

## **U-Learning: An Interactive Social Learning Model**

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### **Abstract**

*This paper presents the concepts of ubiquitous computing technology to construct a ubiquitous learning environment that enables learning to take place anywhere at any time. This ubiquitous learning environment is described as an environment that supports students' learning using digital media in geographically distributed environments. The u-learning model is a web-based e-learning system that could enable learners to acquire knowledge and skills through interaction between them and the ubiquitous learning environment. Students are allowed to be in an environment of their interest. The communication between devices and the embedded computers in the environment allows learner to learn while they are moving, hence, attaching them to their learning environment.*

**Keywords:** *ubiquitous learning, u-Learning model, web-based e-learning system, learning environment*

### **1. Introduction**

Learning occurs everywhere. It occurs not just in the classrooms, but at home, the workplace, the playground, the library, museum, and even in our daily interactions with others – an informal form of learning.

Ubiquitous learning is a new educational paradigm characterized of providing intuitive ways for identifying right collaborators, right contents and right learning services in the right place and the right time based on students' surroundings. That is, who are the learning collaborators that could provide the student's needs, what are the learning resources and services available, and when and where should the learning take place.

U-learning system is an environment supporting student learning, using digital media in a geographically distributed environment. This environment proposed the implementation of student learning among students within campus, at home and teacher of content producer in u-space which is not limited to traditional learning system.

This paper presents the concepts of ubiquitous computing technology to construct a ubiquitous learning environment that enables learning to take place anywhere at any time. Various e-learning environments, architectural designs, and implementations are examined to include the elements of m-learning extending it to create a u-learning environment.

This ubiquitous learning environment is described as an environment that supports students' learning using digital media in geographically distributed environments. This learning environment modeled the design of a u-Learning Community where learning takes place between students within campus/home and teachers as facilitators in u-space.

U-Learning Community is a web-based e-learning system that could enable learners to acquire knowledge and skills through interaction between them and the ubiquitous learning environment. Students are allowed to be in an environment of their interest. The communication between devices and the embedded computers in the environment allows learner to learn while they are moving, hence, attaching them to their learning environment.

## **2. Background/Rationale**

In the recent years, various e-learning systems have been developed, and these systems are usually implemented either with client-server architecture or are centralized server based. In these systems, the teachers provide the contents, and the students consumes in which these reflects the real world learning scenarios [1, 2].

The m-learning extends the availability of e-learning and has the concept of learning that could be acquired anytime/anywhere. The advantages of m-learning includes: flexibility, cost, size, ease of use and timely application. The devices used include PDAs, mobile phones, portable computers and tablet PDAs [3].

Learning occurs not just in classrooms, but at home, the workplace, the playground, the library, museum, and in our daily interactions with others. Ubiquitous learning as a new educational paradigm is characterized by providing intuitive ways for identifying right collaborators, right contents and right learning services in the right place and the right time based on students surroundings. That is, who are the learning collaborators that could provide the student's needs, what are the learning resources and services available, and when and where should the learning take place [4, 5, 6, 7, 8, 9].

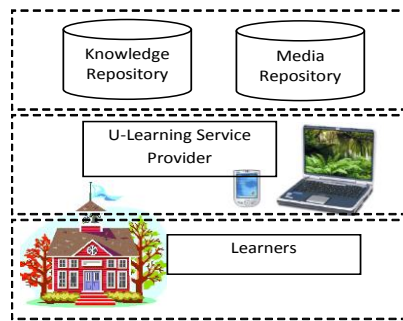
U-learning system is an environment supporting student learning using digital media in a geographically distributed environment. This environment proposed the implementation of student learning between students within campus/at home and teacher of content producer in u-space, which is not limited to traditional learning system [10, 11].

## **3. U-Learning Community Model**

U-learning is a learning paradigm which takes place in a ubiquitous computing environment that enables learning the right thing at the right place and time in the right way. It is an expansion of previous learning paradigms as we move from conventional learning to electronic learning to mobile learning and now to ubiquitous learning.

### **3.1 The U-Learning Community**

U-learning community is an interactive social learning model that aims of accommodating learners in their learning style by providing adequate information at anytime and anywhere as they wish for it. To promote a more effective application of u-learning, a model for the design of an online learning environment is presented.



**Figure 1. A Model of the u-Learning Community**

*Knowledge Repository* refers to a wide range of knowledge domains across various subject areas including math, physics, biology, social science, language, etc. it is being interacted upon by goal analysis, task analysis, learner characteristics and other semantic rules to provide a design for knowledge representation for learners.

*Media Repository* represents the different media to support the knowledge representation in u-Learning. For example, learners can use multimedia tools to create a learning object that contains the new knowledge created by the learner and post it to the web to share with others. Media refers to the use of one medium (e.g., video) or a combination of several media (e.g., video, audio, textbook, etc.) in instruction.

*U-Learning Service Provider* presents information in an interactive and informative way. This may include courses, student's information, teacher's information, etc. The development of the learning content is based on the instructional designs applied to the information stored on the knowledge repository.

Based on the inputs from the design component and domain knowledge analyses in the knowledge repository, the knowledge representation is formed. Various learning modules are formulated to represent the knowledge identified and at the same time the rules of reusability and shareability are applied to the design and development of instructional modules. Unlike the traditional design, knowledge representation enables learners to experience the construction and creation of knowledge through multiple venues, thus promoting a learning process that focuses on the understanding of "how do people know it" rather than "what do people know."

An online instructional program is created to facilitate dynamic knowledge acquisition and creation as well as promote learners' self-initiation and collaboration in learning

Learners are offered the opportunity to increase the implements using the latest multimedia technology, equipment and testing.

Characteristics of u-learning community:

*Permanency*: The information remains unless the learners purposely remove it.

*Accessibility*: The information is always available whenever the learners need to use it.

*Immediacy*: The information can be retrieved immediately by the learners.

*Interactivity*: The learners can interact with peers, teachers, and experts efficiently and effectively through different media.

*Context-awareness*: The environment can adapt to the learners real situation to provide adequate information for the learners.

The u-learning community was designed with the following important concepts.

- *Resources*– students needed one place to find both internal (forms, FAQs, course offerings, etc.) and external information (RSS Feeds, bookmarks, etc.).
- *Community*– students needed a place to collaborate, communicate, and share information such as ideas, photos, videos, news, etc.

### 3.2 U-Learning Community Functionalities

Some of the major features and functionality of the u-learning community include:

- *Dynamic Content* – user generated content can appear throughout the web site in addition to automatically generated content such as RSS feeds of news, journals, blogs, etc.
- *Forums* –registered users can create discussion threads about courses, research, and administration or just about anything.
- *Projects* – registered users can create and manage all aspects of a project and invite others to join the project through an online project management tool.
- *Profile* – registered users are automatically given a profile that can be edited and updated with personal and profession information. They can also create their own friendship networks by accepting and requesting friends within the community.
- *Messaging* –registered users are allowed to send and receive private messages within the community.

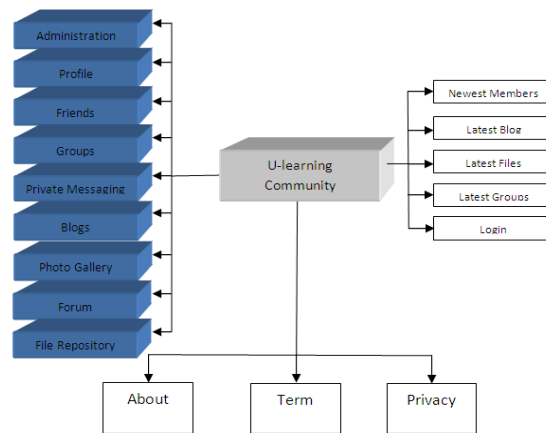


Figure 2. U-Learning Community Web Architecture

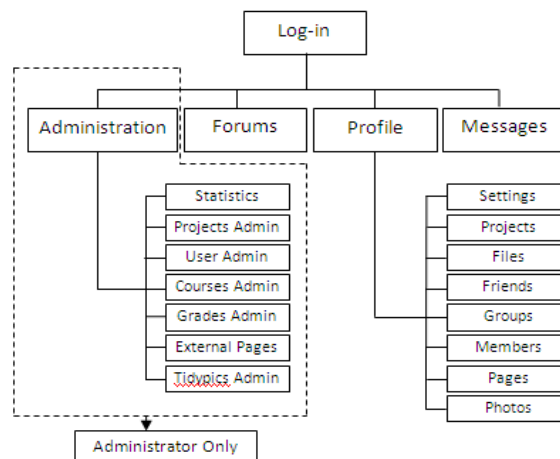


Figure 3. U-Learning Community Web Decomposition Chart

## 4. Conclusion

U-learning is a learning paradigm which takes place in a ubiquitous computing environment that enables

learning the right thing at the right place and time in the right way. It is an expansion of previous learning paradigms as we move from conventional learning to electronic learning to mobile learning and now to ubiquitous learning.

U-learning community is an interactive social learning model that aims at accommodating learners in their learning style by providing adequate information at anytime and anywhere as they wish for it. Hence, u-Learning Community model is web-based and incorporates e-learning, m-learning, and the ubiquitous environment to provide mobility and flexibility to learners as well as the teachers.

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