SEE: A PROJECT BASED LEARNING INITIATIVE TO INTEGRATE ADWC WITH THE LOCAL COMMUNITY

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ABSTRACT

Adapting the independent and project based learning requires real life projects for the students to work on. Such projects require strong support and participation from the local community. However, a mechanism has to be proposed and established to bring about an integral relationship between the higher education institutes and the local community.

Educational institutes should utilize information technology (IT) advancements to improve its delivery methods. Learning by example is a learning method that lends itself effectively to the project based learning using advances in IT in the areas of Organizational Memory (OM) and Organizational Learning (OL).

This paper proposes the SEE project, which is a web portal that: 1) strengthens the ties between higher education institutes and the local community. 2) facilitates for project based learning, where students propose and implement ideas to be sponsored by local organizations, or implement a posted project by an organization with the approval of their instructor based on course objectives. 3) Allows for the use of learning by example method, where the completed students’ projects are stored in the OM and retrieved as examples by future students.

Keywords: Organizational learning, organizational memory, project based learning, case based learning, Knowledge Management, Learning by example

1. Introduction

Due to the dynamic and innovative nature of the work place in today’s business environment, educational institutes are required to provide graduates who can cope with such business nature. Calls have been initiated by different sources to reengineer the education delivery system to meet such task. This change could have not come at a better time, especially with the advances in technology and in e-learning in particular.

Many initiatives have been taken system wide by the higher colleges of technology and by the individual campuses to enhance its educational delivery methods. Abu Dhabi Women’s College [http://adw.hct.ac.ae] is part of the Higher Colleges of Technology [http://www.hct.ac.ae] in the United Arab Emirates, which supports the independent and project-based learning approaches. English is the instructional language, and students have to meet the standards by passing English and Math entrance exams before joining a program of study.

The SEE (Standards, Enhancement, Empowerment) project reflects the educational life cycle offered at our college. Students must meet the standards by passing English and Math entrance exams before joining a program of study, in addition to a qualified high school GPA. The curriculum is designed to enhance the students’ knowledge and educational abilities, which in turn empowers them to join the work force.

Both students and faculty face problems of allocating enough projects for the students to work on. Moreover, there are major differences between the use of hypothetical case studies and projects when compared to real life projects [10, 2]. Local organizations are the best source for real life projects, which triggered the idea of establishing a relationship between the college and local organizations as the best source for these projects.

The SEE project is an innovative idea that serves the students’ needs to implement real life projects as assessed course work tasks. This portal brings the
students, instructors and local organizations together. Local organizations are required to register as members description of the project, deadline date and contact person. Furthermore, organizations can browse through the students’ innovative ideas/projects and ask to sponsor and implement a project at the organization.

Students would post their ideas/projects, browse posted projects by local organizations to find a suitable project to implement, bid for it and get the instructor’s approval on the project. This online process would trigger direct communications between the students, instructor and the organization’s representative to implement the project, which will be used by the organization.

Students respond well to the learning by example method. Hence, the SEE portal builds a repository of examples to be used by both faculty and students in future work. On conclusion of the project, it will be stored in the portal’s repository as a learning case for other students to tap into it, as well as a marketing tool for the implementing students when seeking employment by referencing such projects on their resumes.

This repository will form the organizational memory (OM). Many researchers have presented different models for OM construction and methods for using the OM as a rich tool for organizational learning (OL). SEE uses the case based method in its OM structure. We believe that the use of this method is very suitable for the project based learning approach and the learning by example methods [3].

In order to implement these methods, we have to first define the technological concepts to be used in the SEE portal:

**Knowledge Management (KM):** is the process of acquiring, creating, distributing and using knowledge in organizations.

**Organizational Memory (OM):** can be defined as the way an organization stores organizational knowledge and applies it to present activities.

**Organizational Learning (OL):** is the development of shared meanings and interpretations of those meanings to enhance future activities.

Section two presents a literature review of organizational learning. Organizational memory is presented in section 3, where as the SEE structure and Tool are presented in sections 4 and 5 respectively.

in the SEE portal before they can load their projects. Each project must include, among other information, additional information about the project.

### 2. Organizational Memory

Organizational Memory (OM) refers to the process of storing documents and artifacts of the organization in a way that can be retrieved and re-interpreted effectively in the future. It includes the processes of storage and retrieval. Hence, *storage* is the retention of information since it is important for organizations to retain its experiences and information for future use. *Retrieval* is the ability to reuse the previous experiences stored whenever they are needed [3].

We need a new definition of the OM, which is domain or purpose dependent definition. Mostly, the OM has been approached in the literature in the context of organizational procedures and practices. The growth of e-learning will present new demands and challenges to the educational organizations, however. The challenge is in designing and utilizing the OM for the students’ learning purpose not just in the organizational business process. Such change of role requires innovative educational delivery methods as well as competitive methods in utilizing the OM. Hence we present the learning by example and personal resume link uses of the OM.

Ask Jasper [4] is a system that supports middle school students as they learn the concepts of practical geometry. A performance support database of example designs with accompanying rationales and procedural guidance is provided as a design resource. Ask Jasper provides direct examples (versus examples by analogy to other design tasks) because less successful students would have difficulty in transferring the associated procedures and issues across domains. Ask Jasper is a learning tool that utilizes the OM and learning by example methods. This supports our argument that we need to think outside the box, meaning that we need innovative ideas in applying existing technologies in different domains. Furthermore, these ideas should be objective driven.

### 3. Organizational Learning

Leaders and managers of firms worldwide have “seized upon organizational learning as a coherent response to pressures emanating from significant changes in the business environment” [5]. As a result, organizational learning is considered an essential process for organizations to remain innovative and competitive. It enables them to make sense of their environment, understand their relationship with it, and adapt and adjust to changes in order to remain competitive in the marketplace [6, 7, 8, 5, 9, 10, 11]. Organizational
learning has been defined and conceptualized in various ways, but essentially it represents change in awareness and/or practice among organizational actors for the purpose of improving organizational performance [7, 8, 9].

Learning involves the process of studying something and becoming skilled at it. It is concerned with education, knowledge, and wisdom. It is gaining knowledge from others and getting meaning out of experiences that have occurred earlier.

Organizations are increasingly paying attention to the concept of organizational learning in order to increase competitive advantage, innovation, and effectiveness. “Organizational learning is a competence that all organizations should develop”\(^1\), and is defined as “the acquisition, application, and mastery, of new tools and methods that allow more rapid improvement of processes whose improvement is critical to the success of the organization”\(^2\).

Most organizations in today’s work practices are constantly faced with environmental change to which they must adapt. There is also increased pressure on these organizations to produce workers/employees prepared for the knowledge-driven economy, as well as to serve as both a source and a producer of knowledge.

So many assumptions have been made with regard to the matter of business improvement through organizational learning and organizational memory. Different studies have been made about the effects of organizational practices on its process of exchanging data, information and knowledge.

An intelligent and competitive organization is the one that successfully uses its knowledge to enhance performance and compete with other organizations through the intelligent use of its own experience over time. The use of such experience makes it a learning organization that is skilled at creating, organizing and sharing knowledge.

Organizational Learning is not only essential in an organization but also has to meet the following goals:

- Retain an organization’s competitiveness
- Improve productivity, innovativeness, adaptability and efficiency during the times of change
- Enable a more effective response to a dynamic environment
- Increase information sharing and communication \(^{[14]}\)

**OL in Educational Organizations**

The above literature presentation of OL is mainly in the context of business organizations. However, our context is in educational organizations. We believe that most of the above concepts are applicable in the educational context. Without a doubt organizational learning increases the process of information sharing and communication. This is very well represented in the educational concepts of:

- **Pear tutoring:** where students learn from each other directly.
- **Learning by example:** students learn from other students’ work that was done previously for the same or a similar course.
- **Independent learning:** this method requires students to tap into different resources such as peers, libraries, Internet, etc. to acquire the needed information and knowledge. Hence, the educational institute must facilitate such resources to its students in this context.
- **E-learning:** promotes independent learning, where students need to take the initiative of posting their ideas or search and book a project –online- to work on. Furthermore, students would search the OM for appropriate examples and learn from it.
- **Project based learning:** Among other things it promotes team work, information sharing and communication skills \([1, 2]\)
- **Market driven learning:** this is a new concept that we introduce here to emphasize the integral relationship needed between the local organizations (as the potential employer of graduates) and the educational organization’s delivered content \([1]\).

Moreover, the issue of competition between educational organizations is a two-way competition:

1- **Institution based competition:** educational institutes compete among each other based on ranking, enrollment, fund raising etc. Hence the better programs that an institute present should play a major role in such competition.

2- **Graduates competition:** The students of today are the graduates of tomorrow. It is the graduates of all educational institutes that end up competing for the available jobs in the local market.

The SEE tool brings about a strong integration between the institute and its students on one side and the local organizations on the other. Such integration supports the institute in its two types of competition.

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\(^1\) Chris Argyris, 1999 \([12]\).

\(^2\) Defined by Arthur M. Schneiderman, 2000 \([13]\).
Impact of Technology on Organizational Learning

Issues about the relationship between information technology (IT) and organizational learning are becoming more critical as IT is becoming a focal point in organizations. We believe that in order to understand the role of IT in organizational learning, we need to focus on the relationship between learning theories and understanding technology. Technology (especially information systems) can help achieve effective organizational learning, hence improving organizational performance. Information systems can facilitate the learning process by supporting the processes of knowledge management, information distribution, information interpretation, and organizational memory.

The best way organizations can maintain valuable knowledge and support organizational learning is by using information systems to store and retrieve it. As applications are developed, more studies are needed to evaluate the effectiveness of such information systems in encouraging organizational learning.

4. SEE Structure

The SEE portal is a multi purpose portal that serves different requirements of any higher education institute. The main points that we are focusing on at this stage of the system are the following:

1. Real life projects
2. Learning by example
3. Recruitment
4. Events

However, the recruitment part of the system will not be piloted at this stage due to other existing college plans for a recruitment portal. Figure 1 shows the home page of the SEE portal with projects, events, and job offers being the main navigations.

Architecture

SEE is a multi purpose portal that supports real life project based learning, learning by example, along with other added value services. The OM part of SEE employs the case based method. A literature review shows many OM and OL based systems that use this method such as HICAP [15], SEE D [16] and BORE [17].

Project based learning: SEE is divided into three major components:

1. The Portal: which is the host of all the activities that take place between the actors. The portal houses the innovative ideas proposed by the students to be adopted by organizations, and projects proposed by the organizations to be booked and implemented by the students as shown in Figure 2.a.

2- Actors: are the students, instructors and the local organizations that interact and communicate through the portal.

3- The OM: it is the repository of all finished projects as shown in figure 2.b.

One of the major problems that instructors in our college face is allocating enough suitable projects for students to work on. This is a major requirement when adopting independent and project based learning, which our college does in many advanced courses. So teaming up with the local community, as a rich source for such
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projects, works as a great idea that serves many objectives. Some of these objectives are real life project based learning, integration between the college and the local community, takes away some of the burden off of the teacher who constantly needs to come up with new projects, encourages students’ innovation, etc.

**Learning by example:** Another major issue that we face with our students is their need to view similar examples to their assignments. It is fairly easy to provide few examples to a specific problem or scenario. However, when dealing with different scenarios, an instructor does not have the time or, maybe, the resource to provide enough examples to each scenario.

It is a fact that students respond well to the learning by example method. Hence, the SEE portal builds a repository of examples to be used by both faculty and students in future work. Those examples are simply the finished projects worked on by previous students and stored in the OM. Teachers are very familiar with these stored projects and should be able to direct the current students to finished projects, see figure 3, as examples to be used in implementing the current tasks.

![Figure 3. Learning by example](image)

**Added value (recruitment):** other focus issues for the SEE portal, as shown in figure 1, are the Events and Job Offers. Events are, mainly, used by the local organizations to list any conferences, seminars or any other activities that would be of interest to students as well as teachers. Job Offers is used by local organizations to post any vacancies, where the students can apply to them through the SEE portal directly. The students also use it to post their resumes to be viewed by the organizations for possible recruitment, as shown in figure 4.

![Figure 4. Added value features of the SEE portal (recruitment)](image)

5. **SEE the Tool**

SEE is a web-based portal that was implemented using visual basic.net, ASP.net, HTML and Access as the back end database. However, we realize that Access would need to be replaced with a more powerful database such as SQL, Oracle, etc.

Figure 1 shows the home page for the SEE portal. Users of the SEE portal must be registered members in the system as Students, Organizations or Teachers.

**Users’ Roles**

The member student can post an innovative idea or search for a posted idea by a company. The student would go through the search results (figure 5) and read through the project details (figure 6) results of the search, book an idea and designate the course and teacher for approval. Once the student receives the approval from the teacher she can start working on the project. The same is true of a company that showed interest in a student’s posted innovative idea.

![Figure 5. the search results](image)

Once the teacher logs into the portal, he gets a list of the booked projects by his students, which he needs to approve or disapprove the booking based on the course and assessment goals. The teacher also needs to be part of the communication between the student and the organization. On conclusion, the teacher assesses the student’s work and rewards a grade.

A member organization posts project ideas for students to work on. The company’s representative must work with the student and supervising teacher to assure the accurate completion of the project. Organizations also can book an innovative idea to be adopted by them. On conclusion of the project, the organization’s representative needs to fill an evaluation form for the student.
6. Future Work

All what we have done so far is present the idea of the SEE system and developed version 1 of its portal. In our next phase we plan to test it and add more features to it.

System testing
Thus far we present the idea and developed and hosted the tool. Just recently, we proposed the use of the system by our college. The top management along with the educational technology department has approved our request to pilot the SEE system for a selected set of project based courses in the IT and E-commerce departments.

Additional features
We need to add an admin interface for marketing and performance analysis. This interface is essential for the educational organization to measure the success of the system and to generate all kinds of reports and results about the effectiveness of the system.

For better learning by example, the system should support a Multi Dimensional Search (MDS). When students search for an example project, they search by category i.e., MIS, Ecommerce, Oracle, etc. This search does not take into consideration the course level of the project or the teacher’s expectations. Hence the MDS takes into consideration the following:
Subject: search based on a subject area of programming, web design, etc.
Teacher: It is a fact that teachers vary in expectations of their students. Knowing the teacher who supervised the project would help understand the teacher’s expectation.
Course: search based on a given course code to insure the exact level of expectation. For example you could search by subject “Web Design” and get the following projects among others AIMS and e-kidsmath. You would get the same projects if you search by teacher Alshara, too. However when searching based on the course ITEC451 (fourth year level) you get AIMS and e-kidsmath for ITEC222 (second year level).

7. Conclusion

This paper proposes the SEE system, which is a multi purpose system that promotes organizational learning and the integration between the educational institutes and the local organizations.

Project based and independent learning methods require teachers to provide the students with projects as well as divers examples based on the given projects, which proved to be a very difficult task. The SEE system is built around the fact that local organizations are the suitable source for such projects. The organization would post a project to be worked on by the student or adopt an innovative idea posted by a student.

Students work on real life projects as part of their assessed course requirements, and learn by example by tapping into the system’s OM, which contains the work of other students. The finished work of current students will be stored in the OM to serve as examples for future students.

The SEE system, which is implemented as a web portal allows for added value features such as the recruitment and events features. More features can be added based on the educational institute’s needs and practices.

Acknowledgement: Najwa AlBuraiki, the BAS class of 2002

References


