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CREATING WITH WEB 2.0: A COURSE DESIGNED TO BUILD INTERDISCIPLINARY ALLIANCES

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Abstract:

This paper reports on a new interdisciplinary undergraduate course aimed at providing students with the ability to create interactive multimedia content using Web 2.0. The course is named *Creating with Web 2.0*. It is part of a larger project whose goal is to explore and articulate the strategic alignments among Information Systems and other fields of study. The original focus of the course was on Web 2.0 and Performing Arts.   'Creating with Web 2.0' closely conforms to the 'IS Innovations and New Technologies' elective course specified in the *IS 2010 Curriculum Guidelines for Undergraduate Degree Programs.* We expect the course may lead to increased interest in integrating computing into other disciplines.   We describe the philosophies leading to 'Creating with Web 2.0' within the context of today's enrollment challenges and employment opportunities. We then present some course specifics including assignments, the set of free tools that were used in class, and some of the student work. The objective is to provide a set of materials that will allow others to create and deploy a similar course.

Keywords: Web 2.0, interdisciplinary, IS innovations course, interactive media, multimedia

I. INTRODUCTION

This paper reports on an interdisciplinary undergraduate course named 'Creating with Web 2.0'[1]. The course aims to provide students with the ability to create multimedia and interactive content. The course was developed under a Verizon Thinkfinity Cornerstone III grant. These Thinkfinity grants fund proposals that develop new technology initiatives in interdisciplinary programs, including informatics. The course is part of a larger project whose goal is to explore and articulate the strategic alignments among other fields of study and Information Systems. Originally, the grant was aimed at generating interdisciplinary program offerings for the Performing Arts. The Performing Arts are experiencing an emerging reliance on computer driven creation and technology driven presentations including virtual auditions. New media open up enormous opportunities for the individual performing artist who understands computer mediated engagement and can write, direct, capture and present work using these media. In the first course offering there were no Performing Arts majors enrolled. However, the concepts of

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[1] When we refer to Web 2.0 in the context of this paper, we are describing three types of services:

1. A set of interpersonal applications (such as YouTube, facebook, Wikipedia or Pod-casts ;),
2. a set of web services (such as PayPal or Google Maps), or
3. Software as a service (SaaS) where individuals and businesses can rent applications on a sort of pay-per-use basis without having to purchase and host the software themselves.

reliance on electronic, interactive multimedia to generate and present content apply to most professions and occupations.

'Creating with Web 2.0' closely conforms to the "IS Innovations and New Technologies" elective course specified in the *IS 2010 Curriculum Guidelines for Undergraduate Degree Programs in Information Systems* [Heikki, et al., 2010]. In the Curriculum Guidelines, the authors point out that it is essential for the health of the Information Systems discipline to actively recruit students by creating excitement about the field of Information Systems. The 'Creating with Web 2.0' course appeals to many different majors and may lead to enrollment in one of a set of interdisciplinary minors offered under our new Computer Information Technology curriculum.

In the following sections, we briefly describe the philosophies leading to 'Creating with Web 2.0'. We also describe some other programs that are experimenting with integrating Web 2.0 tools into existing courses. We briefly summarize some of the enrollment challenges in the Information Systems field as well as the employment opportunities. We then present the course specifics including assignments, the set of free tools that were used in class, and some of the student work completed during the first class. A voluntary course evaluation instrument was also completed by 4 of the 12 students who completed the course. A description of the evaluations content is included.

II. COURSE PHILOSOPHY AND ENVIRONMENT

'Creating with Web 2.0' is one component in a larger project funded by a Thinkfinity Cornerstone III Grant whose purpose is to use technology initiatives to support strategic alignments among the various disciplines within the university. The course 'Creating Web 2.0' is designed to act as an interlacing axel. We have begun to quietly refer to Computing as the Liberal Art of the 21st Century.

The emerging reliance on computer-driven creation and technology-driven presentation of information opens opportunities for the individuals educated in using these interactive media. The benefits of understanding the essence of a new media and the techniques to incorporate it professionally provide myriad creative and professional opportunities. Information Systems content generating skills can provide an edge in the marketplace, although these skills require constant updating to maintain a competitive advantage. Web 2.0 content delivery and creation methods have changed rapidly in the last five years, and the pace of change is likely to accelerate. For example, YouTube is only five years old. It was launched five years ago in February 2005 [Wikipedia, YouTube].

Other Web 2.0 integration exemplars

Numerous courses throughout the Business and Information Systems curricula use Web 2.0 tools, primarily to increase student engagement. For example, Joshi and Chugh [2009] recently introduced blogging in their accounting courses as a tool to increase student engagement in the material and as a reflective tool. In their Knowledge Management MBA course, Levy and Hadar [2010] used a number of Web 2.0 tools in order to provide a rich context in support of a blended learning environment. They used the Ning platform to facilitate social networking, user generated content, and external links to other tools such as Wiki. Levy and Hader report that the overall students' feedbacks were positive.

Many standard Web 2.0 components are integrated into platforms that support online and blended education. The standard Blackboard course shell (version 9.1) now includes components for blogging and Wikis. Ning and Moodle also include Web 2.0 tools.

Enrollment challenges

Many of our students transfer into the Information Systems side of computing after first trying Computer Science as a major. Fortunately, the number of undergraduate students majoring in Computer Science significantly increased for the second year in a row according to the Computing Research Association (CRA) Taulbee Survey for 2008-2009. There has been a 14 percent increase in the number of majors among U.S. computer science departments in PhD granting institutions since 2007 [Zweben, 2010]. M. Granger, et al. suggest some of the original decline in Information Systems enrollments may indicate fundamental problems with the curricula. They ask, "is it possible that many IS curricula do not reflect the evolving demands of today's (and tomorrow's) IS professionals?" [Granger, et al., 2007, p .3]. These authors also cite Lomerson and Pollacia's 2006 study showing that the most frequently selected reason for not choosing Information Systems as a major was that the students "didn't think they would enjoy the work" [see also Walstrom, et al., 2008]..

Employment opportunities

The overall job market for IS professionals has remained relatively strong, and, according to US Bureau of Labor Statistics (BLS) projections for 2008-2018, Information Systems related employment remains one of the major occupational growth areas for the next decade. As of December 10, 2009, three of the top 15 fastest growing and "Very High" paid occupations (top quartile of compensation) that require a bachelor's degree are computer related [US Bureau of Labor Statistics, *Occupational Outlook Handbook*, 2010].

The Occupational Information Network (O*NET) , being developed under sponsorship of the **US Department of Labor/Employment and Training Administration** [http://online.onetcenter.org/] is reporting that all but five occupations in their Information Technology career cluster of 20 occupations have a "Bright Outlook" for the 2008-2018 decade. Every Bright Outlook occupation matches at least one of the following criteria: (1) Projected to grow much faster than average (employment increase of 20% or more) over the period 2008-2018, (2) Projected to have 100,000 or more job openings over the period 2008-2018, or (3) is classified as a New & Emerging occupation in a high growth industry.

III. CREATING WITH WEB 2.0: THE COURSE

The first elective offering of 'Creating with Web 2.0' was in spring 2010. Students enrolled from the following majors: Information Systems, Communications, Computer Science, Film Studies, Finance and Marketing. This diversity of students presented quite variegated backgrounds, but all were excited to learn how to wrap their creative work in a Web 2.0 context.

To create the syllabus of this hands on, multidisciplinary course we depended especially on the work of David Wiley of Utah State University's USU Open Courseware Web site [2010] and Brent R. Wahl of University of California at Berkeley's 'Special Topics in Innovation and Entrepreneurship: Web 2.0' (2010).

The students received the following course description:

This course educates students in using new and emerging interactive media tools, exemplified by the interactive Web. In 1964 Marshal McLuhan introduced the concept "the medium is the message" in his book *Understanding Media: The Extensions of Man*. The phrase initiated an inquiry into the nature of the interactions of content and media that has lasted over forty years.   In this course students gain experience with how the new web media interacts with content by composing, creating and delivering new content. Theoretically, the course explores human computer interaction and cognition. Students use interactive technology to create content including blogs, wikis, images, photos, videos, RSS feeds, mashups and podcasts.

This course requires an effective amount of writing to help students learn course content. Writing content for interactive media adds new compositional ideas and opportunities. Formal writing elements, such as clear focus, organization, development, and editing are considered in grading these assignments, as well analyzing how the content interacts with the specific media.

Assignments

The assignments are designed to build one upon the other so that in the end, the students have constructed a set of outcomes that demonstrate their abilities to create multimedia using the Interactive Web 2.0. The blogging platform is used to combine all the materials together to create a coherent presentation. The needed scaffolding to construct the "living resume" ePorfolio was supplied by the blogging platform www.Tumblr.com.   This platform offers a set of templates that easily link to content of any type, anywhere on the web. All tools used in the course to generate content are free.

The approach to this course depends on commercial platforms and free software, and is subject to the usual problems presented by third-party free software. First, the free software may break. Next, the students may decide to modify or eliminate their work that resides outside the university authority on platforms such as PBworks, Blogger, Fflickr, Ttumblr, MyPodcast, YouTube, Jing and other robust but public Web 2.0 providers. The students may elect at any time to make their content private or to remove it. This approach allows public use of the information according to the licensing of the packages used. Making any material public is completely voluntary.

These are the tools we used in the course. Although the set may seem endless, it is composed of easily downloaded and useful software. It is important to have a comprehensive toolkit for a course that works intensively with Web 2.0. Using various tools and sites helps empower students to understand they can locate and download tools from a variety of platforms with different interfaces and yet have the components work seamlessly. The Thinkfinity Cornerstone III grant supporting this work allowed us to purchase small flip Video cameras. We signed these out to the students for their off-site video work.

The tools were selected to allow the students to learn how to create and deploy a web segment with the components useful in creating captivating short broadcast segments. These components were distilled by Chona Camomot, an Emmy-winning broadcast journalist with Boston.com, which is the online news site for the Boston Globe. These components that make for a compelling video segment are: narration and voice over, music, interview competence, titles and credits, transitions, 'b' roll and stills. Successful creation of content requires meticulous preparation and planning, and all the performance-style assignments require appropriate research and preparation documentation. The blogging platforms provide a context where these components may be deployed individually and in combination.   Table 1 shows the assignments completed during the course along with the Web 2.0 tools used.

Table 1: Course Web 2.0 tools and related software

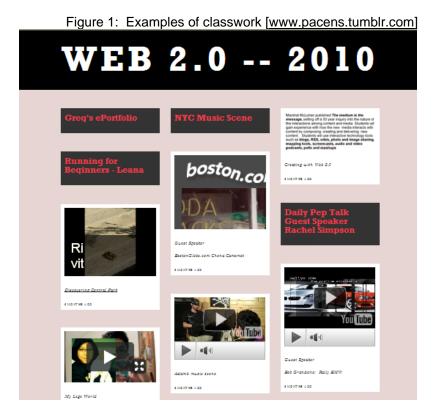|	Assignment	Tools
1	Create your first blog, customize it, and make two 2 paragraph posts for peer review. Focus on writing modes; e.g., narration, explanation, argument.	www.Blogspot.com (Blogger platform)
2	Demonstrate final posts; include draft version, insert poll, external links and blog introductory information and profile.	www.Blogspot.com
3	Create an account on a photo sharing site. Add photos, and post links on your blog. Reflection on your own blog photo posts; you may reflect on your improved/corrected photo-post.	www.Flicker.com (Photo Sharing) www.creativecommons.org (re-use licensing), www.techsmith.com (Jing screen capture),
4	Draft script for podcast for peer review & embedding maps and gadgets.	www.googlemaps.com (embedding maps)
5	Create your first audio podcast; post text and podcast (<1.5 minutes).	www.Mypodcast.com (creating podcasts) Podcast embedding software www.edublogs.tv Gadgets: http://www.google.com/ig/directory?synd=open
6	Create Video Podcast in class: Embed YouTube video in blog. Begin preparing research, location and planning documents including story-boards for second video.	www.Youtube.com, www.Vimeo.com(video sites) www.edublogs.tv embedding software and downloading software,
7	Video (<2.5 minutes) with titles/credits, narration voice-over, video, "b" roll, stills, music, interview segment. Post on Wiki.	www.youtubedownloader.com (download YouTube videos)
8	Group Project: Wiki project first drafts; Wiki project complete and demonstrated (may focus on Video as in #7)	www.PBworks.com (public wiki)
9	Living Resume/ePortfolio created	www.Tumblr.com (blogging platform and community)

IV. CREATING FOR WEB 2.0 ASSIGNMENT EXAMPLES

In this section we display and describe two sets of assignments and the platform used for the ePortfolios. The examples use a template from the tumblr.com site as a face page for accessing these assignments.   Tumblr.com provides needed scaffolding to construct these face pages by offering a set of templates that easily link to content of any type, anywhere on the web.

The examples are easily accessed online. The first draws upon work by different students and includes guest speaker sites. The second example is an ePortfolio from one student.

Because the course depends on outside free software some of these links may be broken by the students. We made the decision to use outside software since it better emulated the world after University. Several guest speakers who earn their living in the world of interactive Web 2.0 were asked to speak for the class. Each was paid a stipend.   Another professor of Information Systems spoke on Business Model differences between facebook and twitter.

The figure has unavoidably small print, but the information is online at http://pacens.tumblr.com/.

Figure 1: Examples of classwork [www.pacens.tumblr.com]

- *Greg's Portfolio* is the final ePortfolio submitted by the student Greg.
- *Running for Beginners* and NYC *Music Scene* are examples of blogs created during the course. These blogs were used as repositories for the assignments. Assignments were later moved as well to the tumbler face page template.
- *Text box* has a description of the course for context.
- *Discovering Central Park* Demonstrates a slide show.

- *The Boston Globe* video is one of a daily internet newscast created and delivered by one of our guest speakers.
- *Rally BMW* video was produced by another young guest speaker who integrates YouTube marketing on the web into a company's usual strategies.
- *Daily Pep Talk* site belongs to a young guest speaker who earns part of her living giving Internet Advice.
- *My Lego world* and *Adam's Music* Scene are videos created that include voice over, text, stills, titles and credits, music and "B" roll film from another site.   The blogs all include an interview video created and embedded in a blog post.

Figure 2: Example of student portfolio [www.amportfolio.tumblr.com]

Each of the items shown on this face page of AAshish's ePortfolio, http://amportfolio.tumblr.com/   links to content stored elsewhere on the web.

- *What you can learn from my blog* links to the blog: http://greencleanplanet.blogspot.com/2010/04/water-green.html,
- *What is tiger?* Links to a particular blog post: http://greencleanplanet.blogspot.com/2010/04/water-green.html.
- *My first interview video* links to: http://www.youtube.com/watch?v=Zh4X1el68f8&feature=player_embedded. These embedded videos may be watched in the small frame or in the larger frame.
- *My podcast script* links to the post on his Blogspot.com blog.

- *My podcast* links to a podcast embedded from www.mypodcast.com onto www.blogger.com.

V. COURSE EVALUATION INTERIM RESULTS AND CONCLUSIONS

Surprisingly, none of the students had any experience with public blogging or wikis prior to this course. Most had experience with YouTube, but not with embedding videos. Several students had experience with microphone and digital recordings, but none had experience with podcasting, either video or audio.

The results of the in class supplemental evaluation are meager and varied. Since only four individuals completed the voluntary evaluation out of 12 possible respondents, we are unable to draw conclusions. We report the basic similarities and differences to indicate some of what might be expected in a more formal study. We used a modified grounded theory approach to categorize the information based on the work of [Calloway and Knapp, 1995].

All four respondents were positive in that they would recommend the course to others inside and outside their major. Otherwise, there is much variation among the four completed evaluations. Different students put different assignments in the set of "most useful"assignments for a number of categories, indicating that most assignments were useful, at least to some students. Also, the assignments that were marked as being "least useful" or those that should have "less time" varied depending on the student. For example, the Computer Scientist wanted much more podcasting, while one of the Information Systems people found it among the least useful of the assignments. She wanted more video, he disliked all video assignments. The group project was pointed out as one of the most useful assignments in three evaluations; however, in two of these evaluations it was identified as the assignment they would most want to leave out. We are enrolling individuals from several different schools and majors in the course, and these differences are likely to be aligned with some of the different responses to the assignments. The next iteration of the course is in fall 2010.

This multidisciplinary course is a candidate for engaging students from many fields as potential recruiters. Koch and Hayworth describe their process of Partnering with the IS Majors by having existing IS majors working closely with placement, faculty and corporate recruiters to entice students into the IS major [Koch and Hayworth, 2009].

ACKNOWLEDGEMENTS

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Editor's Note: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web can gain direct access to these linked references. Readers are warned, however, that

1. These links existed as of the date of publication but are not guaranteed to be working thereafter.

2. The contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.

3. The author(s) of the Web pages, not CAIS, is (are) responsible for the accuracy of their content.

4. The author(s) of this article, not CAIS, is (are) responsible for the accuracy of the URL and version information.

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APPENDIX 1: EVALUATION SUPPLEMENT

What is your major? _____

1. **Reflecting on this class: What did you like about it? Why?**
2. **Reflecting on this class: What did you like least about this class? Why?**
3. **Would you recommend this class to a person in your major?**
   a. **Yes, because**
   b. **No, because**
4. **Would you recommend this class to a friend from a different major?**
   a. **Yes, because**
   b. **No, because**
5. **What activities were most useful to you in your current work/studies today? (Select top five)**
   a. **Blogging**
   b. **Image management**
   c. **Embedding techniques**
   d. **What to include in a short video ('b' roll, etc.)**
   e. **Creating short video in class**
   f. **Creating your outside video**
   g. **Movie maker**
   h. **Jing**
   i. **Guest speakers**
   j. **Podcasting**
   k. **Individual work on research wiki**
   l. **Group work on research wiki**
   m. **Class demos of your work**
   n. **Other _____**
   Why?
6. **Which activities do you think will help you in the future? (list top five)**
   (Same list)
   Why?
7. **Which activities were least useful to you in your current work/studies today? (list top five)**
   (Same list)
   Why?
8. **If you had to eliminate one thing from the class, what would it be?**
   (Same list)
   Why?
9. **If you had to spend more time on one thing, what would it be?**
10. **What would you add to the class to make it better?**
11. **What would you remove from the class to make it better?**
12. **Other comments.**