School of Tech:

Educating Experts in Cultural Heritage Multimedia

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http://www.tec-ch.unisi.ch/

Abstract

Cultural heritage multimedia is a young domain which lacks certain elements of mature fields including degree-granting educational programs. Despite the absence of established paradigms, a number of academic institutions are developing programs in this area. At this critical juncture, when skills and processes are being codified for the first time in academic curricula, the input of professional practitioners is desperately needed. This paper and accompanying forum are an open invitation to the museum multimedia community to contribute their insights. Key issues will be discussed in the context of a conceptual model and concrete examples. The model is based on three years of student feedback at the University of Lugano. It addresses three questions:

- What should students know?
- How should they learn it?
- Who should teach it?

Meaningful dialogue between the academic and professional communities is the only way to bridge the gap between theoretical and applied knowledge. This is especially true in a multidisciplinary field like cultural heritage multimedia where there is no consensus about the ideal path to professional qualification. Museum professionals, your future colleagues need your help. How can educators ensure that graduates will be able to operate creatively and effectively in the professional environment? And how can they support you in pushing our field in challenging and exciting directions? Join us in exploring these important questions.

Keywords: education, technology, multimedia, cultural heritage, training, degree program, university, museum, professional, training

Introduction

This paper introduces a new model for teaching cultural heritage multimedia and invites feedback from museum professionals about its merits. First, a framework (Figure 1) for course content is discussed. It consists of three categories: Interpretation and Communication Skills, Design and Production Skills, Creative Project-making Skills.

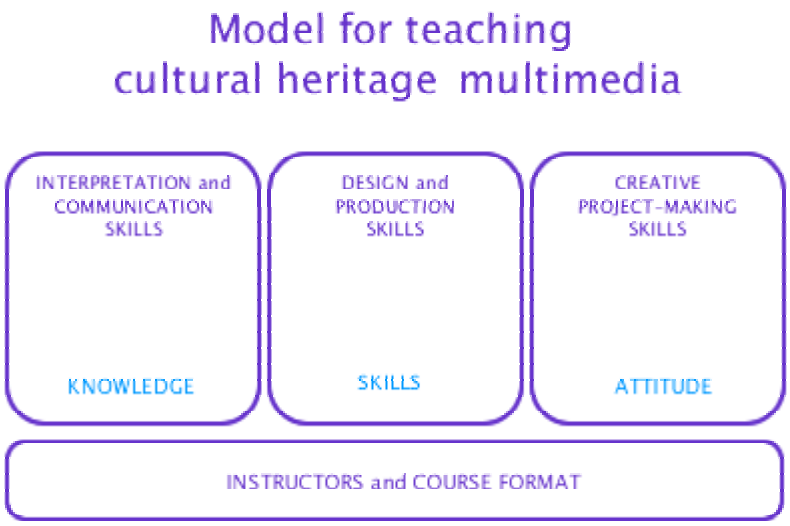

Figure 1: Model for teaching cultural heritage multimedia based on student feedback from Master in Technology-Enhanced Communication for Cultural Heritage (http://www.tec-ch.unisi.ch)

These categories correspond to the three types of competencies that most educators view as essential elements in a successful learning environment: knowledge, skills, and attitudes. The second part of this paper describes effective instruction and course formats. Third, we examine a student-developed on-line course that includes some of these elements. These suggestions are based on three years of student work in the Master program for cultural heritage communication (http://www.tec-ch.unisi.ch/) at the University of Lugano. The intent in presenting this model is to encourage the current generation of museum professionals to take an active role in shaping newly emerging educational programs in this field.

Interpretation and Communication Skills

Interpretation is the single-most important competency that educational programs in cultural heritage multimedia should provide. Interpretation includes a number of aspects. First, the ability to "get to the bottom of things" or uncover underlying themes and ideas which are central to the subject or artwork. Second, the ability to discern which themes or ideas are interesting for the target audience. Students must also be able to weave these concepts into a compelling and dramatic narrative. In fact, award-winning museum Web site developers say that their "approach to the content, their understanding of the need for narrative, set them apart from those who design non-educational sites." (Haley Goldman, Haley Goldman, 2005). Third, students need the ability to decode the language of curators and domain experts and engage them in intelligent dialogue about the material and its communicative potential. This final point requires that students be exposed to the theoretical approaches used in different

disciplines. This gives them flexibility to operate in a variety of cultural domains. While the level of their domain expertise may never equal that of curators, they need to delve deeply into content in order to understand and appreciate its characteristics. Only then can they make good judgments about how to adapt it appropriately and creatively.

Strong interpretive skills are indispensable whether students pursue careers as independent consultants or as museum professionals. Consultants who work for many different types of institutions need to understand a variety of approaches to culture. This generalist knowledge allows them to speak the language of their clients. Those students who become museum professionals will be able to bring fresh perspectives from outside the discipline that can invigorate the communicative approaches being used within their institution. Since Web-based multimedia applications are not bound by physical walls of the museum, a variety of approaches ensures that it will reach diverse audiences. Experience in student projects confirms that designers who immerse themselves in the subject matter are able to discover creative solutions. The opening screen of a multimedia kiosk (Figure 2) for the Museum of Extra European Culture in Lugano depicts tribal members gathered around a fire. Ancestoral figures from the collection look on from behind. The project is exemplary in part for its elegant graphic design, but more importantly because students captured a fundamental theme in Oceanic life—the ever-present connection with deceased ancestors—and embedded it in a compelling narrative.

Figure 2: Design of an interactive kiosk for the Museum of Extra European Cultures in Lugano by students Jessica Powers, Paola Lazzeri and Mehdi Abdollah. The application also included evocative sound effects of blazing fire and traditional drumming

Internship experiences also reveal the importance of interpretive skills. As one student reports: “What I really need are tools to interpret the content. I was supposed to write exhibit labels, but how can write them if I don’t know anything about the objects or how to analyze them?” Clearly, students need more than communication theory alone: more

than simplistic guidelines on the appropriate length and style of texts, more than Flash animation labs. They need to understand—at least to some degree—how to carry out an interpretative analysis of the subject they are communicating. Interpretive skill is *the* quality which distinguishes practitioners of cultural heritage communication from those in other fields. As one museum Web site developer told Michael and Kathryn Haley Goldman (2005): "When we hire someone new, we have to make it clear that this [is] very different from marketing or [working at] an advertising firm. The skill of interpretation needed [in an employee] is hard to find."

Design and Production Skills

Technology training is an essential part of any program in cultural heritage multimedia. Students should be exposed to cutting-edge software applications used in the professional world. Ideally, this training should be done in the context of project-oriented assignments where students work with actual content from museums or other cultural institutions. This ensures that interpretation becomes an integral part of the development process. If students work in groups, a rotation system should be employed so individuals are required to perform different roles. Evaluation should include both an assessment of the collective product and the contributions of individuals. At the University of Lugano, instructor Peter Samis (who teaches the introductory course Interactive Communication for Museums) requires students to submit a short individual report describing the process and group dynamic from a personal point of view. This tends to expose personality conflicts or differences in working styles and makes the process of evaluation much easier.

In addition to hands-on production skills, students must be aware of emerging technologies and the social trends which influence them. Instructor Susan Chun (who teaches a seminar on Cataloguing by Crowd) observed that, even after a full semester of coursework, students in the Swiss program knew very little about Web 2.0, or social tagging, or similar technologies widely discussed in the professional community. Although they had been introduced to Web sites like Flickr (http://www.flickr.com) and YouTube (http://www.youtube.com), they could not articulate what distinguished them from more traditional-style Web applications. To encourage students to develop a habit of keeping up with current trends, Chun suggests an ongoing "show-and-tell" of innovative Web sites. Students research at least one application a week and present it to their colleagues. An equal number of examples must be taken from inside and outside the cultural realm. Students should also be encouraged to incorporate technology into their every day lives and experiment with new kinds of electronic devices. Educational institutions must make these devices available on loan for those who cannot afford them.

The type of training described above is clearly important, but it is nothing new. Many institutions offer generic multimedia production programs and there are well-established methods of teaching the subject. There is another aspect to production skills, however, which is critical for cultural heritage applications. Students must learn to make the connection between the audience for cultural products—users and visitors—and their designs. Visitor perception is identified by professional practitioners as a crucial but little understood element in successful museum Web sites. It emerges as a central theme in Michael and Kathryn Haley Goldmans' (2005) survey:

> *By acknowledging two types of judges for success– experts and visitors, we face one of the most critical issues in museum Web site design today – the lack of*

> *rigorous evidence from the visitors about their opinions (10). ... [T]he practitioners clearly agreed that the user is a central figure in successful museum Web sites (10). ... Many of those interviewed saw this aspect of the user or visitor as one of the larger challenges for museum Web sites at this time (11).*

The authors conclude that "the lack of true connection with the virtual user has handicapped the evolution of both the domain and the field." Clearly, this is an area where educational programs can lead the way.

Figure 3: Students at the University of Lugano act as test administrators and subjects in a course on Web site usability testing. Usability testing is not enough, however. Students need a toolkit of techniques for collecting and interpreting user data

In his introductory course, Peter Samis introduces the Visitor Bill of Rights (Rand, 1995) and students work with personae and scenarios (Smith, 2003). Later in the semester, students also participate in a usability lab. But these activities alone are less than sufficient. They should be followed up with an entire course dedicated to understanding user/visitor requirements on-line and off-line. Such a course could provide a toolkit of techniques and methodologies for collecting, analyzing and interpreting user feedback. Assignments would stress the link between data analysis and appropriate design. Ideally, an iterative method would be used where early stage designs are evaluated and modified based on user feedback. This user-centered approach should be a continuous thread throughout the entire curriculum: the user should be the central figure in every design discussion. Graduates should emerge as pro-active user advocates who know how to translate both structured (quantitative) and unstructured (qualitative) feedback into concrete design solutions.

Creative Project-making Skills

Students should be encouraged to formulate a personal vision of what they want to accomplish in their careers. This vision must be grounded in an understanding of the type of organizational, political and economic obstacles they are likely to encounter in the workplace. Without this knowledge, students experience serious conflicts when they attempt to apply their expertise in professional situations and can easily become

discouraged. One student who spent three months at a large museum in Berlin relates her experience:

> *I was shocked. They had barely heard of multimedia, much less think of it as relevant to their exhibition work. All these things we learn in this program are wonderful and exciting, but what am I supposed to do if they have never even heard of these things?*

Students need to be taught how to cope with such situations, because success in their careers depends on their ability to act as effective change-agents. They must help their colleagues understand how multimedia can support the institution's mission and educational goals, and enable it to reach out to new types of visitors. Many cultural institutions, especially those outside North America, have little or no experience with new technologies and students frequently encounter resistance or even outright hostility to their proposals and suggestions. These are organizations and people in transition and students must develop the sensitivity to guide uncertain, even recalcitrant, colleagues through this delicate process. As Peter Samis (2006) points out:

> *As museums come to consciousness that the old models, the old paradigms are not going to serve them well enough in the coming decades, the coming years, the coming century, [cultural heritage multimedia] graduates can become the pioneers in helping museums communicate with their publics using the tools like the Web, podcasting and DVDs. [Tools] that museums themselves are only beginning to understand.*

Coping effectively involves a variety of competencies that could be summarized as Creative Project-making: out-of-the-box thinking, an understanding of technology adoption, change management, conflict resolution, effective proposal and presentation skills, fundraising, and project management. The discussion of how to negotiate these situations must be an ongoing part of the curriculum so that by the time students start their internships they are prepared for the challenges they may face. In his three-day seminar, visiting professor Larry Friedlander tirelessly encouraged students to consider the impact of organizational realities on their designs. Each afternoon he assigned design problems in different types of cultural institutions. These included museums, libraries, schools and government ministries. Students had less than three hours to brainstorm, research, and flesh out their solutions. Then, in presentations to the class, they were required to justify their rationale—why their proposed design was appropriate for the given institution. These exercises stimulated creativity, but at the same time compelled students to be realistic about the feasibility of their "big ideas".

Instructors and Course Format

Instructors with professional experience are essential, because they are able to ground discussions in real-world examples. Professional experience alone is not enough, however. These individuals must also be lateral thinkers, able to connect multiple disciplines seamlessly. Museum multimedia is a domain that merges concepts and skills—art and technology—that many people perceive as contradictory. Students are excited by the potential collision of these "opposite worlds" and are attracted to educational programs that claim to reconcile them. As one student remarked: "To me that [multidisciplinary quality] is interesting. It's like redefining new fields." Students need instructors who embody the kind of synthesis that they too hope to master. Those who stick narrowly to a single domain or who are incapable of making imaginative links and connections are perceived as irrelevant by students, regardless of how competent they may be within their area of expertise.

Figure 4: Students in Interactive Communication for Museums during a field trip to the Hermann Hesse Museum in Montagnola. Seated (right) are instructor Peter Samis and museum director Regina Bücher

Courses themselves should include two elements: a connection or collaboration with a real-world cultural institution or artist, and ample time to explore cultural subjects through open discussion. Entering the world of a museum or atelier—even for half a day—confronts students with many of the sticky problems professional practitioners encounter. If these collaborations include a tour or formal interview, students have the chance to see or even participate in the life cycle of multimedia production as camera persons, sound engineers or interviewers. Students in Interactive Communication for Museums have interviewed architect Mario Botta at his office; met with Regina Bücher, director of the Hermann Hesse Museum in Montagnola; and toured the Museum of Extra European Culture. Ideally, these activities are followed by a lengthy debriefing session during which instructors help students make sense of their experience and uncover important interpretive themes that become raw material for interactive designs. After a field trip to an ethnographic museum, visiting professor Harald Kraemer posed the following thought experiment: If your visit was a meal, what kind of food would it be? This evoked a wide range of responses: Spanish Tapas, Nouveau cuisine, Chinese

buffet, Indonesian rice table. These strange, but stimulating, descriptions became the inspiration for students' multimedia projects.

Communication Strategies for Cultural Heritage

Communication Strategies for Cultural Heritage (CSfCH) is an on-line course that incorporates some of the elements discussed above. Created as a student project for the Moodle (http://moodle.org/) platform, it synthesizes several months of course material into a simple framework for teaching cultural heritage multimedia to beginners. Four cultural domains are studied as separate modules: Museums, Archaeology, Performing Arts and Cultural Tourism. The table below (Table 1) shows the content of the Museums module within the four-part framework: Key challenges, Strategies, Techniques and Technologies.

	1	2	3
Key challenges	Fostering aesthetic appreciation	Public perception of museums as elite institutions	Tension between preservation and access
Strategies	Creative and challenging interpretation	Context	Access and manipulation
Techniques (in case study context)	Timeline and visual comparisons in Making Sense of Modern Art	Virtual tour and photo gallery in Visas for Life	Scanning and digitization in Turning the Pages
Technologies	Flash	Hypertext, digitized images	Shockwave, custom software

Table 1: Content of the Museums module in Communication Strategies for Cultural Heritage

Each of the four modules focuses on three important interpretive issues in the given domain. These are formulated as "Key Challenges." The Museums module, for example, examines the challenges of fostering aesthetic appreciation, the public perception of museums as elite institutions, and the tension between preservation and public access to artworks. Obviously, this is not a comprehensive list. The aim is not be to exhaustive, but to get students thinking about how the unique characteristics of a domain influence the design of interactive applications.

Figure 5: Homepage for Communication Strategies for Cultural Heritage. The design template is a default used by the University of Lugano for its Moodle on-line course platform. The course has four modules: Museums, Archaeology, Performing Arts and Cultural Tourism

The second part of the CSfCH framework is a list of effective strategies for cultural heritage communication (Table 2). A strategy from the list is matched with each of the key challenges to form a problem/solution pair. On one hand, the list serves as a set of fundamental quality principles for cultural heritage multimedia. Sources of inspiration include Tate Modern's Principles of Interpretation (Wilson, 2004), Ten Quality Principles for Cultural Heritage Websites from the Minerva Project (http://www.minervaeurope.org), and the American Association of Museums MUSE Award Criteria (http://www.mediaandtechnology.org). In addition, it is an objective criterion against which applications being considered as case studies could be evaluated. Together, Key Challenges and Strategies correspond to Interpretation and Communication in the model introduced at the beginning of this paper.

Context	Creating context helps viewers connect with, understand and appreciate objects. There are many types of context: historical, social, artistic, visual, physical, etc. Finding the appropriate context for your target audience is the key to effective communication.
Access and manipulation	Technology can provide virtual access to remote locations, highly delicate objects or artifacts in storage. This allows users to look closely at artifacts and manipulate them in ways not possible in real life.
Multiple voices/readings	Alternative viewpoints or perspectives on a work should be presented to the viewer. This not only enriches the viewing experience, but also reinforces that there is no single, correct way to interpret works of art.
Creative or challenging interpretation	The design and presentation of an application should represent creative or original thinking. Often, this allows viewers to connect with the object on a deep, emotional level. Provocative interpretation may challenge viewers, encouraging them look and think critically.
Multicultural perspective	Consistent with the current mandate of UNESCO to promote meaningful dialogue between cultures, designs and presentation should be sensitive to the diverse nature of modern societies.

Table 2: Strategies for Cultural Heritage Communication

Design and Productions Skills, the second element of the overarching model, are taught through case studies of successful Web-based multimedia applications. Case studies show the Strategies (or solutions to Key Challenges) in action. More than a hundred applications were considered during the selection process, including many Best of the Web winners. The case studies illustrate the third and fourth parts of the CSfCH framework: Techniques and Technologies. Techniques were reverse engineered from the applications seen during the selection of the case studies. They are the basic building blocks of applications divorced from the technologies used to implement them. Making a separation between Techniques and Technologies forces students to think first about *what* their design needs to accomplish, rather than *how* it will be built. This emphasizes the needs of users over the lure of "cool" technologies. It also helps students understand that while design techniques are relatively constant, technologies are continually evolving and changing. The technology used to implement a virtual map today may not be the same as the one used tomorrow. Technologies are simply the actual software or coding methods used to create the specific element being discussed.

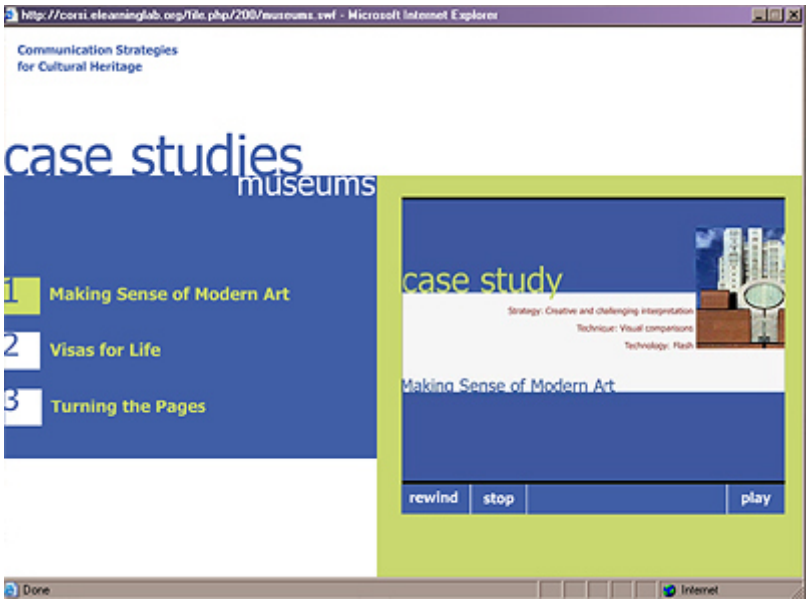

Figure 6: Screenshot of the Case Studies window for the Museums module. These rich-media vignettes walk students step-by-step through the application. The audio commentary points out which techniques and technologies are being used to solve an interpretive challenge

The final assignment for CSfCH is intended to develop students' Creative Project-making skills, the third element of the model. After working through the four domain modules, students are presented with a design challenge—the brief for a multimedia application drawn from a real-life scenario. Although the primary goal is to describe a prototype application based on the techniques they have learned, students are also expected to take organizational and economic realities and limitations into account. This encourages them to reflect on the appropriateness of their ideas in the context of a specific institution.

Clearly, this project is a work in progress. An on-line course cannot incorporate all the elements of an ideal curriculum discussed in this paper. Upon completion of the course, however, students should be acquainted with some of the most important interpretive problems and the kinds of strategies and design elements they can use to solve them. As they progress, students will go beyond the mechanical process of matching Strategies with Key Challenges and Techniques with Technologies. Ideally, they will reach a point where the framework has been internalized and they are able to combine and recombine the basic elements on an intuitive level—the same way that highly-skilled professional practitioners operate.

Conclusion

The domain of cultural heritage multimedia is entering a delicate phase during which the skills and processes of professional practitioners are being codified in academic curricula. At this critical moment, the input of the professional community is essential to ensure that educators are on the right track. This paper suggests that there are three main competencies that students need: Interpretation and Communication Skills, Design and Production Skills, and Creative Project-making Skills. It argues that instructors must have both professional experience and the ability to make connections across multiple disciplines. Courses should include collaborations with real-world cultural institutions that promote dialogue between students and professionals about the challenges of carrying out innovative multimedia projects.

The ideas presented here are simply starting points for discussion. What makes sense about this model? What could be improved? What other important questions should be raised? Dialogue with ideas exchange between the academic and professional communities is the only way to ensure that the next generation of museum professionals will be able to make meaningful contributions to the evolution of this field.

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