Course Design with a Blueprint for Learning

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ABSTRACT
As faculty engage in scholarly teaching, they create, deliver, and document their courses in order to improve student learning, to become stronger teachers and to disseminate results of high quality practices. Courses are designed purposefully with respect to the unique contributions of the instructor, the student, the context, and the content. Consideration is given to logistics, knowledge domains, participant constraints, and availability of resources. In this paper, we present how we used a blueprint for learning [1] to develop the teaching and learning experiences in a Web 2.0 technology workshop for urban high school educators [2]. By following the course blueprint, we were able to align the intended content with the desired cognitive processes and knowledge domains based on Bloom’s revised taxonomy. We designed our instruction and assessments with the dual purposes of delivering an excellent educational experience as well as the intention of sharing the results of the design process to contribute to the scholarly teaching literature.

Keywords: technology training, professional development, course blueprint, Bloom’s revised taxonomy, scholarly teaching

INTRODUCTION
As digital natives, students in the public schools have a great deal of experience using social media and are continually developing the ability to construct their own knowledge as they engage with each other in online environments [3]. Teachers in Cincinnati Public Schools take professional development courses to keep up-to-date with the emerging technology tools as well as with how to effectively use them in their classrooms. As a component of two National Science Foundation programs [4, 5], the University of Cincinnati College of Engineering provides technology training for public school teachers as well as providing teaching opportunities for students at the graduate and undergraduate levels. We developed a technology workshop session for high school teachers [6] to train teachers to use Web 2.0 applications to enhance their classroom teaching.

USING THE COURSE BLUEPRINT
To most effectively cover our topic and to provide a quality learning experience for the participants, we wanted to incorporate direct instruction, including a technology demonstration in an informative, succinct, yet value-filled session. By surveying the participants prior to the workshop, it was determine that one of the topics that would add value in their teaching was training in how to use web 2.0 tools to enhance classroom instruction. So we set out to develop the course by brainstorming specific technical concepts related to teaching with web 2.0 tools—specifically blogs in the classroom—then we narrowed down the content for the two-hour hands-on training session.

To make the best use of our contact time and to clarify how to most effectively meet our teaching goals, we used a scholarly design process with a course blueprint (Table I). The blueprint design lays out the criteria for determining the desired cognitive process and knowledge dimensions of the course. Using the blueprint, the instructor aligns the teaching goals (TG), learning objectives (LO), learning experiences (LE) and evaluation plan (EP) with Bloom’s revised taxonomy to identify the plan for achieving the teaching goals.

In the example, our cognitive process dimensions are mainly understanding and applying; we address all knowledge dimensions. Overarching teaching goals are the vision for a course and drive the design process. Learning objectives are the abilities students are expected to have upon completing the course. Learning experiences are activities for meeting those objectives. The evaluation plan devises assessments that directly reflect achievement of learning goals. In working through this process, we discussed how the terms goals and objectives are used differently in various disciplines. For this workshop we used the terms as applied in the Richlin model with goals defined as what the teacher hopes to accomplish in the classroom and learning objectives being the observable and measureable behaviors the students can perform after the class is complete.
Our goals were to teach general information about web 2.0 tools, present relevant examples, demonstrate the technology, provide specific ways to use blogs for enhanced learning and have teachers reflect on how they could apply the lessons to their own teaching. Once we identified the goals, we set out to align each of our learning objectives with the content knowledge dimensions and cognitive process dimensions of Bloom’s revised taxonomy by filling in relevant cells in the matrix.

Given the limited contact time and the volume of content, we analyzed our intended topics and deconstructed elements to identify the factual, conceptual, procedural and meta-cognition teaching goals. To be most effective we focused mainly on the cognitive process dimension of understanding for our teaching goals.

To develop the learning objectives, we looked at each of the teaching goals and determined the student behaviors we would like to achieve. By completing the statement ‘Students completing this course will ______,’ we were able to define the abilities we wanted the participants to demonstrate upon completion of the course. By thinking through the learning objectives, we identified the achievements in each of the knowledge dimensions, using action verbs that indicate the cognitive process dimension of understanding.

We created the learning experiences so participants could achieve the desired objectives. For the factual dimension of understanding the terminology, participants responded to questions on the class blog. By reviewing the participant discussion comments after the course was complete, we were able to evaluate if they understood the terminology. When working with the understanding cognitive process, we wanted participants to identify and use tools. As they wrote comments on the blog, we knew they could navigate and compose responses using the web tool. The evaluation plan was to review the content they generated on the blog during the hands-on activity and the content of the class discussion.

As we developed the lesson plan for the session, it was clear how we would divide the limited time between direct instruction, hands-on interaction and class discussion. While these decisions are intuitive to most quality teachers, our choices were informed by following a well-developed plan to provide the deepest possible learning in a very short time.

We used the site, Edublog.com [7] to house our demonstration blog. This site is geared toward facilitating educational experiences with teacher-level administrative functions as well as individualized sites possible for each student. The blog we developed for the workshop served several purposes including providing a demonstration site as well as housing the materials we used to teach the workshop. We posted an overview of our program and details about the specific workshop lesson plan. The site housed the articles and links that served as the content for our demonstration lesson that facilitated a debate of the Wii video game system [Figure 1]. In addition, the workshop participants were able to engage in real-time on-line debates during the session and were able to see the potential for developing asynchronous learning environments for student engagement.
Figure 1. Demonstration blog elements

**About the program**

**Lesson plan**

**Lesson content**

**Participant postings**
TEACHING AND LEARNING

In the workshop, after conducting a warm-up exercise that was designed to assess the existing knowledge of the participants, we provided an overview of the explosion of web 2.0 tools with the potential to enhance education (Figure 2.). We then provided concrete examples of educational and administrative uses we each have adopted to take advantage of new modes of communication. Specifically we presented briefly how Doodle can be used to schedule meetings and Survey Monkey can be used to for students to conduct peer evaluations. We then focused in on examples of Blogs used effectively in K-12 education with an emphasis on science, technology, engineering and mathematics as this was the subject matter focus of our workshop participants. Participants then began exploring the demonstration blog and engaging in the on-line debate. Afterward the class reconvened and discussed their experiences. The participants generated questions ranging from specific technical inquiries to questions regarding managing classroom interactions using blogs and ethical questions regarding publishing student work on-line and the evolving dynamics of learning technology while in the process of employing it in the classroom.

Figure 2. Examples of administrative and evaluative uses of Web 2.0 tools in educational settings.

DISCUSSION

The course blueprint design process facilitates scholarly teaching, quality curriculum development, and efficient evaluation. We developed the workshop using data from the teachers’ survey to select a relevant technology content area and brainstormed the specific topics. Goals were articulated, objectives defined, literature reviewed, domains identified, processes created, and curriculum delivered. Throughout the process, data are collected with the intention of contributing to the literature on quality teaching and learning practices.

Overall, we found the process of using the course blueprint very effective in developing the workshop content. By plotting out the cognitive processes and knowledge domains, we could easily visualize the intended learning outcomes that our students would experience by participating in the workshop. We were able to make informed decisions about developing learning experiences and relevant evaluations.

We recognized that in a situation where there is more contact time, all of the cognitive dimensions would have been incorporated. Given that we were teaching the use of blogs to enhance classroom instruction, we would have developed additional learning experiences in which the students would analyze, evaluate and create their own blogs to deepen their meta-cognitive learning.

Participants engaged in the workshop evaluated the experience directly following the experience. Overall the respondents replied that the experience was positive with comments stating that they learned new ideas about using web 2.0 technology in their classroom and employing blogs for increased student interaction. Participants replied that they now realized how simple it is to use the tools and that they were now more likely to employ it in their own classrooms.

To engage digital natives and to keep pace with emerging technologies, public school teachers need continual professional development courses.
Teachers want professional development courses that have rich content, are convenient, and are related directly to their needs. By using the course blueprint as a means to facilitate the scholarly teaching process, we were able to make very effective use of limited contact time. We were able to purposefully determine the cognitive process we wanted the participants to engage in during the session and to address each of the knowledge domains. We were guided in our instructional decisions by these choices. We were able to assess and evaluate student learning as we documented the process in order to share our successful practice.

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REFERENCES


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