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ABSTRACT

Experiential learning, an effective method in business and MIS courses, has been limited by instructional formats and teaching resources. But with the advent of Web 2.0 and its rich set of social networking and mass authoring tools, a shift in learning from delivery to experience is forming. In this paper, we propose an experience-based, outcome-driven pedagogical model that is particularly suited for MIS courses at the MBA-level, and offer case studies to exemplify such implementations. We also discuss the advantages and challenges with this model based on our initial experience.

Keywords: Experiential learning, Web 2.0, outcome-driven model, MIS

Introduction

Experience is a powerful medium for learning. Experiential learning, referring to the encounter that learners experience, has received much attention among scholars and practitioners as an effective way of instruction (Biggs, 2003; Kolb, 1984; Laurillard, 2002; Lave and Wenger, 1991; Schön, 1987). In management information systems (MIS) curriculums, schemes and media have been proposed to enhance this methodology, such as case studies (Gackowski, 2003; Hackney et al., 2003; Kerr et al., 2003), games and simulations (Connoly and Stansfield, 2006; Nuldén and Scheepers, 2002), student-driven approach (McBride, 2005), and consulting projects and business plans (Huang, 2006; Tabor, 2005). Properly designed and executed, experiential learning can not only be used to supplement other teaching methods but play the main role of achieving desired outcome of a course. But due to many restrictions—not the least of which are the limited instructional resources offered by the traditional teaching environment despite the appeal—truly experience-based courses are difficult for form. Addressing these limitations, such as reconciling the differences between online and classroom teaching (Buzzetto-More and Alad, 2006; Heinze and Procter, 2006; van der Rhee et al., 2007), often demands attention by instructors and distracts them from focusing on the truly important learning goals.

In this paper, we propose a different approach to achieve experiential learning by taking advantage of tools made available by Web 2.0. With its many forms such as social networking and mass collaboration, Web 2.0 has had a great impact on the everyday life of people—the younger generation in particular—and is slowing changing the way business is conducted. A few early adopters in education, recognizing the potential of Web 2.0 and its associated tools, have also incorporated the concepts and practices (Chaker, 2007, Turban et al., 2007). We argue that, when applied to business education, and MIS courses in particular, these tools effected a paradigm shift in instruction, enabling an experience-based pedagogical model that is driven by learning goals. This new approach enables instructors to design and structure courses based on desired learning outcomes, not instructional formats.

The rest of the paper is structured as follows. We first provide an overview of Web 2.0 and its associated tools. The shift in learning, enabled by these tools, is then discussed. In the ensuing section, we propose an experience-based, outcome-driven pedagogical model and describe its implementation using case studies. Finally, we discuss the advantages and challenges of the model, and offer some directions for future research.

Web 2.0 and Business Education

A phrase coined by Tim O'Reilly of O'Reilly Media in 2004, Web 2.0 refers to the "second generation" of Web-based services that emphasize online collaboration and sharing among users (O'Reilly, 2005). Some regard Web 2.0 as "participation web," as opposed to the original web as mostly information sources (Decrum, 2006). Its exact meaning remains open to debate, but the term often refers to one or all of the following:

- The transition of websites from isolated information silos to platforms of growing content and functionality, with an architecture of participation that allows users to contribute, manage, share, and own their data;
- A social networking phenomenon embracing an approach to generating and distributing web content in an open, decentralized, and conversational fashion by and for end users; and
- Use of improved worldwide web technologies such as weblogs, social bookmarking, wikis, podcasts, online videos, RSS feeds (and other forms of many-to-many publishing), social software, and other web services.

Since late 1990s, websites— MySpace.com, wikipedia.org, del.icio.us, Secondlife, and Youtube are some of the most prominent examples—that embody such characteristics have been created and often thrived. In addition to those websites, concepts and techniques of Web 2.0 have been adopted by broad-based Internet service companies such as Yahoo!, Google, and eBay. More recently, companies are also starting to embrace Web 2.0 as a tool for conducting businesses in both internal operations and external customer and vendor relationships (Carr, 2007; McAfee, 2006; King, 2006).

Web 2.0 as Education Tools

As influential as it seems to the business and social use of the Internet, Web 2.0 also offers tools that can enable new approaches to education. This potential is slowly being recognized among educators, as indicated by, for the first time, the inclusion of Web 2.0 concepts in a recently published MIS textbook (Turban et al., 2007). In this section, we discuss a few of these tools and their implications. As tools are being updated frequently and new ones are being created often, this list is by no means exhaustive. Rather, it only offers a partial snapshot of what we believe those that can be readily adopted in an MIS course.

Weblogs

Weblog (or blog for short) is an online journal or diary, presented in a reverse chronological order, kept and updated by the author (the "blogger") and open to view and comment by others online. The underlying technology is not sophisticated, but the impact is significant. Anyone with an interest in offering his or her knowledge or opinions on any topic can do so with a weblog, and a lively online discussion can be generated as a result. And access to blogs can be open or closed, depending on the settings the blogger prefers. This is arguably the most popular Web 2.0 tool among business faculty, because it is easy to set up and enables timely update and dissemination of information. For instance, an IT professor can use a blog to post important events and their analysis for an MIS course, and students can read, comment, and discuss the postings at their convenience, extending the educational experience beyond face time. Such a weblog can be done on public Internet access for free (via providers such as blogger.com or vox.com), or it can be hosted on a private server with off-the-shelf software.

Wikis

A wiki refers to (1) a website that allows visitors to add, delete, and otherwise edit all available content, with or without the need for registration, or (2) the collaborative software itself—the so-called "wiki engine"—that facilitates the operation of such a web site. The ease and the open, unsupervised nature of interaction and operation make a wiki an effective tool for mass collaborative authoring. There are multiple ways that a wiki can be used for an MIS course. "Wikipedia," perhaps the most popular wiki, is an excellent source for technology trends and terms, because it is composed, edited, and updated by many of the tech-savvy visitors. Alternatively, instructors can maintain wikis for the courses they teach; and by allowing other instructors or even students to contribute, such wikis can have rich and up-to-date content. Wikis can be implemented either on the web or as an application hosted on a private server.

Office 2.0

Although Microsoft Office has become the *de facto* standard for business programs, web-based office productivity applications—such as Google's Docs and Spreadsheet and Thinkfree office—are taking shape and gaining popularity. With these "Office 2.0" applications, users can perform office tasks such as word processing or spreadsheet calculations, as well as store and access files, online. Perhaps more interesting as a potential instructional resource, these applications allow users to publish their documents for collaboration or sharing, representing a ideal platform for team projects. Many of these Office 2.0 applications are free, and users can control the level of access.

Experiential Learning with Web 2.0

Although not obvious at first glance, Web 2.0 and its associated tools can have a much greater impact, well beyond the role of supporting or complementing other instructional methods, on business education. They effect significant changes in the learning content, process, and outcome:

- Learning content: from scarce to abundant;
- Learning process: from traditional to experiential;
- Learning outcome: from knowledge acquisition to knowledge integration.

The traditional teaching model was designed to maximize two key learning resources—namely knowledge, kept mostly by instructors, and ability to seek out new information, maintained by students but enhanced by instructional tools, both of which are scarce. In such a model, which applied equally to in-class, online, or hybrid format, instructors teach students what they know, with the help of instructional tools such as library, teaching assistant, informational websites, and software. But either the knowledge or the information seeking ability is no longer scarce in the current setting. Many instructors and industry practitioners maintain their own blogs online for all to see; instructional materials such as videos and simulation games are widely available; and search engines and wikis make finding information easy. Perhaps more indicative of the shift and far-reaching in the impact, a growing number of universities, pioneered by the Massachusetts Institute of Technology through its MIT Courseware program, now offer up complete course materials, including lecture notes, audio and video recording of lectures, assignments, tests, references, and so on, for open access online (Chaker, 2007).

As the instructional resources are made abundant, the value of content delivery in the classroom or an online forum, focus of the traditional learning process, seems less because of the widely available knowledge and tools for searching, aggregating, and customizing information. Many Web 2.0 components offer opportunities well beyond traditional tools such as case study and systems project for students to experience or practice various aspects of the use of information systems in business. An e-commerce assignment, for instance, can conceivably involve joint-concept development using a wiki, project management with blogs and online spreadsheet, prototyping sharing via video, live testing the website on a free hosting service, and analyzing the traffic with live web statistics. All these can be done with publicly available, mostly free of charge, resources on the web. Such a mode of instruction would shift the focus of learning process from delivery of knowledge to experiential learning, and allow the learning outcome to transcend from knowledge acquisition to knowledge integration. In the next section, we propose a pedagogical model to take advantage of the changes effected by the Web 2.0 tools in business and MIS curricula.

Pedagogical Model

The new learning paradigms, enabled by Web 2.0 and its associated tools, prompt us to develop and teach MIS courses in the time-tested business management approach, where goals are set first, strategies for achieving goals follow, and tactics for executing the strategies are then determined. Our pedagogical model is driven by the desired outcomes, or learning goals, for a course. For every desired outcome, we look for appropriate instructional channel(s)—lecture, project, assessment, and so on—that constitute the experiential learning strategy for achieving that learning goal. Then, we select the available tools—Web 2.0, traditional, and so on—that best match the channel requirements as tactics to execute the instructional strategy. The model is summarized in Figure 1.
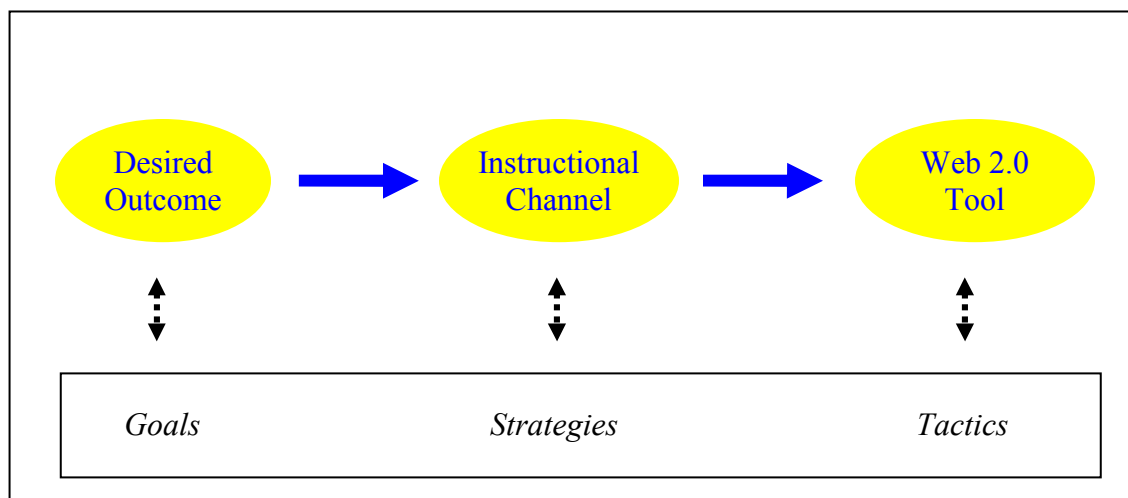
Figure 1. Experiential Learning Based Pedagogy Model

This experience-based pedagogical model is a considerable deviation from the traditional approach, where learning outcomes are often limited by, and thus follow, the resource and format constraints an instructor face. For instance, the classroom format is necessarily lecture and/or discussion based, while online teaching is frequently limited by the tools that the software platform provides. Our model, however, takes advantage of the abundant resources that Web 2.0 offers and does not depend on a particular format. To illustrate how it works, we offer two case studies based on actual instructions.

Case Study: MBA-Level E-Commerce Course

One of the authors teaches an MBA-level e-commerce course on an annual basis in a classroom setting. In previous years, a mixture of lectures and cases were used to cover topical subjects of e-commerce, anchored by a business-plan project (Huang, 2006). Prompted by the popularity of Web 2.0, the experiential learning based model is fully adopted in the current semester to design the whole course. First, three desired outcomes for this e-commerce course are identified: skills in developing e-business, ability to evaluate e-business ideas, and critical survey of current e-commerce technologies and trends. We then structure the course driven by these outcomes, as summarized in Table 1.

Table 1. E-Commerce Course Structure
(Full implementation of pedagogical model)

Desired Learning Outcome for the Course	Instructional Channel	Instructional Tools
Skills in developing an e-business	Team project—business plan composition	Google Docs and Spreadsheet
	Team project—live test website	Microsoft OfficeLive
Ability to evaluate e-business ideas	Class discussion	Blog on vox.com; cases
	Assessment	Website evaluation
Critical survey of current e-commerce technologies and trends	Class discussion	Google Group; Google Notes; cases
	Class project/assessment	TWiki

The e-business development skills—the main driver of the course—are developed through direct experience: we require the students, working in teams, to select a business idea, produce a business plan, and create a live website for testing

purpose. The assignment of writing a business plan is accomplished through the use of traditional tools, such as lectures and business plan templates, and Web 2.0 tools, such as using an Office 2.0 application (Google Docs and Spreadsheet, in our case) for collaboration. The Office 2.0 tool not only allows sharing, but also enables near-real-time interactions among the students and between students and the instructor in problem solving and progress checking. After they complete the business plans and make presentations in class, the teams are expected to implement their business ideas live, using a free hosting service such as Microsoft OfficeLive basic, to test the performance and usability of their implementation. With these tools, our instructional focus is to facilitate the students' learning of skills through actual experience of e-business development.

To accomplish the second desired outcome, the ability to evaluate e-business ideas, we use a combination of Harvard cases and real websites as basis for discussions in class. Each student is required to maintain an individual blog that records their research and analysis of the assigned cases or websites, and others can comment or inquire on the blog entries. (We select vox.com for its ease of use and ability to control access.) In so doing, most of the "class discussions" on the assigned cases or websites happen outside of the classroom. For instance, to cover the business models of Web 2.0 services, students are required to register with and use sites such as Facebook.com, Runescape.com, and SecondLife.com and to report and discuss their findings in their blogs. Students can learn through actual experience of using, researching, and conversing on new and/or live businesses. This leaves the class meeting to cover a few key issues that emerge from the blogging. Students are also evaluated by the quality of their blog entries on the analysis of various cases.

To effectively cover the critical survey of e-commerce components, we choose to forego the use of a textbook, which is static and often out-of-date. Instead, we assign one topic—such as Internet marketing, information security, social networking, mobile commerce, and so on—weekly, and the students are responsible for finding and sharing the materials associated with that topic before the class meeting. Articles and comments are shared on a group site, while useful websites are recorded with a social bookmarking tool (we use Google Group and Google Notes, respectively). In such a setting, in-class lectures are no longer necessary, and the time saved can be devoted to discussions of key issues associated with the assigned topics. In addition, the class as a whole works on completing an "e-commerce wiki" (using TWiki hosted on a university server). The instructor picks the topics and assigns the key terms; the students add to, edit, and even organize the content throughout the semester. The students are graded on their performance in online and classroom participations as well as the quality of their wiki contribution.

Case Study: MBA-Level Operations Management Course

The other author teaches the core MBA course in operations management. Contrary to the e-commerce course, operations management contains topics that are appropriately covered with traditional methods such as lectures and exercises. Therefore, the author selectively applies the pedagogical model to achieve two desired learning outcomes, namely an increased appreciation of the operations function and a critical analysis of company quality management, as described in Table 2.

Table 2. Operations Management Course Structure
(Partial implementation of pedagogical model)

Selected Desired Learning Outcomes	Instructional Channel	Instructional Tools
Increased appreciation of operations function	Assignment	Digg.com
Critical analysis of company quality management	Assignment	Planetfeedback.com

The instructional channel to achieve the outcome of an increased appreciation of the operations functions is an assignment in which students search, analyze, and discuss a timely, interesting, and relevant operational situation that students choose. In addition to web searches and online subscriptions to news sources, students are required to use a social bookmarking service, in this case Digg.com, to publish their findings. They are expected to post their operations stories to Digg.com under its Business and Finance section, reply to comments that they receive, and comment on the stories that others (not necessarily those from the class) have posted. Beyond the expected instructional values that such an assignment delivers, this tool brings alive many of the concepts introduced in class in a real-life setting. In addition, the students are motivated to get involved in a community of professionals with similar interests, an activity hopefully to be carried to the rest

of the program and beyond. This tool also provides a platform in which learning in one section can be shared with those in other and subsequent sections of the course, a continuity that seldom exists in most teaching environments.

To achieve the outcome of critical analysis of company quality management, students generate feedback on an actual purchase of a good or service that they recently made. They are required to submit an analytical letter of kudos or complaint to the company they bought from via a service called PlantFeedback, showing their ability to apply quality management principles to their purchase or use experience. Because the site provides a collection of customer letters sorted by industry and letter type, students can analyze and compare their letters to others' feedback, giving them an experience of what a customer service manager would face. Based on these experiences, in the ensuing class, students are expected to have an in-depth discussion on the state of customer service in the industry they cover and a comparison of the issues faced by different industries. The instructor plays a critical role as the moderator of the discussions, highlighting the limitation of possible small sample size as well as balancing out students' positive and negative views.

Discussion

As with the enabling Web 2.0 tools themselves, this concept of the outcome-driven, experience-based learning is new, and more data need to be collected before its validity and effectiveness can be evaluated. But based on the initial experience, we identified a few advantages with the pedagogical model, besides the apparent outcome-driven nature. With clearly defined outcomes, instruction channels, and tools, it captures all four stages of experiential learning—concrete experience, observations and reflections, generalization, and testing in new situation (Kolb, 1984)—in a controlled and facilitated environment. And the time, location, and facility aspects of learning become flexible. A class discussion implemented with blog and bookmarking tools shifts much of the learning to the research activities and subsequent interactions and is no longer limited by the three hour weekly meeting in classroom or the threaded discussion online. In addition, the learning becomes two-way. In such a setting, students are given an open sea knowledge on the Internet, and instructors can often learn as much from the students' activities and experience. It would be a great way for instructors to renew and accumulate their knowledge and facility of teaching while committed to instructional activities.

This model does come with issues and challenges. It may not be suitable for all MIS courses, because some are less effective using experience-based learning than with traditional delivery tools. For instance, a programming-oriented course may still be more properly implemented with a mixture of lecture and assignments. (However, even in those cases, Web 2.0 can still supplement traditional tools to make the course richer.) Another challenge is the amount of time and effort to be devoted to the course: All the experience-based tools and interactions would require a high level of involvement by both students and instructors to make such a learning model successful. Students have to do a lot more than just read the textbook and show up in the class, and instructors cannot simply prepare for lectures and exams to get through a course. And the experience-based tools can be difficult to implement in classes of large size. For these reasons, we believe that this pedagogical model may be best suited for MIS courses at the graduate level initially; it would be interesting to see how it can be implemented in other curricula. Finally, being substantially deviated from the traditional teaching model, it may be difficult for some students to learning in such a setting, especially those who often excel in a well defined, structured teaching environment characterized by lectures, topical papers, and exams. To help such students make the transition and maximize their learning in this model, a considerable amount of supervision and "hand-holding" may be required on the part of the instructors.

Lastly, it is important to recognize the significant role of instructors in this pedagogical model. No longer the keepers of the knowledge expected to be transferred to the students, instructors nevertheless play a key part in an outcome-driven, experience-based learning setting as facilitators, in such tasks as selecting the topics and tools, moderating the interactions, and, perhaps most important, situating and interpreting all the knowledge that students acquired in the proper context. This role requires not only subject knowledge and active participation, but also constant renewal. Though demanding, we believe that the efforts on the part of the instructors can be vastly rewarding.

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