Training management system: A case study of Information Technology in Iraqi Rural Communities

نظام إدارة التدريب

دراسة حالة تكنولوجيا المعلومات في المجتمعات الريفية العراقية

Thamir Naeem Jassim

Thamir_69@yahoo.com

الملخص

تقسم المجتمعات الريفية في العراق بأعداد كبيرة من السكان ولذلك فان الفجوة الرقمية بين المناطق الحضرية والريفية كبيرة جدا وعلى الرغم من محاولة الحكومة والمجتمع المدني في الكثير من السياسات لتطوير المناطق الريفية، لا تزال الفجوة الرقمية بين الريف والحضر واسعة. الحكومة و المنظمات غير حكومية (NGO) تحاول أيضا لنشر المعرفة في تكنولوجيا المعلومات (IT) ولكن لا يمكن لها رصد الذين لديهم المعرفة بتكنولوجيا المعلومات والت المعلومات والتقد عمكن لما رصد الذين لديهم المعرفة بتكنولوجيا ومن تشر المعرفة في تكنولوجيا المعلومات (IT) ولكن لا يمكن لها رصد الذين لديهم المعرفة بتكنولوجيا المعلومات، والذين يحتاجون المزيد حول هذا الموضوع. ومع ذلك، فإن مشكلة سكان الريفي في قضائي الصويرة جدا. والمعزية من ثم فإن الغرض من هذه الدراسة هو لفهم وتحديد متطلبات إدارة التدريب للمجتمع الريفي في قضائي الصويرة والعزيزية. سيتم اقتراح نموذج أولي لتخزين وإدارة المعلومات حول المتدريين. وقد تجلى التطبيق لبعض المستخدمين، كما تم التوصل إلى ردود أفعال ايجابية.

Abstract

The rural communities in Iraq divided by many population; therefore, the digital gap between the urban and the rural areas are very big. The government, civil society tried a lot of policies to develop the rural area, the digital gap between the rural and urban continued to be wide. The government and non-government organization (NGO) also trying to spread the information technology (IT) knowledge, but cannot monitor who has already IT knowledge, needs more about IT. The purpose of this study to understand, identify the training management requirements of the rural community in Al Suwaira and Al Azizea. A prototype will be proposed to store and manage information about trainees. The application has been demonstrated to some users and the feedback obtained had been positive.

1.0 Introduction

A rural community is a group of people are live in the country, which is far away from a big city or town (Wikipedia,2009). Information technology is used to develop the rural communities and has the potential to boost the economic development in the third world. However, any deployment should be backed by a positive economic activity to be sustainable (Sen, Kole, & Raman 2006).

Government will build and deploy to improve ICT infrastructure to the general public throughout the country. Human resource development in ICT was also given emphasis, to increase the supply of skilled and knowledge manpower to meet the demands for new sets of skills and competencies required. Efforts were also rolled out to foster local capabilities in creative content development. It is a challenge to keep track of people trained and who would need more training. Through ICT organizations can keep trainee details manually; but an Online Training Management System can keep trainee details and schedule the programs. Digital gap between urban and rural the reason to improve ICT for those who have not access knowledge in IT. Although IT provides opportunity for many people; but in the rural area there are many who do not have IT skills, knowledge and those are deprived of these opportunities. Every year trainers are training many people in IT skills. However; the government organization, Non-Government Organization (NGO) are facing challenges to know which people have already been taught IT skills then which level of IT knowledge they have? The Online Training Management System will contain the personal information about the

people also; this system will run directly from www. So; the Government or NGO can know which people from rural area already have IT knowledge and what the next improve they need. It will remove the duplication of same topics training, as it can be accessed from anytime and anywhere. The aim study is to build a prototype of Online Training Management System. The research question: How can we design and develop prototyping of training management system. The significance of study is to keep tracing people which, has been trained and will be trained.

2.0 Literature review

Described, a course management system for university lectures and lab courses, called LCMS, which started as a simple registration tool for students. The problem was signing up for lab courses, examinations and student administration. LCMS has been developed into a powerful system, assisting the lecturer and the lab course administrator in the management of entire courses. LCMS tasks are ranging from course registration, student data administration, creation of course web pages, design and administration of exercises and test sheets, up to the design of certificates for successful course participation. LCMS can do student administration and can easily be adapted to any kind of course management. LCMS mainly focused on course registration are student data administration students may choose to take online training (Meinel, Sack & Schillings, 2002).

Determine about the importance of grassroots ICT development for the community such as they need assessment. The main reason for ICT development does not only to provide information, but also for communication opportunities for the rural poor. They discuss the identification also the process of the content creation for ICT development can help by the local universities; which could play the role as facilitators. The design of product to achieve the development goals id tele-center. Normative prescription; while the expected progress of technology usage to development of ICT (Roman &Colle, 2002).

Policy makers have long hoped that the Internet could bring especially powerful benefits to rural areas; many of which have suffered economic problems as residents migrate to cities and suburbs. Many officials in small towns and rural regions hoped that technology allowed people to communicate easily and cheaply with any modem owner in the world and to access all kinds of information, products and services on the Web would allow people to remain in rural settings while reaping some new social and economic rewards. Rural leaders and technology enthusiasts have dreamed that the Internet's capacity to render physical location less meaningful would in some ways make rural life more desirable. The findings were the type of community in which a person lives is not a very significant predictor for ICT and Internet use. Age, income and educational attainment are stronger. The average age of the rural residents is quite high and this probably affects ICT and Internet penetration rates. Educational attainment is associated with ICT and Internet use in rural communities (Fang 1997).

3.0 Research methodology

This study use research methodology or sometime called improvement research contained the major phases as shown in figure 3.1 (Awareness of Problem, Suggestion, Development, Evaluation, Conclusion).



Figure 3.1: Research Design Methodology (Kuechler & Vaishnavi, 2008, 489-504)

3.1 Awareness of Problem:

The first stage of this methodology is to identify the requirement of the prototype: also understanding objectives and scope of study as well as the problem which are to be solved. The requirement of the system gathered using two techniques (interview and review of the current system). The proposal is the output of this phase, and achieved through the interview, discussion and the literature review. The current system for training management done by manually, it cannot management training by classification for trainee programs or which level reached for him / her. It hasn't the ability to make the registration in training of programs via online servers; even it cannot manage a training programs classification for checking or other events. The trainees in the rural area need effort to do this process.



Figure 3.2: The current system for training management system

3.2 Suggestion:

The study suggests using of training management system to help government and NGO to know and track of people trained and who would need more training. The responsible can easily access training management via online. The output of this phase is the tentative design.



Figure 3.3: The proposed system for training management

3.3 Development:

In this phase the design training management system has been developed to validate the requirement. Prototype is a technique that involves developing a small-scale working model of a system (Oostveen & Van den Besselaar,2004). The prototyping process contains three main steps, as shown in figure 3.3 by interacting with prototype; users can get a better idea of their information requirements.



Figure 3.4The prototyping processes adapted from (Kenneth & Jane, 2000,23-46)

Step1: Develop initial prototype

Based on the requirements that had been identified in awareness of problem, a design training management system has built.

Step2: Use the prototype

In this step, users are encouraged to use the training management system in order to identify errors and measure the efficiency of the functionalities provided.

Step3: Evaluate as operational prototype

In this step, a sample ten of staff and trainees has been selected randomly to measure the use satisfaction of training management system.

3.4 Evaluation

Implementation completed with formal proposed system evaluation. Evaluation data is essential in this process: the purpose of evaluation is to validate the usability for users, anywhere anytime in the country where the result will be online of the proposed system. In other words mean to determine the proposed system meeting user expectations as outlined by the user requirements (Davis,1989).

3.5 Conclusion

This phase is the final step in the research effort. The results consolidated and lead to future works that maybe unify with this application to implement the overall training management system.

4.0 Finding

4.1 System requirements

Requirement is simply a statement of what the system must; Requirements can be Functional or non Functional. A functional requirement relates directly to a process a system has to perform or information it needs to contain. Non Functional requirements refer to behavioral properties that the system must have (Dennis, Wixom & Roth, 2010).

4.1.1 Functional requirements

The success of any system depends on how well it fits the need of its users and its environment. The system functional requirements comprise these needs, and which the requirements are determined.

- **1**) The proposed system will support the admin and staff to do trainee registration by inserting specific details about trainee.
- The system will support the admin and staff to view all the registered user details.
- **3)** The proposed system will provide the admin and staff to update information by (Edit, Delete, and Add) on OTMS database tables.
- 4) The system will support the admin and staff to add training program details.
- 5) The system will support the admin and staff to search trainee details.
- 6) The login operation will be share between the admin and staff by different username and password.

4.1.2 Non- Functional requirements

• Security

Unauthorized person should not use the system, just view the main page. The system can not authorize for the trainee to enter unauthorized page.

• Usability

The system must be easy to deal with. The system must provide easy information for the users. The system must give easy instruction for both of the users.

• Understandability

The system should be easy to understand. The system should identify all the system functionality.

- Reliability
- The system should present the same selected sequence
- Performance
- The system must have reasonable speed according to the technology used to access many of users at the same time.

4.2 Use case diagrams

Use case diagrams are closely connected to scenarios. A scenario is an example of what happens when someone interacts with the system. In our case we have three main Actors which are the admin, staffs and trainer about the main functionalities of admin are management of web site such as manage document by uploading, downloading deleting, Staff also can add, edit, delete class notes, class schedules and program details list (Dennis,Wixom & Roth,2010: Sewchurran, &Petkov,2007).



Figure 4.1: Use case diagram

4.3 Class diagrams

The class diagram is a Unified Modeling Language (UML) diagram that shows the classes that is going to be used in implementation phase. Class design focuses on understand and purpose of class design and where in the lifecycle it is performed (Sewchurran &Petkov,2007).



Figure 4.2: Class diagram

4.4 Database design tables

This study used MySQL relation database management system, the MySQL is very fast database server that is also quite as to set up and use, it is free open source software and functions as a client/ server system that support different back ends, several different client programs and libraries (PHP, Rational rose, Endnote) administrator tools and programming interface (Williams & Lane,2004).

Table 4.1: Administrator

+ administrator + CREATE TABLE `administrator` {
 `admin_id` int(11> NOT NULL AUTO_INCREMENT,
 `username` varchar(30> DEFAULT NULL,
 `password` varchar(30> DEFAULT NULL,
 PRIMARY KEY (`admin_id`>
> ENGINE=InnoDB DEFAULT CHARSET=latin1 +

Table 4.2: Staff

ł	staff ¦ CREATE TABLE `staff` <
	<pre>`staff_id` int(11> NOT NULL AUTO_INCREMENT,</pre>
	'username' varchar(30) DEFAULT NULL,
	`password` varchar(30) DEFAULT NULL,
	`email` varchar(50) DEFAULT NULL,
	PRIMARY KEY (`staff_id`)
)	ENGINE=InnoDB AUTO_INCREMENT=2 DEFAULT CHARSET=latin1

<pre>{ course { CREATE TABLE `course` (`course_no` int(11> NOT NULL AUTO_INCREMENT, `topic` varchar(15> DEFAULT NULL, `leve1` varchar(30> DEFAULT NULL, PRIMARY KEY (`course_no`> > ENGINE=InnoDB AUTO_INCREMENT=5 DEFAULT CHARSET=latin1 ;</pre>
Table 4.4: Calendar
<pre> calender CREATE TABLE `calender` (`calender_no` int(11) NOT NULL AUTO_INCREMENT, `start_course` date DEFAULT NULL, `complete_course` date DEFAULT NULL, PRIMARY KEY (`calender_no`) ENGINE=InnoDB DEFAULT CHARSET=latin1 </pre>
Table 4.5: Trainee
<pre>{ trainees CREATE TABLE `trainees` (</pre>
Table 4.6: Login
<pre> login : CREATE TABLE `login` (`login_id` int(11) NOT NULL AUTO_INCREMENT, `username` varchar(30) DEFAULT NULL, `password` varchar(30) DEFAULT NULL, PRIMARY KEY (`login_id`) ENGINE=InnoDB DEFAULT CHARSET=latin1 ; </pre>

4.5 Interface design

Depending on previous design the system construction includes user interface, system functions.

User login		
User name	:	
Password	:	
		Login

Figure 4.3: User login

register new traineee

Register new	ainee	
Trainee_No	:	
topic	:	
Level	:	
Trainee Name	:	
City	:	
Vallige	:	
Phone No	:	
Date	:	
	Update	

view registard trainee update trainees information delete trainees information

logout

Figure 4.4: Register new trainee

register new traineee

view registard trainee

:	tra_name	1	city	i	vallige	i	reg	İ	course_no	topic	level
	Thamir Naeem Ali Thamir Amar Thamir		Baghdad Suwera Azizea		Askan Hafriea zubidea		2014-03-04 2014-04-06 2014-05-02		1 2 3	Word Word Excel	advance basic basic

update trainees information

delete trainees information

logout

Figure 4.5: View registered trainee

Update trainee information					
Trainee_No	:	3			
topic	:	Excel			
Level	Ξ	Basic			
Trainee Name	:	Amar Thamir			
City	:	Azizea			
Vallige	:	Zubidea			
Phone No	:	0780123456			
Date	÷	2014-5-2			
		Update			

Figure 4.6: Update trainee information

4.6 Evaluation

User acceptance for model that identifies the usability factors in general such as effectiveness, efficiency, satisfaction. However, the generally accepted meaning usability characteristic is specific and assessable element (Jokela & Abrahamsson, 2000: Daabaj,2002).

This study has taken two weeks to perform the usability testing. The total numbers of respondents were 10, where 5 respondents were staff and 5 respondents were trainees. The 10 respondents' comments about the prototype were different than each other. This study evaluates the testing with three categories such as convenience, excellence and performance. Most respondents were concerned to the convenience of the prototype. 3 respondents stated that the prototype responds to their needs. That meaning the prototype is convenience, which makes 30%. However, the evaluation results were 70% respondents state that the prototype is excellence where the total numbers of respondents was 10. The tool used to description and analysis of data is a program SPSS version 15.

	Ν	Mean	Std.Deviation
Q1	10	4.40	0.698
Q2	10	4.00	0.667
Q3	10	3.20	0.443
Q4	10	4.00	1.155
Q5	10	3.60	0.966
Q6	10	3.00	1.154
Q7	10	3.60	1.075
Q8	10	3.70	0.823

Table 4.7: statistics for evaluation of training management system

5.0 Conclusion

Many universities in Iraq are offering Information Technology (IT) project management course the IT training in a rural area is a mandatory. Government and NGOs are also developing capacity in rural area in the development of IT So to eliminate paper based work and avoid repetition of training in the same topics was the main focus all over this study.

In further research works, more usability tests for re-design application with real consumers should be conducted. Interviews with these test persons and evaluation to reach more people will help to shape the system and better meet the user requirements and expectations. The overall results were encouraging but improvement is definitely needed. The recommendations of this study the design of training management system should be implemented and tested using the actual web-server connection on actual PC devices to get more reliable results. The registration system should be upgraded with more useful and beneficial functions according to the user's needs.

6.0 References

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Appendix

SECTION A:

Demographic Background Please kindly tick ($\sqrt{}$) your answers to the given statements. GENDER :

 \square Male. \square Female.

AGE :

 \Box 18-25 Years old. \Box 26-

🗆 26-33 Years old

□ 34-41 Years old.

 \square 42-49 Years old. \square Above 49 Years old.

SECTION B

Website Acceptance

Please check the appropriate column. The numbers 1 to 5 represent the following:

1= Strongly Disagree. 2= Disagree.				ot S		
	Question	1	2	3	4	5
1	Is the online training management system (OTMS) benefit for staff and trainee					
2	Is the online training management system (OTMS) brings a weakness on current system					
3	Would you use this online training management system (OTMS) in future as your first choice to do your course registration					
4	Is the schedule program in the online training management system (OTMS) well organized					
5	Do you think the online training management system (OTMS) can help to improve the current system.					
6	The online training management system (OTMS) is beneficial for the staff and the trainee.					
7	The online training management system (OTMS) can support the staff to manage course registration					
8	The online training management system (OTMS) can provide the different accessing to the database.					

4= Agree.

5= Strongly Agree.