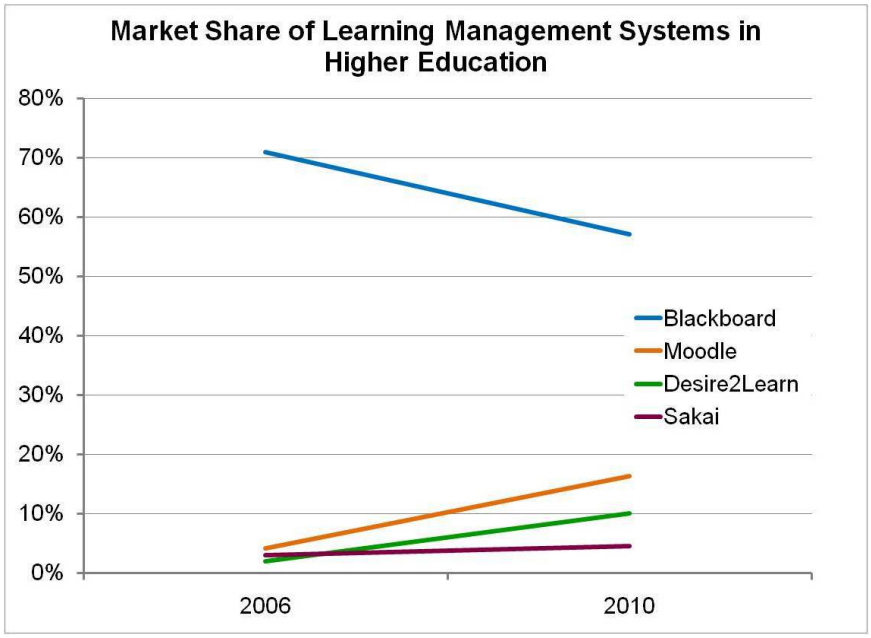

Figure 1: Market share of Blackboard (http://mfeldstein.com/blackboard-moodlerooms-an-insight-private-equity/; Cited: 13 Jan 2015)

As a virtual platform, Moodle is the most widely distributed freeware virtual learning platform, while Blackboard is one of the most commonly used packages requiring software to be purchased. Establishing an e-learning platform through software, such as Moodle and Blackboard, has enabled the virtual classroom environment to store information, such as course instructions, a grading system, and a listing of school contacts. However, the e-classroom environment remains inadequate in ensuring the quality of education because the desired quality elements of online education can only be achieved if important functions of conventional education on campus are virtualized successfully and if the same support as that on campus is made available (Prasolova-Førland et al, 2010).This research aims to develop, not only an e-classroom, but also a new and innovative eCampus that will cover important support functions to transform the conventional distance learning university into a 21stcentury fully online e-university. It also aims to analyze the effectiveness of e-education framework through distribution of survey questionnaires.

PROBLEM STATEMENT

The concept of distance learning has been established decades ago by distance learning providers such as the Penn Foster Career School. However, according to Simpson (2004) research data showed that the dropout rate of the distance learning students are dramatically high, as shown in Figure 2. It can be seen that there are approximately 20% degree students who are unable to complete their program while approximately 50% of the non-degree program student dropout. Conventional distance learning uses communication methods such as post, phone, and fax to communicate with their students around the world for the purpose of teaching, and mentoring the student study process. However,

distance learning has failed to provide good support for students. Thus, the quality of education became questionable (Simpson, 2004).

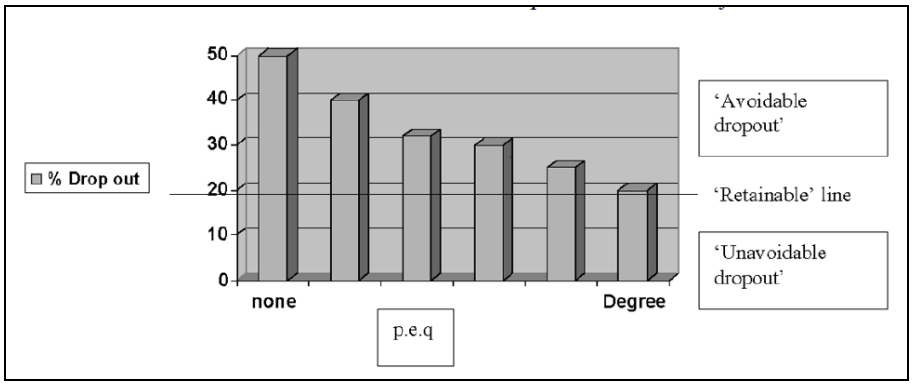

Figure 2: Drop-out rate versus level of education qualification in Open University, UK (Simpson, 2004)

Internet technology has enabled distance learning to operate programs through several approaches that are limited to virtual classrooms. According to Prasolova-Førland et al (2010) the online approach remains insufficient in providing the best class education support because e-learners still need to find their study materials, books, and information conventionally. Moreover, communication conducted to the school remains the same through post, phone, or fax. While e-mail has been proven to be a good communication tool, but it is still not suitable for prompt student support. Email also fails to reach the face-to-face discussion level (Prasolova-Førland et al, 2010). In short, the current e-education system requires further improvement in order to incorporate important aspects such as the face-to-face communication support in order to make sure that the students are able to complete their programs. Therefore, this research aims to build complete and functional eCampus software that includes important functions similar to those of an on-campus program, such as student support, bookstore, library, classroom, and discussion room. Therefore, this research is expected to reflect feedback from e-education students and faculty. The eCampus software which is being compared with exceeds the current e-education or conventional distance learning approach. The results will help enhance the quality of distance learning education, which is enjoyable and efficient.

RESEARCH OBJECTIVE

This study aims to develop a complete and functional eCampus platform so as to assist in enhancing distance learning. The proposed eCampus software is designed to provide an effective distance learning approach in terms of quality and efficiency. The analysis of this research is critical for the understanding of the contribution of the Internet to e-education for both the students and the faculties. The research objectives are as follows:

(1) To determine the framework of highly effective e-learning through a literature review
(2) To develop an eCampus platform that covers the important functionality which is at least equivalent to on-campus learning
(3) To examine the usefulness and effectiveness of the eCampus by obtaining feedback from students and faculty through questionnaires

LITERATURE REVIEW

Technology Management

Technology management is a set of management disciplines that uses the latest technologies to improve the daily work efficiency of humans, including planning, design, optimization, operation, and control of productivity. However, technology management is not only limited to information technology, but it also among others includes transportation and manufacturing, as long as the management event involves a particular technology. The main goal of technology management is to improve the productivity and ultimately to reduce cost. Technology management is important in distance learning education because it can improve the efficiency of the conventional distance learning approach. Holmberg (1995) pointed out that a learner or student should be placed at the center. In other words, the study material and the distance learning support staff should be student centric to ensure their successful completion of the program. Therefore, distance learning support staff can operate in the manner of industrialization in which the economic concept of division of labor can be implemented. Keegan (1993) classified the organizational structure of distance learning institutions into two types, namely, autonomous and mixed institutions. Distance education can be construed as a complex set of relationships between learners and teachers within a framework of various types of industrially structured organization.

Virtual Campus Framework

The virtual campus approach was implemented to incorporate technology management into the distance learning environment so as to improve the operational efficiency of the study; in this context, virtual means geographically separated (Shekhar, 2006). Virtual campus is a metaphor for the electronic teaching, learning, and research environment created by the convergence of powerful new information and instructional technologies (Van Dusen and Gerald, 1997). An effective virtual campus should be immersed in the 3D world to simulate the real campus enrollment (Prasolova-Førland et al., 2006). The simulation is necessary to store, classify, and browse didactical study materials to make them available to flexible learning paths. A run-time infrastructure is also needed to drive students along their learning path, and monitoring tools are required to assist them during their learning activities by providing suggestions to the students and feedback to teachers. According to Vygotsky (1978), aside from the learning features, the socializing features are also essential for learning, which should be maintained. Prasolova-Førland et al. (2010) proposed that a virtual campus should not only have workplaces to conduct educational activities but also supporting features, such as a library, a virtual gallery to store students' projects, and a place for presentations (virtual stage), which are equipped with corresponding facilities such as a projection screen.

FRAMEWORK OF THE ECAMPUS

An eCampus framework was developed according to the literature review findings. The vital aspects of an eCampus are presented in Table 1.

Table 1: Aspects of eCampus

Related Literature	Literature Aspects	Proposed Features of the Author
i. Prasolova-Førland, Sourin, &Sourina (2006)	i. Simulation campus	i. Graphical user interface (GUI) eCampus
i. Shekhar (2006) ii. Van Dusen& Gerald (1997)	i. Virtual study place ii. CVW	i. E-classroom ii. Online journal iii. Live chat support
i. Vygotsky (1978)	i. Socializing features	i. Student center ii. Coffee shop
i. Prasolova-Førland, Fominykh, &Wyeld (2010)	i. Learning support features	i. Virtual library ii. E-bookstore iii. Student and faculty handbooks
i. Prasolova-Førland, Fominykh, &Wyeld (2010)	i. Area for project presentation	i. E-conference room

The eCampus framework was created based on the literature, as shown in Table 1 and illustrated in Figure 3.

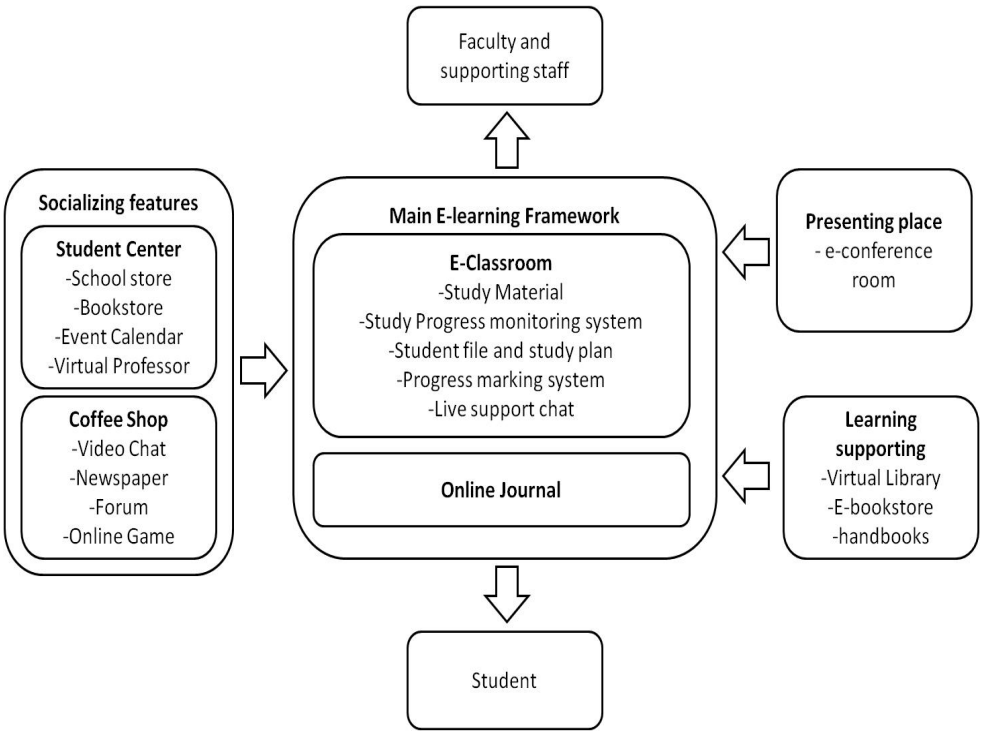

Figure 3: Framework of ECampus

Figure 3 shows how the eCampus virtual framework was designed according to the findings from a detailed literature review. In unity with the findings, the students, faculty, and the

school communicate through the main online learning features such as the e-classroom and, discussion rooms, the online journal. The e-classroom functions as a virtual study location that stores the study materials, assignments and other program materials. It also provides the study plan and the academic program to guide students throughout their studies. Students can upload their completed work, such as their written assignments and dissertation chapters, while the instructors can download students' completed work and provide grade and written or oral feedback. The faculty and the students also interact through the "live chat support" to discuss study issues. Online journals store related literatures providing supplemental knowledge for the students. These features fulfill the conditions found in the studies of Shekhar (2006) and Van Dusen (1997). The e-conference room is also part of the framework in which online corresponding activities, such as research viva voce and project presentations can be conducted.

According to Vygotsky (1978), in maintaining the socializing activities in a virtual campus system, two socializing features should be included in the framework, namely, the student center and the coffee shop, whereby students can find their school merchandise in the school store and purchase their textbooks from the e-bookstore. The event calendar shows the schedules, such as exam week, school holidays, public holidays, and convocation day, among others. The virtual professor answers questions from the students that may be study related, school information, and so on. The coffee shop feature enables students to interact with each other either in group discussions or private chat. Students can also spend their leisure time reading online newspapers, post and reply in a university online forum, and participate in online game room for entertainment.

Prasolova-Førland et al. (2010) indicated that the support features are equally important for a quality online academic program in which the virtual library, e-bookstore, student and faculty handbooks are included in the virtual campus framework. Prasolova-Førland et al. (2006) proposed the integration of the entire feature into "simulation campus."

ECAMPUS DEVELOPMENT

The effectiveness of the conventional distance learning method in comparison with the e-education method was carefully considered in order to improve the quality of distance education. An extensive eCampus development and features are described below.

1) **Web Programming Language**

This study used GUI, which is implemented via the current operating systems (OS), for example, Microsoft Windows, IOS, and Android, for easy interaction between the computer and an individual. The author used several web programming methods to integrate the entire e-education system into the eCampus virtual platform as shown in Figure 4.

Figure 4: Akamai University ECampus

The web programming methods used in the eCampus are as follows

(1) **Hyper text mark-up language** (HTML) was used as the foundation of the eCampus website. Its main purpose is to integrate the features and link them to Adobe Flash to create an interactive GUI.

(2) **Adobe Flash** (formerly called Macromedia Flash) is a multimedia and software platform used for authoring vector graphics, animation, games, and rich Internet applications that can be viewed, played, and executed in Adobe Flash Player. Adobe Flash was integrated into all eCampus features, such as e-classroom, e-journey, and e-library.

(3) **PHP** or hypertext preprocessor coding is a server-side scripting language designed for web development. Most features were developed using hypertext preprocessor coding (PHP).

The integration of the three web programming languages resulted in an excellent and innovative graphical and interactive eCampus environment. The subsequent section will discuss the features implemented in the eCampus.

2) **eCampus Features**

The eCampus was developed based on the eCampus framework as shown in Figure 5 to be incorporated to develop a well-structured and the best class interactive experience. Figure 5 presents these features.

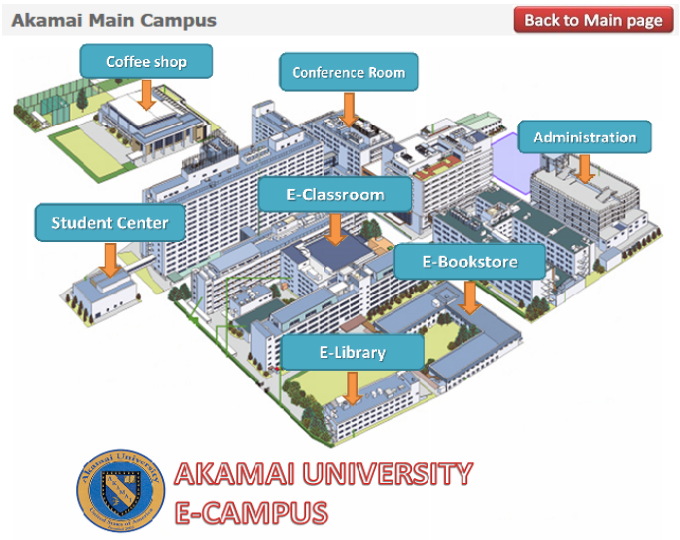

Figure 5: eCampus Features

The eCampus was furnished with several vital features namely the e-classroom, which was developed using the Moodle PHP platform to fulfill the e-framework of "the virtual study place. Secondly the E-Library was integrated with the popular WWW library system, including the extensive Questia Media Library, The Free Library, Google Scholar, Google Books and The Akamai University HTML Virtual Library to fulfill the essential learning support features in the framework The e-bookstore was developed in partnership with the Amazon bookstore platform.

An e-conference room was developed by integrating Google Hangouts features. This enables an online live video conference chat of up to 10 persons at a time. A live recording feature is included in the hangout, which records and publishes the online meeting in Akamai TV.

An e-coffee shop and an e-student center were developed based on the eCampus framework requirement for the "socializing features" aspect, whereby the university community is able to interact. The community can hold a group discussion using the video chat feature. Students can spend time in the coffee shop to read the latest headlines through the "Newspaper" feature. They can play the "Online Cheese Game.".

Refer the Detail eCampus information from below link:
https://drive.google.com/file/d/0B8_0KebrWztcVTN3dVoydFJTblk/view?usp=sharing

METHODOLODY

Responses from the students, faculty, and management team in terms of the effectiveness of the eCampus to improve the efficiency of distance education were collected.

The three different sample sizes are:

(1) Student respondents: A total of 15 students who are currently studying their degree program in the university were included in the survey.
(2) Faculty respondents: A total of 15 faculty members who are either teaching staff or facilitator were included in the survey.
(3) Administration respondents: A total of 15 respondents from the administration, including the management team, the program directors, and the university administration staff also participated in the survey.

A set of questionnaires were designed for essential data collection purposes. The questionnaire was designed using Survey Monkey (www.surveymonkey.com) to determine the effectiveness of the eCampus in conducting an online academic program. The respondents were required to provide answers using five levels, namely, strongly agree, agree, slightly agree, disagree, and strongly disagree.

The following are the nine elements of the questionnaire used in this study.

(1) The online study material storage has improved the efficiency of study material sharing among students and faculty, creating a friendly learning environment.
(2) The online student study plan and study progress monitoring system are useful guides for students to complete their degree program and for the faculty to manage the work of students more efficiently.
(3) The progress marking system benefits the students, the faculty, and the university administration in terms of the overall academic program performance. The live chat support improves the communication significantly among the students, faculty, and school administration.
(4) The online journal feature improves the processing of the literature review research for thesis writing.
(5) The inclusion of the online socializing features, such as the student center and the coffee shop, are important to establish a balance between the learning process and the social activities of the school community, resulting in a study process that is enjoyable.
(6) Learning support feature. The virtual library and the e-bookstore have significantly improved the literature search process. The handbooks for faculty and students enable them to search for the school policies conveniently.
(7) The online conference room assists the school and the faculty to manage online examination, such as research viva voce and online proctoring. It also helps in making the study mentoring activities between the faculty and students become more efficient.
(8) The school academic council function has become more efficient through the e-conference room as it enables students to review the study syllabus, the design of the new quality degree program, and the school policy.
(9) The simulation campus with the GUI interactive method is more user friendly when conducted between the user and the computer than with the old “wording clicking” manner.

RESULTS AND DISCUSSION

Table 3: Respondent Feedback Overall Summary

No	Description	Strongly agree	Agree	Sligthly agree	Disagree	Strongly disagree
1	The e-classroom feature - the online study material storage have improved the efficiency of the study material sharing amongst students and faculties. It did help to create the friendly learning environment.	37.78%	57.78%	4.44%	0.00%	0.00%
2	The e-classroom feature - the online student study plan and study progress monitoring system are useful guide for the student to complete their degree program and it did help the faculties to manage the students' work more efficiently.	15.56%	80.00%	4.44%	0.00%	0.00%
3	The e-classroom feature - the progress marking system do benefit the students, the faculties and the university's administration in terms of the overall academic program performance. The Live support chat improved the communication significantly amongst student, faculties and the school admin.	22.22%	73.33%	4.44%	0.00%	0.00%
4	The online journal feature has improved the processing of the literature review research for thesis writing.	22.22%	68.89%	6.67%	2.22%	0.00%
5	The inclusion of the online Socializing Features such as the "Student Center" and the "Coffee Shop" are important in order to balance up between the learning process and the social activities of the school community and so that the study process is more enjoyable.	35.56%	51.11%	13.33%	0.00%	0.00%
6	Learning supporting feature - the Virtual Library and the e-bookstore have significantly improved the literature searching process. The handbooks for faculty and student allow them to search for the school policies in a more convenient way.	55.56%	33.33%	8.89%	2.22%	0.00%
7	Online conference room help the school and the faculty to manage the online examination like research viva voce and online proctoring as well as the study mentoring activities which became more efficient between the faculty and the student.	44.44%	51.11%	2.22%	0.00%	2.22%
8	The school academic council function became more efficient through the e-conference room enabling it among others, to review the study syllabus, design of new quality degree program, and discussion of school policy.	31.11%	68.89%	0.00%	0.00%	0.00%
9	The simulation campus with "Graphical User Interface" interactive method is more users friendly when conducted between the user and the computer when compared to the old "Wording Clicking" way.	31.11%	62.22%	4.44%	0.00%	2.22%

Table 3 shows the response to the survey from thethree groups, namely, students, faculty, and university management and administration staff.

(1) Virtual Library and Bookstore. Question 6 obtained the highest agreement rating, with 55.56% of the respondents strongly agreeing that the virtual library and the e-bookstore helped them to significantly improve their literature searching process and that the online handbooks for faculty and students helped them to understand the school and study policies conveniently.

(2) Online Conference Room. A total of 44.44% of the respondents strongly agreed with question 7. That is, they considered that the online conference room facilitates the management of the e-learning process by the faculty and the school, such as in online examination, research viva voce, and online proctoring examination. The learning mentoring activities also became more efficient between the faculty and students.

(3) Storage of Online Study Material. A total of 37.78% of the respondents strongly agreed that the e-classroom feature with the online study material storage improved the efficiency of study material sharing between students and faculty in a friendly environment.

(4) Socializing Features. About 35.56% of the respondents strongly agreed that the socializing features, such as the student center and the coffee shop, were important to keep the balance between the learning process and social activities to make studying more enjoyable.

The eCampus features also received negative feedback, however only 2.22% of the respondents strongly agreed that the simulation campus with the GUI did not help them become more interactive with the computer compared with the old wording clicking method. Similar to the GUI feedback, 2.22% of the respondents strongly disagreed that the online conference room could improve the examination and learning mentoring processes.

Further, a total of only 2.22% of the respondents did not agree that the virtual library and e-bookstore features could improve the literature searching process and that the online handbooks could help them to understand the school policies more conveniently. Lastly, 2.22% of the respondents disagreed that the online journal could help them in the literature review for thesis writing.

The results indicated that to ensure the viability of the eCampus, more surveys are needed over time to understand in detail why four among the features received negative feedback.

CONCLUSION

An eCampus was successfully developed on the basis of the eCampus framework fromthe literature reviewed. The framework for the present research is comprehensive as it combines various frameworks. The eCampus framework is incorporated with real campus support services, such as the e-classroom, e-library, e-bookstore, conference room, socialized features, journal search features, and online student support system. The developed eCampus is considered a breakthrough software as it manages to put a conventional campus into a virtual environment to provide the “campus support standard” to e-learning. The comprehensive framework was effectively converted to eCampus software and is implemented in a live distance learning program. The eCampus features include: (i) The advancement of the eCampus GUI (Graphical User Interface) was designed as an easy interactive interface between users and computers; (ii) e-classroom with assignment submission function, online exam/quiz, schoolmate and instruction profile, online chat, grading system, report card, and e-forum system; (iii) E-library; (iv) E-bookstore hosted by Amazon.com; (v) Conference Room hosted by Google Hangouts; and (iv) Socialize support features, such as the coffee shop, student center, and virtual professor. The present study bridges the knowledge gap in the online distance learning framework to develop eCampus software that was tested and analyzed through a survey questionnaire method. The eCampus is fully operational at present.

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