Sudan University of Science and Technology

Faculty of Graduate Studies

Faculty of Computer Science and Information Technology

A Solution for the Management of Supervision in a Blended Learning On-line PhD Program: Case Study of SUST Computer Science PhD Program

حل لإدارة الإشراف في برنامج الدكتوراة المختلط على الإنترنت :

دراسة حالة برنامج دكتوراة علوم الحاسوب بجامعة السودان للعلوم

والتكنولوجيا

This thesis is presented as a partial fulfillment for the degree of MSc in Information Technology

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الاية

﴿ فَتَعَالَى اللَّهُ الْمَلِكُ الْحَقُّ وَلَا تَعْجَلْ بِالْقُرْآنِ مِنْ قَبْلِ أَنْ يُقْضَى إِلَيْكَ وَحْيُهُ وَقُلْ رَبِّ زِدْنِي عِلْمًا ﴾

طه[114]

Dedication

To my parents, my husband, my son, sisters and brothers.

Acknowledgement

Thanks to Mighty Allah, for giving me the power to complete this research.

I would like to express my sincere gratitude to my advisor Prof. Izzeldin Mohamed Osman for the continuous support, for his patience, motivation, and immense knowledge.

All thanks to Sudan University of Science and Technology College of Computer Science and Information Technology staff for their continuous help in gathering information and requirements to come up with this work.

Abstract

Blended learning describes the way e-learning is being combined with traditional classroom methods and independent studies to create a new or hybrid teaching methodologies. Sudan University of Science and Technology (SUST) College of Computer Science and Information Technology (SCIT) used blended learning in their PhD program. But they apply it by making hybrid teaching ways so they find difficulties in managing their two different groups of lecturers which make the top management facing difficulties in sharing information to handle management processes.

This study aims to enhance the management of this PhD blended learning by enabling coordinators to manage students and supervisors, connecting supervisor's payments with student's progress, and covering all payments which related to this programme. The study presents some related works to blended learning processes and creating criteria according to the needs of SUST CSIT management staff. The proposed solution covers lecturer's teaching information and researches supervision process regarding phases that each research go through. It also handles lecturer's visits for those who come from outside Sudan and their payments for visits, teaching and supervision. Also, covers payments to third parties like travel agencies and hotels which hosts lecturers who come from outside Sudan.

المستخلص

التعليم المختلط يصف الطريقة التي تجمع بين التعليم الالكتروني و الطريقة التقليدية للتعليم عن طريق قاعات للدراسة والدراسة عن بعد لانشاء طريقة جديدة للتعليم. تستخدم هذه الطريقة بجامعة السودان للعلوم والتكنولوجيا بكلية علوم الحاسوب وتقانة المعلومات لطلاب الدكتوراة . ولكن ايضا يتم تطبيقها مع اختلاف بين اعضاء التدريس من داخل و خارج السودان، لذلك تجد صعوبة في التعامل مع مجموعتين من المدرسين مما يجعل الادارة العليا تواجه بعض الصعوبات في الحصول على المعلومات المطلوبة و مشاركتها.

هذه الدراسة ترمي إلى تحسين ادارة برنامج الدكتوراة و ذلك عن طريق مساعدة المنسقين على ادارة الطلاب و المحاضرين ، ربط دفعيات المحاضرين بتقدم دراسة الطلاب، و تغطية جميع الدفعيات المتعلقة بهذا البرنامج. هذه الدراسة تعرض مجموعة من الدراسات المتعلقة بالتعليم المختلط و تقوم بإنشاء معايير بناء على احتياجات الادارة في جامعة السودان للعلوم والتكنولوجيا بكلية علوم الحاسوب و تقانة المعلومات. النظام المقترح يشمل معلومات المحاضرين و المعلومات الخاصة بالتدريس و الاشراف على البحوث مع مراعاة االمراحل التي يمر بها كل بحث . أيضا يغطي زيارات المحاضرين القادمين من خارج السودان و الدفعيات الخاصة بالزيارات والتدريس والاشارف على البحوث . كما يغطي دفعيات لأطراف اخرى مثل وكالات السفر والفنادق الني تستضيف المحاضرين القادمين من خارج السودان.

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CHAPTER ONE

INTRODUCTION

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INTRODUCTION

1.1. Background

Blended learning describes the way e-learning is being combined with traditional classroom methods and independent studies to create a new or hybrid teaching methodologies[1].

In order to encourage teaching assistants and other Master holders to increase their level of education and to do more deep research in specific areas of specialization, Sudan University of Science and Technology (SUST) start the on-line PhD program for the MSc holders who reside in or outside Sudan. The program makes use of the world-wide resources in computer science to guide the research of the students.

1.2. Problem

The management of the program includes contacting external supervisors and choosing between them, then monitoring the progress of each batch of student through their study semesters and their thesis after that.

Currently the program has supervisors from 19 countries supervising students from 7 countries in many research areas. Managing such a huge program manually had put a tremendous load on program coordinators on managing, collecting, storing, retrieving, analysing and reporting on data from papers or excels forms.

1.3. Objectives

The research aims to achieve the following goals:

- Enable university coordinators to manage supervisors.
- Enable supervisors and university coordinators to monitor each student progress through his Ph.D. semesters.
- Enable coordinators to create payments for supervisors according to progress of their students.
- Enable coordinators to create payments for third parties e.g. hotels and travel agencies.
- Enable top management to be up to date by viewing the data entered by coordinators.

1.4. Scope of work

Develops a web-based computerized system to cover SUST management of the Ph.D. program.

1.5. Methodology

We will go through Waterfall software methodology steps to implement the system.

1.6. Thesis organization

Ch1: Introduction

This chapter contains background introduction to this research, problem statement, objectives of the research and scope of work.

Ch2: Literature review

In this part of the research, we will introduce some related works.

Ch3: Methodology

This chapter will analyze and design through the best software methodology to implement the system.

Ch4: Implementation and Results

This chapter presents the conclusions of the work and some recommendations.

Ch5: Conclusion and Future work

CHAPTER TWO

LITRITURE REVIEW AND RELATED WORK

CHAPTER TWO

LITERATURE REVIEW AND RELATED WORK

2.1 Introduction

This chapter discusses previous related work about the research problem and how others cover their studies about blended learning management.

2.2 Previous studies

This section discusses previous related studies to blended learning management.

2.2.1 A Didactical Framework for the Design of Blended Learning Arrangements

Blended learning basically refers to (at least) the mix of different:

- Didactical methods (expository presentations, discovery learning, cooperative learning, etc.).
- Delivery formats (personal communication, publishing, broadcasting, etc.).

3C-didactical components of a learning arrangement

Any learning environment consists of three components:

- a content component that makes learning material available to a learner;
- a communication component that offers interpersonal exchange between learners or learners and tutors; and
- a constructive component that facilitates and guides individual as well as cooperative learning activities to actively operate on learning tasks (or assignments) with different degrees of complexity (from multiple choice to projects or problem based learning)[2].

Figure 2. 1 Components of a blended learning arrangement [2]

2.2.2 Evaluating a Learning Management System for Blended Learning in Higher Education

This paper examines the literature on the use of different Learning Management Systems for blended learning in higher education in Greek Universities and Technological Educational Institutions and reviews on the advantages and disadvantages.

The Blackboard Learning System provides traditional instruction and powers pure distance learning providing specific utilities such as content management and sharing, assessment management, gradebook and assignment management, collaboration and communication, student and instructor portfolio, etc. it also has some drawbacks: some resources published in the Blackboard system cannot be shared by other users due to copyright problems, and other technical limitation is associated with the management of hyperlinks between and within documents.

Moodle, on the other hand, is an open-source learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create learning environments. The main advantage of Moodle in comparison to other commercial LMSs is that the courses developed are based on the constructionist pedagogy.

The Greek University Network has developed the platform E-class. The users can create learning paths compatible to the eLearning standard SCORM and provides a set of utilities for composing exercises, structuring agenda with tasks and deadlines, post notifications, writing collaborative documents, asynchronous communication such as forums, links to internet resources, publishing documents in any format, group management, learning objects[3].

2.2.3 USE OF A CONTENT MANAGEMENT SYSTEM FOR BLENDED LEARNING: Perceptions of Pre-Service Teachers

CMS can be used to create, store, update, publish and present information.. Furthermore, using CMS as a support to classroom instruction will form the structure for blended learning.

ENIYISI: A CMS developed for Blended Learning

ENIYISI is a content management system, which aims at providing an environment for knowledge makers to collect, share, distribute and re-organize their materials within a specific community. The users are categorized in three levels as administrator, instructor and learner. The system users, pre-service teachers and classroom instructors, adopted ENIYISI as a collaboration and communication tool for carrying out classroom activities like group projects, file sharing and commenting on peer reviews within their own community of practice[4].

2.2.4 The use of Moodle e-learning platform: a study in a Portuguese University

Moodle platform is characterized by a set of functionalities grouped in two different classes: resources and modules. Resources instructional materials that are usually created in digital formats and then uploaded to the platform. Web pages, PowerPoint files, word documents, flash animations, video and audio files represent some examples of these resources. Modules are components created via Moodle in order to provide interaction among students and teachers towards manipulation and content transformation. The Moodle platform provides several modules, such as Database, Lessons, Assignments, Workshops, Chats, Forums, News, Glossary, Wikis, Choice, Quiz, Survey, Feedback, SCORM (Sharable Content Object Reference Model) and External tools[5].

2.2.5 OPEN SOURCE LEARNING MANAGEMENT SYSTEMS IN DISTANCE LEARNING

This study shows the results of comparisons of open source LMSs. In particular, the purpose of these comparisons is two-faceted. One is to analyze general features of open source LMSs considering the requirements of an LMS in an e-learning process. The other purpose is to conduct comparisons of these features among the mostly preferred four LMSs: Moodle, ATutor, DOKEOS and OLAT.

When the items are analyzed under General Aspects, Moodle is the only LMS which has wider options with different access possibilities, modular structure, and advanced backup tools. Then, the LMSs are analysed according to their didactic functionality. Comparisons show that, Moodle and OLAT have the ability to view full user logging and tracking and activity reports for each student are available with graphs and details about each module (last access, number of times read) as well as a detailed "story" of each student involvement including postings etc. on one page. Moodle and ATUTOR have an advanced online exam module with time, date and duration constraints[6].

2.2.6 University management system full report

UMS (UNIVERSITY MANAGEMENT SYSTEM) makes management to get the most updated information always by avoiding manual accounting process. This system has three functional divisions: University Administrator, College Administrator and User (Students / Faculties).

University Administrator has the functionality of registering new colleges and courses. College Administrator has the rights of creating department, allocating courses to departments, creating faculties, students and allocating subjects to faculties, and modifications in the data entered by the user can also be done by the college administrator. User of this may be faculty or students. Faculty has the facility of entering the marks and attendance of the students. Students can check their marks and attendance but there is no chance of modifications. Reports must be generated for the existing data i.e. for attendance and marks of the students, which are used to assess the performance of the students. These reports should be viewed by the in charge and user[7].

2.2.7 Paradiso LMS Blended Learning

Paradiso LMS Blended learning brings together the best of both classroom learning and eLearning. It combines the support of classroom learning with the flexibility of online education. Blended Learning uses Paradiso Learning Management System to teach and support learning in a classroom.

2.2.8 MasterSoft University Management System

This software has 23+ pro modules and in-built 45+ modules and can be hosted easily to the university data center or on cloud servers. Modules are designed keeping in mind the different dynamics of operation, and can be customized according to the needs of the university.

2.3 **Conclusion**

This chapter has presented list of studies which discussed blended learning from different perspectives. We find that most of them discussing blended learning according to students and the functions which help the learning process. Some systems covered some administration features like student registration process. Also, the financial operations of staff are covered as a payroll module but not connected properly with the progress of learning process.

2.3.1 **Solution Criteria**

Here are criteria that will be covered by our proposed solution for managing supervisors:

- Monitoring progress of the students.
- Classifying lecturers into two groups one for local lecturers and the other one for the international supervisors.
- Paying local lecturers in Sudanese Pound and the international in United States Dollar.
- Paying international staff for visits when they come to present subjects they teach.
- Paying supervisors for researches according to progress of students.
- Paying third parties like hotels and travel agencies.

CHAPTER THREE

RESEARCH METHODOLOGY

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter represents the methodology used to come up with the management system and the technology used to build it.

As mentioned in chapter two the proposed solution covers features that didn't appear in other solutions after making comparison with many Learning Management Systems and University Management Systems. These features are:

- Monitoring progress of the students.
- Classifying lecturers into two groups one for local lecturers and the other one for the international supervisors.
- Paying local lecturers in Sudanese Pound and the international in United States Dollar.
- Paying international staff for visits when they come to present subjects they teach.
- Paying supervisors for researches according to progress of students.
- Paying third parties like hotels and travel agencies.

3.2. Systems Analysis & Design

As stated in the purpose of intended systems is to facilitate and Enhance The management of the program includes supervisors from 19 countries supervising students from 7 countries in many research areas, Managing such a huge program manually had put a tremendous load on program coordinators on managing, collecting, storing, retrieving, analysing and reporting on data from papers or excel forms.

3.2.1 Functional Requirements

The required system would do the following :

- **Manage Courses:**

  The System allows the cordinators to manage their programme crouse Information and it's Subjects .

- **Manage Batchs:**

  The Systems allows cordinators to manage Batchs and students details and manage their progress and reports their progress on course and the progress of the researches.

- **Manage the supervisors (professors):**

  Provides the program Coordinators with Access to add new professors and manage their information starting from personal data and specialization subjects then list of current and history of the subject he teaches. Also lists researches supervision and payments paid or to be paid, and be able to retrieve their data and report on.

- **Manage Financial Transactions and Payments:**

  The Systems allows cordinators to manage and access the financial transaction that related to external proffessors and their financial contracts, and their payments information and provide details informations about course expenses.

- **Manage research**

  The System would allow the cordinators to manage Student researches and their progress with their supervisor details.

- **Manage Students**

  The System would allow the cordinators to manage Course and Research Students and the informations

3.2.2 System Relations

Figure 3. 1 System relations

Figure 3.1 describes the relationships between the entities and how they interact in the system.

3.2.3 Many-to-many Relations

Here are relations which come to handle many-to-many relations with higher database performance by creating intermediate tables to minimize redundancy.

Lecturer-subjects:

One lecturer can teach different subjects related to his specialization and one subject can be taught by many lecturers in different batches that why another table should be created to handle this relation.

Figure 3. 2 Lecturer-subject relation

Batch-stages:

Batch goes through many stages. This table handles stages for each batch along with their start and end dates.

Figure 3. 3 Batch-stages relation

Batch-subjects:

Batch subject is a relation that record subjects for each batch with regard to lecturers who teach those subjects and the stages of learning.

Figure 3. 4 Batch-subjects relation

3.2.4 Schema

This section describes database tables and fields with brief definition to each field in each table.

Lecturer:

This table contains lecturer's basic information.

Table 3. 1 Lecturer table fields definition

Field	Description
Lec_id	Primary key. Number that distinguish each lecturer.
Lec_name	String. Lecturer name
Nationality	String. Country to which the lecturer belongs.
Lec_email	Email address of the lecturer
Degree	Degree of the lecturer e.g. (Phd, Prof.).
Passport_photo	Photo copy of the lecturer passport.
Note	String for any other information about the lecturer

Student:

Save students basic data.

Table 3. 2 Student table fields definition

Field	Description
Std_id	Primary key. Number that distinguish each student.
Std_uid	Unique number for each student used in processes inside university.
Std_nid	National ID of the student.
Std_email	Email address of the student
Std_address	Location address where the student resides.
Std_gender	Male or female
Std_phone	Phone number of the student.
Std_employer	Place where the student work if exists.
Batch_id	Foreign key from batch table.
College_id	Foreign key from colleges table
Stage_id	Foreign key from stages table. Represent the stage of the student in the PHD program.

Batches:

Record all batches information.

Table 3. 3 Batch table fields definition

Field	Description
Batch_id	Primary key.
Batch_label	Sequence of letters and numbers reference to specific batch
Batch_start_date	Date when the batch begin studying.
Local_lec_fees	Fees of local lecturers for the batch.
Global_lec_fees	Fees for the lecturers who come from other countries.
Cor_id	Foreign key from users table used to identify batch coordinator.
College_id	Foreign key from colleges table
Status	Integer 0 for the past batch or 1 for active batch.

Subjects:

Lookup table for subject's data.

Table 3. 4 Subjects table fields definition

Field	Description
Sub_id	Primary key.
Sub_name	Subject title
College_id	Foreign key from colleges table

College:

Lookup table for subject's data.

Table 3. 5 College table fields definition

Field	Description
College_id	Primary key.
College_name	Name of the college

Stages:

Lookup table for stage's data.

Table 3. 6 Stages table fields definition

Field	Description
Stage_id	Primary key.
Stage_lebel	Name of the stage

Payments:

This table contains payments information.

Table 3. 7 Payments table fields definition

Field	Description
Pay_id	Primary key.
Pay_type	0 for semester payment and 1 for research payment.
Pay_amount	Amount should be paid to lecturer.
Pay_currency	USD or SDG.
Description	Description of the payment.
Status	Status of payment until full payment finished.
College_id	Foreign key from colleges table.
Sub_id	Foreign key from subjects table. Reference to subject id for which the lecturer having payment (if it is payment for teaching).
Research_id	Foreign key from researches table. Reference to research id for which the lecturer having payment (if it is payment for supervision).
Batch_id	Foreign key for batch table
Stage_id	Stage of payment whether it is one of semesters or research

Payment_statuses:

Lookup table for status data.

Table 3. 8 Payment_statuses table fields definition

Field	Description
Id	Primary key.
Lebel	Name of the status

Researches:

Contains data about research with link to student and supervisor

Table 3. 9 Researchs table fields definition

Field	Description
R_id	Primary key.
R_topic	Title of the research.
R_start_date	Date starting the research.
Std_id	Foreign key to student table reference to student who is doing the research.
Lec_id	Foreign key to lecturer table reference to lecturer who is supervising the research.

Batch stages:

Record each stage for each batch along with the start and end date of the stage.

Table 3. 10 Batch_satges table fields definition

Field	Description
Batch_stage_id	Primary key.
Batch_id	Foreign key to batch table.
Stage_id	Foreign key to stage table.
stage_start_date	Date of starting the stage.
Stage_end_date	Date of finishing the stage.

Batch subjects:

Record each stage for each batch along with the start and end date of the stage.

Table 3. 11 Batch_subjects table fields definition

Field	Description
Sub_batch_id	Primary key.
Batch_id	Foreign key to batch table.
Stage_id	Foreign key to stage table.
Sub_id	Foreign key to subjects table.
Lec_id	Foreign key to lecturers table.

Lecturer_subjects:

Represents many_to_many relations between subject and lecturer tables.

Table 3. 12 Lecturer_subjects table fields definition

Field	Description
Lec_sub_id	Primary key.
Sub_id	Foreign key to subjects table.
Lec_id	Foreign key to lecturers table.

Users:

Saves user login details.

Table 3. 13 Users table fields definition

Field	Description
Id	Primary key.
Name	Name used to refer to user.
Email	User email used in login process and sending emails to and from the system
Password	User password.
User_type	
College_id	Foreign key to college table
Last_login	Last time the user logged into the system

Suppliers:

contains suppliers data. Works as lookup table.

Table 3. 14 Suppliers table fields definition

Field	Description
Id	Primary key.
Name	Name of supplier

Supplier_payments:

Records payment's data for suppliers.

Table 3. 15 Supplier_payments table fields definition

Field	Description
Id	Primary key.
Supplier_id	Foreign key to supplier table
Batch_id	Foreign key to batches table
Lec_id	Foreign key to lecturers table
Amount	The amount to be paid for supplier
Description	Description why we pay the supplier
College_id	Foreign key to colleges table
Canceled	Is payment canceled or not

Common fields:

There are common fields in most of the system tables used to help in log information.

Table 3. 16 Common tables fields

Field	Description
Created_at	The date and time the record created.
Updated_at	Time stamp changed with every update of the record.
Created_user	Id of the user who created the record.

3.3. Technology used

This section describes the technology used to producing this system.

3.3.1 Programming Language: Hypertext Preprocessor PHP

A PHP is widely used scripting language, which was designed for the purpose of web development for producing dynamic web pages. For this same purpose, a PHP code is embedded inside the HTML source document. The web server along with a processor module, which generates web page, will interpret this document. PHP is a general-purpose programming language, a PHP code will be processed by an interpreter application inside the command line. This will be done while performing the desired operation of the operating system and producing a program output from the standard channel of output.

PHP is so popular that's become the choice of programmers as is has many powerful features:

- **Cross platform**

    A single code written in PHP can be run in any platforms and interface with MySQL - the most popular open source database supported by PHP. Thus, this language is perfect for businesses seeking cost-effective solutions.

- **Extensible**

    PHP can be made for powerful by implementing tiered programming. In this type multiple layers are created for various components, languages or ideas to keep them separate from each other. It makes the application highly scalable. In future, if any change seems mandatory then you can only make changes in the code of certain architectural layer and leave the other layers as it is. It makes your code organized, easily manageable and reusable. PHP also has abundant extension library which combined with the other features makes it highly extensible.

- **Security**

    Security of data is of utmost priority for enterprise applications. This can be easily achieved by deploying highly skilled developers who can fix the security loopholes right when they arise during the app development process. In this context, it is important to understand that there is no such thing as secure programming language. Any language can be insecure based on how the code is written, hence the language be it PHP or any other for that matter is not blameworthy.

- **Optimal performance**

    The secret of the great performance of the PHP applications is that it is configured with the opcode cache via OpCache by default since PHP 5.5 version. The opcode cache saves the output of compiled code into memory to be used in subsequent requests. Thus, it reduces execution time by skipping the parsing and compilation phases during subsequent requests and consequently increases app performance[8].

3.3.2 Programming Framework: Laravel

Laravel is a prominent member of a new generation of web frameworks. It is a free, open-source PHP web framework, created by Taylor Otwell back in 2011 and intended for the development of web applications following the MVC model.

Laravel help developers by easing common tasks used in the majority of web projects, such as authentication, routing, sessions, and caching. Laravel is accessible, yet powerful, providing powerful tools needed for large, robust applications[9].

Server Requirements

The Laravel framework has a few system requirements[10].

- PHP >= 7.1.3

- OpenSSL PHP Extension
- PDO PHP Extension
- Mbstring PHP Extension
- Tokenizer PHP Extension
- XML PHP Extension
- Ctype PHP Extension
- JSON PHP Extension

CHAPTER FOUR

IMPLEMENTATION AND RESULTS

CHAPTER FOUR

IMPLEMENTATION AND RESULTS

4.1. Introduction

This chapter represents the implementation of the implemented solution with explanation of how it works and looks.

4.2. System Users

The system has four kinds of users:

i. **System administrator**: the user who can create user accounts, new colleges any other things could be done by other user types.

ii. **Professors**: user who only see his own page and send message to other users.

iii. **Program top management**: this is the user who can see the progress of each batch and program student such as university management.

iv. **Batch coordinator**: user can create batch students and manage their files and create payments for professors.

4.3. Objectives

- Enable university coordinators to manage supervisors.
- Enable supervisors and university coordinators to monitor each student progress through his Ph.D. semesters.
- Enable coordinators to create payments for supervisors according to progress of their students.
- Enable coordinators to create payments for third parties e.g. hotels and travel agencies.
- Enable top management to be up to date by viewing the data entered by coordinators.

4.4. System Views (Result)

Figure 4. 1 Login screen

Figure 4.1 shows the login screen which needs username and password to login into the system.

ادارة حسابات المستخدمين

الكليات

الاساتذة

الطلاب

الدفعات

البحوث

الدفعيات

التقارير

المراسلات

Figure 4. 2 Side menu

Figure 4.2 illustrates system menu that user can navigate through its options. The first two options are available only to admin user. And the others option available to admin, coordinator and top management users.

ادارة سجلات الكلية

الرقم	الاسم		
			اضافة كلية
1	علوم الحاسوب	تعديل	حذف
5	كلية_القانون	تعديل	حذف

Figure 4. 3 colleges

Figure 4.3 represents colleges which are available in the system as it could work for many colleges each one have its own data and users. The two buttons for edit and delete only available for admin and coordinator users.

انشـاء الكلية

رقم الكلية:

اسم الكلية :

حـــفـــظ

Figure 4. 4 Create college

Figure 4.4 illustrates the form the user can create college through it.

سجل الكلية

الرقم	الاسم	البيانات الاساسية
1	علوم الحاسوب	

الرقم	الدفعة	الدفعات الحالية
1	IT-10-2017	

الرقم	الدفعة	الدفعات السابقة
2	IT-10-2010	
3	IT-6	

Figure 4. 5 College page

Figure 4.5 represents college page which contain college basic information, previous and current batches.

ادارة سجلات المحاضرين

الرقم	الاسم		
3	احمد سامر	تعديل	حذف
4	اسراء علي الطيب	تعديل	حذف
10	ali	تعديل	حذف

Figure 4. 6 Lecturers

Figure 4.6 represents lecturers who teach in colleges. The two buttons for edit and delete only available for admin and coordinator users.

انشاء محاضر

الاسم :

البريد الإلكتروني :

الدرجة العلمية :

الجنسية :

ملاحظات :

صورة جواز السفر :

No file chosen | Choose File

المواد :

حـــفــظ

Figure 4. 7 Create lecturer

Figure 4.7 the form to create new lecturer

الجنسية	الاسم	الرقم
		البيانات الاساسية
sudanese	سامر عجلاوي ابراهيم	11
ملاحظات	الدرجة العلمية	البريد الالكتروني
قنغث	بروفيسور	s.ajlawi@gmail.com

البيانات الاساسية   الدفعيات

Figure 4. 8 Lecturer page

Figure 4.8 illustrates lecturer pages. Here is the first part of the page which shows lecturer's basic information. The envelope icon is link to send message form to the lecturer in the page.

المقررات يستطيع تدريسها		
تاريخ اضافة المقرر	الاسم	الرقم

المقررات يقوم بتدريسها حاليا					
تاريخ نهاية	تاريخ بداية	المرحلة	الدفعة	الاسم	الرقم
2019-01-10	2018-08-10	السمستر الاول	IT-2019	Ahmed Subject	300
2019-01-10	2018-08-10	السمستر الاول	IT-2019	network	319

مقررات قام بتدريسها في الماضي					
تاريخ نهاية	تاريخ بداية	المرحلة	الدفعة	الاسم	الرقم
لا توجد بيانات للعرض					

البحوث		
اسم الطالب	تاريخ بداية	العنوان
mona ali	2017-11-18	blended learning

Figure 4. 9 Lecturer view- part two

Figure 4.9 illustrates the second part of the lecture page which contains the subjects he can teach, subjects he is teaching now, the subjects he has taught before and researches he supervises.

اكمل الدراسة	تقديم سيمنار	تسليم المقترح	اسم الطالب	العنوان
☑	☐	☐		
☑	☑	☑	mona ali	blended learning

الزيارات

| | | ☑ | | زيارة لتقديم عرض لمادة |
| | | ☑ | | زيارة لتقديم المقترح |

Figure 4. 10 Lecturer view- part three

Figure 4.10 represents lecturer's payments of the researches he supervises and the visits that he comes to university. Each research has three payments. Here the coordinator can create payment by clicking the payment checkbox or chick the checkbox of the step so he can check them all if he has one or more research and create payments for researches step. In fact each lecturer (lecturers who came from outside Sudan) comes two times one for making presentation about the subject he may teach if students choose to learn it or to present researches proposals of students he supervises so he deserve payment in each visit here the view show the user if visits payments already paid or let him create them just by clicking the checkbox corresponding to the intended payment.

ادارة بيانات الكلية

الاســـم:

سامر عجلاوي ابراهيم

البريد الإلكتروني :

s.ajlawi@gmail.com

الدرجة العلمية :

بروفيسـور

الجنسية :

sudanese

ملاحظات :

قثقث

المواد :

Database Basics ☑

حـــفــظ

Figure 4. 11 Edit lecturer

Figure 4.11 shows edit lecturer form with the existing data of intended lecturer. Also the subjects that lecturers teach appear so the user can delete them or let them as it is.

ادارة سجلات الطلاب

الرقم الجامعي	الاسم	الدفعة	المرحلة		
					اضافة طالب
1234	ahmed	IT-2018	السمستر الثاني	تعديل	حذف
1235	mona ali	IT-2018	السمستر الاول	تعديل	حذف
2345	sara	IT-2019	السمستر الاول	تعديل	حذف
3456	nadia	IT-2019	السمستر الاول	تعديل	حذف
2345	ننمىمى	IT-10-2017	السمستر الاول	تعديل	حذف

Figure 4. 12 Students

Figure 4.12 illustrates student's page. The two buttons for edit and delete only available for admin and coordinator users.

	البيانات الاساسية
تعديل اضافة بحث اضافة المواد الاختيارية	
ahmed	الاسـم :
1234	الرقم الجامعي:
12345	الرقم الوطني:
Ahmed@ajlawi.com	البريد الاكتروني:
ذكر	النوع:
JED	العنوان:
0912345678	رقم الهاتف :
non	مكان العمل :
علوم الحاسوب	الكلية:
IT-2018	الدفعة:
السـمسـتر الثاني	المرحلة:
LMS	البحث:
network hci	المواد الاختيارية
قيد الدراسـة	الحالة

Figure 4. 13 Student page

Figure 4.13 represents the student basic information, the stage of the Ph.D. program, the research if exist, optional subjects of the second semester if he reaches it and the status of learning whether he still learning, suspends learning or finished learning. The buttons at the top of the page are for editing information, add research to student and add optional subjects.

Figure 4. 14 Edit student

Figure 4.14 shows the form of editing student's data with the existing data to be changed.

اضافة بحث لدارس

البحث بعنوان **blended learning** مضاف لملف الطالب مسبقا. سيتم الغاءه عند اضافة بحث جديد

اسم الطالب: mona ali

عنوان البحث

المشرف:

حــفــظ

Figure 4. 15 Add research to student

Figure 4.15 shows the form of adding research to student by adding title then select supervisor. The warning message appears to inform the coordinator that the student already has research assigned to him and it will be deleted if he continues adding new one.

اضافة المواد الاختيارية

يوجد مواد اختيارية مضافة لملف الطالب سيتم مسحها اذا قمت بإضافة مواد جديدة

اسم الطالب: mona ali

المادة الأولى

network ▾

المادة الثانية

network ▾

حـــفــظ

Figure 4. 16 Add optional subjects to student

Figure 4.16 shows the form of adding optional subjects of the second semester for student by selecting subjects from the lists. The warning message appears to inform the coordinator that the student already has optional subjects assigned to him and it will be deleted if he continues adding new subjects.

ادارة سجلات الدفعات

<div dir="rtl">

		الكلية	الاسم	الرقم
			اضافة دفعة	
حذف	تعديل	علوم الحاسوب	IT-10-2017	1
حذف	تعديل	علوم الحاسوب	IT-10-2010	2
حذف	تعديل	علوم الحاسوب	IT-6	3

</div>

Figure 4. 17 Batches

Figure 4.17 represents batches which are available in college which the logged-in user related to. The two buttons for edit and delete only available for admin and coordinator users.

سجل الدفعة ✉

<div dir="rtl">

البيانات الاساسية		
الكلية	الاسم	الرقم
علوم الحاسوب	IT-10-2017	1
تاريخ البداية		المنسق
2017-10-01		samer ajlawi
مستحقات المحاضر الخارجي		مستحقات لمحاضر الداخلي
3500		7000

المرحلة الحالية			
تاريخ النهاية	تاريخ البداية	البرنامج	الرقم
2018-12-01	2017-07-01	السمستر الثاني	2000

</div>

Figure 4. 18 Batch page part-1

Figure 4.18 represents the first part of the batch page which shows the basic information of the batch and the current stage. The message icon appear at the top of the page is to send email to batch student.

47

تاريخ النهاية	تاريخ البداية	البرنامج	الرقم	مراحل سابقة
2018-02-01	2017-10-01	السمستر الاول	1000	

الاستاذ	المرحلة	البرنامج	الرقم	المقررات الدارسية تعديل
سامر عجلاوي ابراهيم	السمستر الاول	Database Basics	100	
اسراء علي الطيب	السمستر الاول	os	318	

Figure 4. 19 Batch page part-2

Figure 4.19 illustrates the second part of the patch page that contains the next stage of the batch and the subjects they learn.

انشاء دفعة جديدة

رقم الدفعة

الكلية

علوم الحاسوب ▼

تاريخ البداية

dd/mm/yyyy

المنسق

▼ isra

مستحقات المحاضر الداخلي

مستحقات المحاضر الأجنبي

مستحقات زيارة المحاضر الأجنبي

السمستر الأول

تاريخ النهاية   تاريخ البداية

dd/mm/yyyy   dd/mm/yyyy

السمستر الثاني

تاريخ النهاية   تاريخ البداية

dd/mm/yyyy   dd/mm/yyyy

حـفـظ

Figure 4. 20 Create batch

Figure 4.20 represents form to create new batch with its stages beginning and ending dates.

تعديل بيانات الدفعة

رقم الدفعة

IT-6

الكلية

▼ علوم الحاسوب

تاريخ البداية

08/06/2018

المنسق

▼ samer ajlawi

مستحقات المحاضر الداخلي

7000

مستحقات المحاضر الأجنبي

3500

مستحقات زيارة المحاضر الأجنبي

1000

الحالة

○ انتهت

● قيد الدراسة

حفظ

Figure 4. 21 Edit batch

Figure 4.21 represents the form to edit batch with the exiting data of the batch so the user can change what he need.

<div dir="rtl">

اضافة مواد للدفعة

علوم الحاسوب/ IT-10-2017

السمستر الأول

المحاضر 1:	المادة 1:
▼	

المحاضر 2:	المادة 2:
▼	

</div>

Figure 4. 22 Batch subjects

Figure 4.22 represents form through which we add subjects to this batch along with their lecturers.

<div dir="rtl">

البحوث

الحالة	تاريخ البداية	الدارس	المشرف	عنوان البحث
اكمل الدراسة	2017-11-18	ahmed	سامر عجلاوي ابراهيم	LMS
اكمل الدراسة	2017-11-18	mona ali	ali	blended learning

</div>

Figure 4. 23 Student researches

Figure 4.23 represents student's researches along with their supervisors and research stage.

البحث

LMS

المشرف: سامر عجلاوي ابراهيم

الطالب: ahmed

الحالة: اكمل الدراسة

عدد الدفعيات: 3

المبلغ	الرقم
USD 1500	1
USD 1500	7
USD 750	24

Figure 4. 24 Research page

Figure 4.24 represents the basic information of the research with their payments if exist.

الدفعيات

بحث

بحث دفعيات السمستر
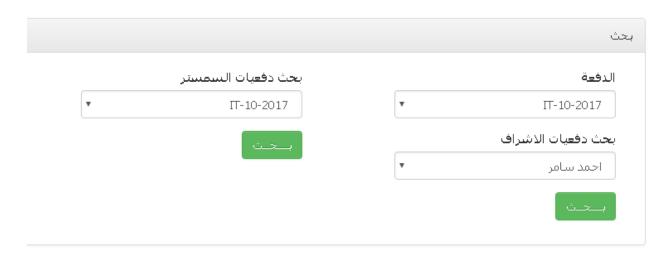
الدفعة

IT-10-2017

IT-10-2017

بحث دفعيات الاشراف

بـــحث

احمد سامر

بـــحث

Figure 4. 25 Payments page

Figure 4.25 shows two forms as there are two ways of search. The first one if for research payments for one supervisor, the other one is for teaching payments for lecturers who teach the batch students.

دفعيات البحوث

المشرف: ali

اكمل الدراسة ☐	تقديم سيمنار ☐	تسليم المقترح ☐	اسم الطالب	العنوان
☑	☑	☑	mona ali	blended learning

Figure 4. 26 Payments for research

Figure 4.26 is the search result for the first form in figure 4.19 which shows the payments for supervisor. This figure shows the user if payments are paid and enable him to make payment if they aren't created -but they should be issued- just by checking the check box of the stage that he should be paid for.

دفعيات التدريس

المحاضر	المادة	المبلغ	تم الدفع ☐
احمد سامر	Database Basics	10000	☐
اسراء علي الطيب	Web Dev Basics	10000	☐
سامر عجلاوي ابراهيم	Ahmed Subject	10000	☐
william	db	4000	☐
peter	os	4000	☐

الدفعة: IT-CS

Figure 4. 27 Payments for semester

Figure 4.27 shows the payments of specific batch for lecturers who teach in each semester. This figure shows if payments have paid already or enable batch coordinator to create them just by checking the checkbox at the table header.

التقارير

طلاب الدفعة   الدفعيات   البحوث   دفعيات المزودين
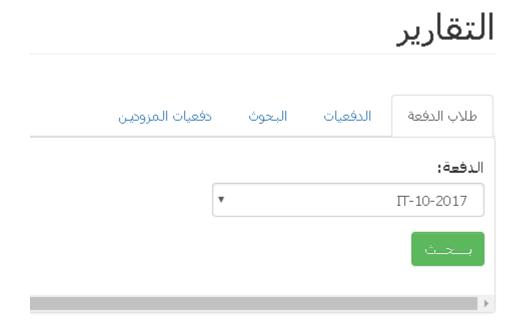
الدفعة:

IT-10-2017 ▼

بـــحـــث

Figure 4. 28 Reports

Figure 4.28 represents the page through which the user creates reports. The page contains three tabs the first one to generate students report.

طلاب الدفعة IT-2018

عنوان البحث	الحالة	الاسم	الرقم
LMS	قيد الدراسة	ahmed	1234
blended learning	قيد الدراسة	mona ali	1235

Figure 4. 29 Students report

Figure 4.29 shows the student of the batch selected from the list of batches in figure 4.28 each student along with status studying and research topic if exist.
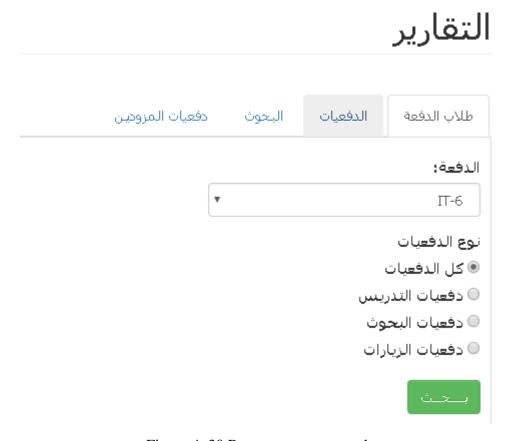

التقارير

| طلاب الدفعة | الدفعيات | البحوث | دفعيات المزودين |

الدفعة:

IT-6 ▼

نوع الدفعيات
◉ كل الدفعيات
◯ دفعيات التدريس
◯ دفعيات البحوث
◯ دفعيات الزيارات

بـــحـــث

Figure 4. 30 Reports – payment tab

Figure 4.30 is the second tab of the report page mentioned in figure 4.22. Here the user selects batch and type of payments (supervision payments, teaching payments, visits or all payments).

دفعيات الاساتذة للدفعة IT-2018

المحاضر	المبلغ المدفوع	التفاصيل
ali	USD 1500	اشراف على blended learning
	USD 1500	اشراف على blended learning
	USD 750	اشراف على blended learning
سامر عجلاوي ابراهيم	USD 1500	اشراف على LMS
	USD 1500	اشراف على LMS
	USD 750	اشراف على LMS

Figure 4. 31 Payments report

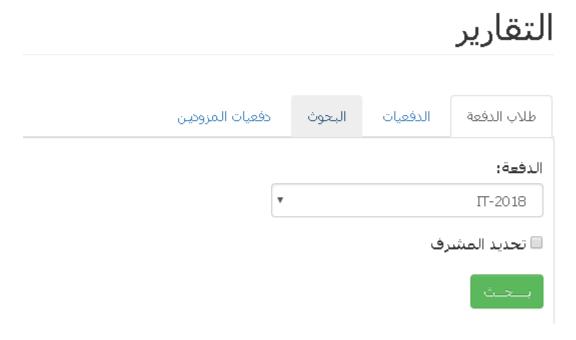Figure 4.31 shows the payments of the selected batch regarding the payment type selected by the user.

Figure 4. 32 Reports- research tab

Figure 4.32 represent the form for generating report of researches for specific batch.

التقارير

دفعيات المزودين	البحوث	الدفعيات	طلاب الدفعة

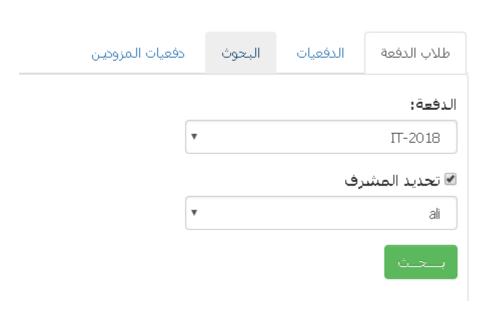الدفعة:

IT-2018 ▼

☑ تحديد المشرف

ali ▼

بــحث

Figure 4. 33 Reports- research tab - 2

Figure 4.33 represents the form for generating report of researches for customized supervisor. The super visors list appears according to selected batch and after checking the "with supervisor" option.

بحوث الدفعة IT-2018

الحالة	المشرف	الطالب	عنوان البحث
تسليم المقترح	سامر عجلاوي ابراهيم	ahmed	LMS
تسليم المقترح	ali	mona ali	blended learning

Figure 4. 34 Researches report

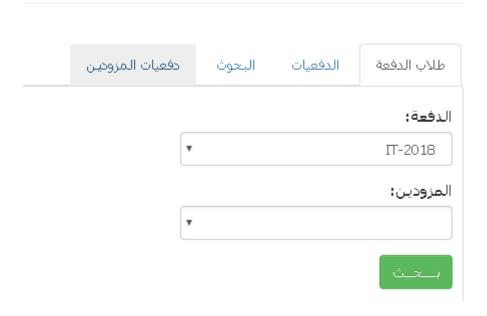Figure 4.34 illustrates researches report for specific batch.

Figure 4. 35 Reports – suppliers payments tab

Figure 4.35 shows the form to generate supplier's payments report for specific batch also could be for specific supplier. Here suppliers refer to hotels, travel agencies and others.

دفعيات مزودين الخدمة

الدفعة	التفاصيل	المبلغ المدفوع	الاسم
IT-2018	تذاكر الطيران	100000 ج.س	tigerland
IT-2018	مستحقات اقامة المحاضرين	20000 ج.س	grand holiday villa

Figure 4. 36 Suppliers payments report

Figure 4.36 represent suppliers and the payments created for them for specific batch.

فاتورة لمزودين الخدمات

إلى

المبلغ(بالجنيه السوداني)

السبب

الدفعة :

حـــفــظ

Figure 4. 37 Create payment for supplier

Figure 4.37 illustrates the form through which the user creates payment for suppliers (travel agency, hotel or other) when lecturers come from outside Sudan in their visits to make presentation for subjects or present research proposal.

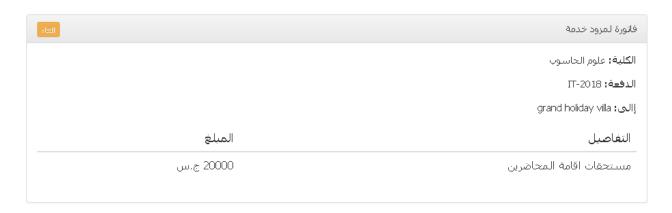Figure 4. 38 Supplier payment

Figure 4.38 represents the payment for supplier for tickets or residence of lecturers of specific batch. The cancel button appears in the top of payment will disappear if payment already cancelled and will be replaced by label to indicate that it's cancelled payment.
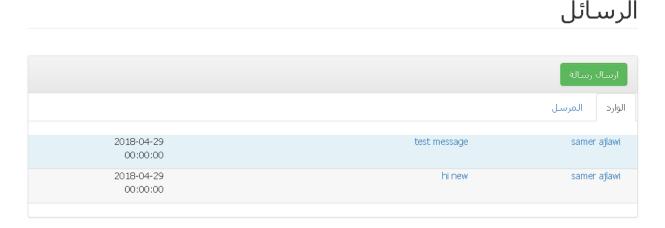

Figure 4. 39 Messaging

Figure 4.39 shows messaging section which contains two parts for sent and received messages. Also link to send message to one of the system users. The blue colour used for unread messages.

Figure 4. 40 Send message

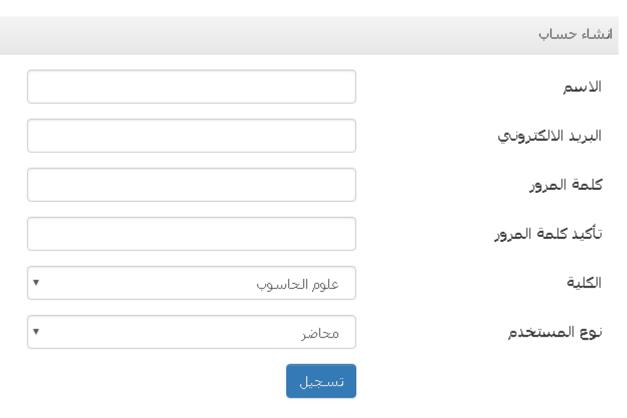Figure 4.40 illustrates form for sending message to other system users.

Figure 4. 41 Create account

Figure 4.41 show the form of creating new user account by the system admin.

CHAPTER FIVE

CONCLUSTION AND FUTURE WORK

CHAPTER FIVE

CONCLUSION AND FUTURE WORK

5.1. Conclusion

The thesis has present a solution for the management of supervision in blended learning online PhD program in CSIT. The solution raised as a result of comparison with other systems related to Blended Learning management or university management. It has covered the management part as other systems don't.

We used Laravel framework and Mysql to build management system for blended learning.

The result is working system that concern with management process specially financial process of payments with reports to the top management in CSIT college. The solution has enabled coordinators to manage students and supervisors, connected supervisor's payments with student's progress, and covered all payments which related to this programme such as lecturer's visits payments and any other payments to third parties who participates in this programme e.g. hotels or travel agencies. Also, it has covered lecturer's teaching information and researches supervision process with respect to the phases that each research should go through.

5.2. Future Work

The following additions are suggested to improve current work:

1. Adding portal for students to see their files and results also to communicate with their lecturer and batch coordinator.
2. Add files repository to contain each research documents so it will be easy for future students to find previous studies.
3. Add portal to post graduate studies college to inform CSIT College with registration data and to update status of payments, also to make communication easy between them.

References

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        https://www.thecompleteuniversityguide.co.uk/distance-learning/what-is-distance-learning/
            [Accessed: 15-oct-2016 7:00 PM]

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            https://www.academia.edu/5568260/UNIVERSITY_MANAGEMENT_SYSTEM_full_report
            [Accessed: 03- Dec- 2017].

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            https://www.bartleby.com/essay/PHP-Code-P3DKFXZVJ
            [Accessed: 03- Dec- 2018].

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        https://www.quora.com/What-is-Laravel-framework
            [Accessed: 20-Jan-2018 9:00 AM].

[10]   Installation of Laravel/ [Online]. Available:
        https://laravel.com/docs/5.6
        [Accessed: 30-Jun-2018 5:30 PM].