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Learning Knowledge Management Concepts via the Use of a Scenario Building Tool on an E-learning Platform

Teresa B.Y. Liew[1], Eric Tsui, Patrick S.W. Fong, Adela Lau

Knowledge Management Research Centre,
The Hong Kong Polytechnic University
{Teresa.Liew, Eric.Tsui, bspafong, adela.lau}@polyu.edu.hk

Abstract. As e-learning or blended learning is more and more popular these days, but with the lack of certain tools, most of the e-learning objects are just simple power point files, pdf files, word documents, HTML files or simple flash files uploaded to a Learning Management System. On many occasions, instructors cannot devote sufficient energy nor time to develop more interesting flash or animations for their subjects. In this paper, we proposed a scenario building and execution tool that supports the learning and application of knowledge harnessing and sharing techniques for knowledge management subjects. This system takes a Web 2.0 approach which ultimately not only instructors but learners can also contribute to scenario building and executions.

Keywords: E-learning, Knowledge Management, Scenario Building Tool, Authoring Tool

1 Introduction

How do we apply what we have learnt in Knowledge Management? How much can we apply what we have learnt from the course into real life experience? How do we know what we apply is correct or not? Most of us have lots of answer to that question for the particular subject we are teaching, but it does not always satisfy our audience. Occasionally, someone will get right to the heart of the matter by asking, " I understand what worked or didn't work for the organization in the case study, but can I really build knowledge management skills simply by reading about what others have done and discussing on or by just attending a course?"

In short, students (aka learners), managers and employees want to actively practice skills and competencies as part of what they have encountered or learnt from a knowledge management program. They want to take active learning to a whole new level. Active learning certainly beats passive learning, but are case studies sufficiently active? Can we enrich the experimental learning that takes place in our organizations

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[1] Corresponding author e-mail Teresa.Liew@polyu.edu.hk

and thereby enable people to improve by actively practicing the art of knowledge management?

After working with both master level students and participants in executive in industry, the authors started to think about adding another new dimension to learning. Could one go beyond reading and talking about what the executives should have done in a case study and create a mechanism to give the learners more real-life experience and more visualization in knowledge capturing, knowledge sharing, knowledge discovering and knowledge application? How can they know and demonstrate their competency in a specific area?

All the above questions led the authors to experiment with a cognitive approach rather than a behavioral approach to online learning. Scenario building on e-learning platform, in which learners are able to use more interesting online technologies to acquire information, make decision, and obtain immediate feedback on their choices are those of their colleagues in a particular subject is a promising and interactive way of enhancing the demonstrating the learning experience.

But will instructors willing to devote their time, attention and energy to outline and build the scenario? How can we help them to get the most out of their time and energy to spend time in building one scenario? One of the main problems is the lack of tools to effectively build scenario(s) in the current market. Most of the tools need special training or skill in order for instructors to be able to build one scenarios. Besides, for the few KM simulation tools on the market, the very scenarios inside these tools are pre-built and cannot be changed by people other than the developers [1] [2] [3].

In this paper, our primary focus is on the possible ways to develop the potential of instructional design tool and authoring tool for building scenarios for Knowledge Management Subjects into an e-learning platform.

The content of the paper is as follows: In section 2 the authors describe what are Knowledge Management, Knowledge Management Scenarios, and sources of the Scenarios. In section 3, the proposed system and the conceptual diagram are briefly described. In section 4, the proposed scenario building tool is explained in detail. Section 5 explained on the tool deployment and target usage. We draw our conclusion and future work in Section 6.

2   Knowledge Management, Scenarios and Their Sources

In this section, knowledge management, knowledge management scenarios and sources of these scenarios are discussed.

2.1   Knowledge Management

Knowledge Management (KM) is an inter-disciplinary field with wide applicability in many industries and organization in today's knowledge-based economy. In contrast to many other academic disciplines which the validity and performance of a new found technique are vindicated by results carried out in laboratories, success in managing knowledge is often judged by the adoption and effectiveness of the deployed KM

initiatives by the daily activities carried out by the involved parties, at the organizational, group and personal levels.

KM may simply be defined as doing what is needed to get the most out of the knowledge resources (e.g. people, repository, practice, etc.). KM is viewed as an increasingly important discipline that promotes the creation, sharing and leveraging of an organization's knowledge. Thus, it can be argued that the most vital resource of today's enterprise is the collective knowledge residing in the minds of an organization's employees, customers and partners. Learning how to manage organizational knowledge has many benefits, some of which are readily apparent, others are not. These benefits may include leveraging core business competencies, accelerating innovation and time to market, improving cycle times and decision making, straightening organizational commitment, and building sustainable competitive advantage. In short, they make the organization better suited to compete successfully in a much more demanding environment. Organizations are increasingly valued for their intellectual capital [4].

In general, KM focuses on organizing and making available important knowledge wherever and whenever it is needed. The traditional emphasis in KM has been on knowledge that is recognized and already codified. This includes knowledge about processes, procedures, intellectual property, documented best practices, forecasts, lessons learnt, and solutions to recurring problems. Increasingly, at a personal level, KM has also focused on managing important knowledge that may reside solely in the mind of an organization's experts [4].

2.2   Knowledge Management Scenarios

According to David A. Kolb, experiential learning is a learning process whereby knowledge is created through the transformation of experience [5]. This learning and teaching philosophy had gained ample recognition over the years and is used in various educational and training settings in different forms. In this paper, we also classify the scenario-based approach that we use as experiential learning.

The scenario approach to knowledge management is an innovative participant-centered learning and teaching pedagogy, which emphasizes the use of experience as a significant source of learning. For example, in management courses, business simulation games have been used as supplementary teaching and learning tools to help business students apply previously acquired knowledge to solve real-world problems.

Learners enjoy watching more fancy flashes or animations while study using e-learning platform in which they willing to devote their time and energy to study online. This observation led us to explore the feasibility of using a scenario to supplement or replace the teaching of a variety of knowledge management subjects. We hope that we can improve learners' decision-making skills and knowledge application skills with KM scenarios. These scenarios often reflect the real world situation and practicality of some taught KM concepts.

However, in many business simulation cases, instructors often test learners on their knowledge of the material (aka the behavioral approach), but are left to wonder if they are actually able to apply the concepts [6].According to previous research, one

of the most difficult practical problems in teaching and learning with business simulation games is finding ways to get students to rigorously apply the knowledge and skills they have acquired in class or through online learning to their decision making in a game simulation [7]. From their experiment with business school students, Mandl et al (1992) confirmed that students using a computer-based simulation game had serious deficits in knowledge application and in problem solving using their previous knowledge or learnt knowledge [8]. In addition, one of the major problems of business simulation games is that learners often become very non-reflective and non-analytical about what they are doing during their game play [9].

Throughout our research, we have so far conceived three types of KM scenarios. The first type of scenario is to illustrate a single technique/concept in Knowledge Management e.g. After Action Review (AAR), Knowledge Café, Peer Assist. This type is analogous to the learners perusing some online content thereby gaining knowledge of a new concept. The second type of scenario is by staging a conversational role play among several subjects, the learner is asked to provide an assessment or some form of participative input in an interactive manner. This type of scenario often involves the learner to apply decision making and/or problem solving skills through which their learning of the concept is enacted and reinforced. The third type of scenario is a combination of the first two types and the learner may be further asked to provide a reflection of what he/she has learnt via some open end questions. This type of scenarios is the most complex of the three and requires the learner to recall and apply, among other things, what they have previously learnt in order to complete the current scenario.

2.3   Sources of the Knowledge Management Scenarios

Since sources of KM scenarios are quite scarce, after some further investigations, the authors have identified the following list as sources for developing the KM scenarios:

1.   KM Method cards which provide many commonly used KM methods [10]
2.   Knowledge worker archetypes[11]
3.   KM competency framework [12]
4.   Existing KM scenarios in HKCyberU Master Course in Knowledge Management [13]
5.   New or simple scenarios as collect from consulting practices by KM specialists from the Knowledge Management Research Centre, The Hong Kong Polytechnic University [13]
6.   Composite scenarios which is the combination of one or more of the above sources/scenarios

2.4   Problem Statement

This study starts from these fundamental facts and questions: KM scenarios are required to let learners to acquire the skills to understand the applicability, scope and limitations of a technique, as well as apply the learnt technique in pre-composed scenarios. But how can one encourage instructors to build scenarios? As things stand,

it is not a must that instructors must build scenario for one course. Because it is not always clear that learners will learn what they are supposed to from accessing scenarios, or that they will be able to apply what they have learnt in class to real-life situations, either during or after accessing the scenarios. Besides, the most important fact is that without an appropriate tool, instructors might need to devote energy and time to build one scenario. They might need special training or skill or hire one designer to build scenarios for that course. Furthermore, the level of IT literacy among instructors can vary enormously and one cannot assume that all instructors are at ease with the use of scenario simulation and building tools. There are a lot of tools in the market that could be used for scenario building such as Adobe Flash Designer, Google sketching tool or others. The author's team has conducted a comprehensive evaluation of these tools and the results will be published in a different article. However, nearly all of the mentioned tools require special skills such as drawing skills or some might need special training and/or commercial license in order to be useful. Besides, all the interaction in the scenarios such as conversation, character walking from one place to another place could not be done in one click or one drag and drop.

During our study, we found out that for KM course, only KM simulations or games are available in the market and all of these are prebuilt scenarios application such as KM Quest [1] which is computer based simulation or KM Game [2] which contains lots of pdf files or word documents which required learners to finish it as in normal face to face class. One famous computer-based business simulation game, titled Launching a High-Risk Business [3] is one example which started with a few informative video clips about the challenges of starting a new business. A guide introduces the simulation to the user and users just follow as per instructed or key in his/her own decision. All these are just pure computer-based simulation and fall short of what scenario building and execution systems can do.

3   Proposed System

In this section, the proposed system based on the above facts and questions from section 2.4 is presented.

This paper aims to provide a learning and simulation system to support the learning and application of many prevalent knowledge harnessing and sharing techniques commonly encountered in the workplace. In particular, specific scenarios can be easily and quickly created by an instructor or online facilitator to reinforce the learning outcomes for the learners. The same platform can be used for the learners to acquire the skills to understand the applicability, scope and limitations of a technique, as well as apply the learnt techniques in pre-composed scenarios.

All types of knowledge management (KM) techniques will be considered for inclusion as individual learning topics into the proposed platform. Such techniques may include, for example, technology-based KM systems, people-based (including both personal and team-based) KM, and process design.

It is assumed that a traditional E-Learning system will continue to serve as the primary platform for delivering the E-Learning environment. A learner would still pursue the necessary reading and activities as guided by the online learning content.

The proposed learning and simulation system complements the above operation by demanding a learner to go through certain interactions and assessments before he/she is deemed competent to apply certain learnt techniques. Depending on the learnt techniques and achieved competency, a learner may be asked to tackle specific scenarios to attest their knowledge on applying the technique(s) with due attention to the specific constraints that are revealed, directly or indirectly, in the scenarios. Examples of constraints are the "knowledge is power" mentality, no budget for KM initiatives, subject matter experts in dispersed locations, core knowledge concentrated in a small set of staff, and high proportion of staff approaching the retirement age. Accordingly, there is a set of pre-defined attributes that governs the characteristics of each technique. Such attributes include the pre-condition, outcome, cost, time to yield, and accompanying condition(s).

A learner may be asked to "revisit" a learnt topic for an update or refresher. The gained competencies can also be "carried forward" from one subject/semester to another subject/semester reflecting the gradual maturity and gaining of experience of a practitioner in the real world. Several basic scenarios can be combined to form a lengthy complex scenario. The competency card will be updated and can be ported across subjects (and eventually across E-Learning systems).

Up to now, the authors are unaware of any similar training and simulation system that is specifically on KM topics. KM is a very practical field but nearly all the training in this field is delivered in the traditional classroom environment[2]. While this will no doubt remain a principal way of delivering effective learning, learners only have a limited number of opportunities to apply their learnt concepts and perhaps exploit new ways of solving real world problems. Right now these opportunities are manifested in the way of mini-projects, invited lectures and site visits. In a semester of training, there can only be a small number of these activities/events. The proposed system, with a growing library of pre-stored KM tools (which serve both as learning content and techniques to apply) and implanted scenarios, provide learners with a lot more opportunities to try out their learnt concepts and obtain feedback on the effectiveness and applicability of various techniques.

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[2] One exception is the HKCyberU's Master of Science in Knowledge Management program which is delivered in a blended mode (www.hkcyberu.com)

3.1   Conceptual Diagram
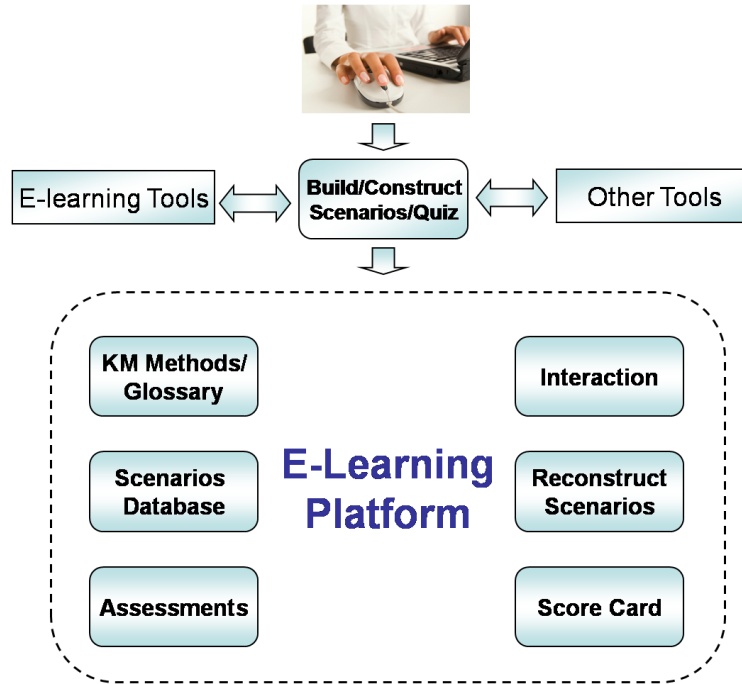
Fig. 1. Conceptual Diagram of Proposed System

The conceptual diagram of proposed system is shown in Figure 1. Instructors can use the proposed tool to build and construct a scenario or can use rapid E-learning tools such as Raptivity [14], Respondus [15], Wondershare Quizcreator [16] and others to build the quizzes or assessment. Then all the built scenarios and assessments will be uploaded into E-learning platform. In the E-learning platform, we have different components which consist of KM Methods/Glossary, Scenarios Database, Assessments, Interaction, Scenario Builder and a competency score card.

As for KM Methods/Glossary component, it will contain all the necessary readings and activities for the learners before or while accessing the scenario databases. Scenario databases store all the built scenarios by the instructors. As for Scenario databases, we are planning to further classify into more details such as KM tools, KM methods, KM approaches etc.

4   Proposed Scenario Building Tool

In order to design and suggest an appropriate tool for building a scenario, the authors had come out with the requirements below for the proposed tool:

- Easy to use even for a non IT-savvy person

- Drag and Drop Script
- Artefacts library
- Scenarios library

The tool that we propose, to some extent, is an authoring tool to build a scenario. With refer to MIT scratch project [17]; we have redesigned the UI and functions of Scratch based on our requirements. The example of user interface (UI) of the proposed tool is shown as in Figure 2.
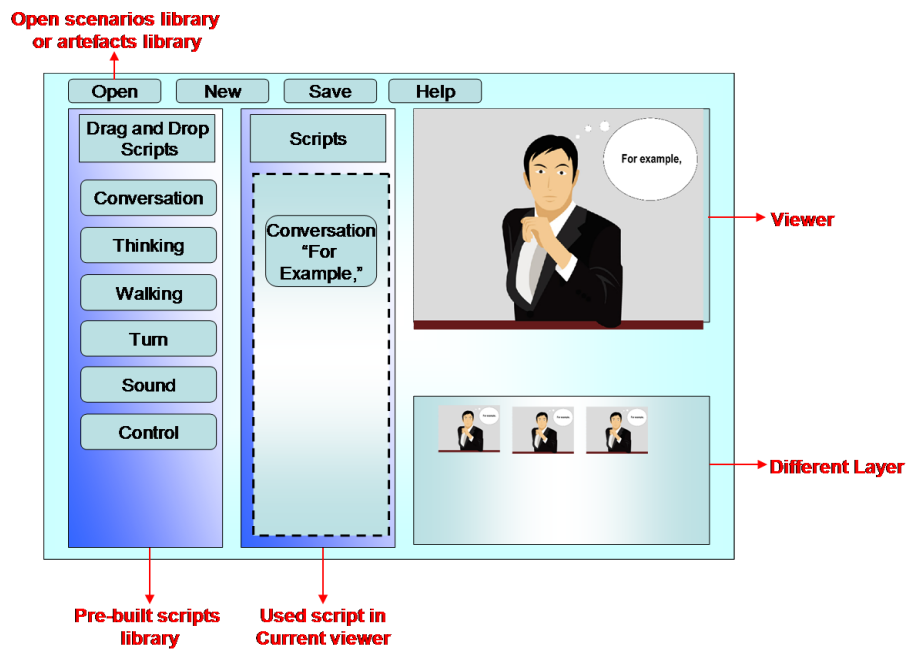

Fig. 2. Example of UI of Proposed Tool

As shown in Figure 2, the proposed tool should keep the required KM scenarios and artefacts libraries. While instructors click on Open menu, instructors can choose from the scenarios library for existing scenarios or from the artefacts library to build a new scenario from scratch. Besides, as shown in the left hand side corner it should also contains prebuilt scripts which allow instructors just to drag and drop all the required scripts to the scripts viewer besides it. On the right hand corner, it is a viewer of the current building scenario. At the bottom of the viewer is the viewer of different layer of the built scenario.

In conclusion, the proposed tool should be easy to use and the functions provided should be not complicated.

5   Tool Deployment and target usage

At the time of compiling this paper, the evaluation of the platform has been completed and a tool has been chosen. Drawing from the listed sources above, the authors are developing several scenarios to be encoded into the chosen tool. It is anticipated there will be a balance of the three types of scenarios in the initial version of the system. A separate Web-based interface is also being developed so that the user can perform manipulations on the scenarios and the competency score card in one single interface.

As for the deployment of the initial system, the authors intend to conduct trials with the participants (altogether 130+ as of May 2009) of the HKCyberU Master of Science in Knowledge Management program. This group of targeted users is considered to be very appropriate. Firstly, they are learners in the area of Knowledge Management. Secondly, as this master program already operates in a blended E-Learning and face-to-face mode, learners are also familiar with the basic operations of an E-Learning platform (in this case WebCT). Thirdly, as many of the learners in this program are also KM practitioners, they can also help in providing the much needed feedback as well as help in refining and contributing new scenarios to the library.

6   Conclusion and Future Work

In this paper, we have presented an analysis of what is the needed of scenarios in knowledge management subjects and also sources of knowledge management scenarios. Besides, we also proposed a system which integrates with our proposed scenario building tool for the use of instructors to build simple and complex scenarios in a go. From our study, to be successfully adopted by instructors, the scenario building tool needs to be very user friendly. Nevertheless, instructors can transfer their practice knowledge into scenarios with ease. Our challenges for future developments of this project are the identification of the various controls and pedagogical interactions needed for the targeted scenarios to be developed and also the development of a KM competency scorecard.

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