Collaborative Design Process of a Rich Interactive Web-based Interprofessional Pain Education Resource

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Abstract: This paper describes the design process of a Web-based interprofessional pain education resource for pre-licensure health sciences students. Working in a large multidisciplinary team, an authentic patient case was constructed. Situated in interprofessional complex care, the case highlights learning objectives related to pre- and post-operative care and treatment up to one-year for a surgical cancer patient. Collaborative design maps, copy decks and other strategies to support our collaborative design process are discussed.

Introduction

Design processes are increasingly collaborative - especially when complex interactive projects are the proposed outcomes. From the Human Computer Interaction field, user-centered design is commonly viewed as the *de facto* design approach. As a broad design philosophy, encompassing a variety of methods, user-centered design generally describes any design processes where end-users influence the overall design (Abras, Maloney-Krichmar, & Preece, 2004). Participatory design is considered a subset of user-centered design and refers to a process where the users are actively involved in the development of the products. In the learning sciences, we use the term 'co-design' to refer to projects where the classroom teacher has an integral role of the design process. Used for developing innovations that fit into authentic classroom contexts, this process relies on teachers' ongoing involvement to design educational innovations (Penuel, Roschelle, Shechtman, 2007).

All of the approaches described above reflect a way to design with multiples voices in the process, which sit in contrast to traditional co-operative processes in design studios where each member of the team possesses a distinct role. For example, the creative director would decide on the vision and strategy for the project, the graphic designer would be responsible for the layouts, logo and interface design, and the programmer would add interactive functionality based on a final design document. In many academic teams, however, members tend to take on more amorphous roles. A direct result of this is a more open and collaborative environment. Although each member arrives with expertise in specific areas, their voices are valued (and often expected) in other parts of the project. However, when working in a large multidisciplinary team, members not only provide much needed content and technical expertise, they also come with their own set of background, perspectives, biases and disciplinary jargon. This can be demonstrated by the collaborative design process in creating an interprofessional pain education resource (IPER) for pharmacy, nursing, medicine, occupational therapy, physical therapy, and dentistry students. This paper presents the IPER and strategies used to achieve a common conceptual space to effectively design the resource.

Interprofessional Pain Education Resource

An authentic patient case was constructed relating to the interprofessional complex care of a surgical cancer patient to highlight pain learning objectives related to pre-operative, post-operative, and treatment up to one-year (Figure 1). Video vignettes were created not only to carry the case narrative, but also to simulate real-world authenticity within the learning environment.
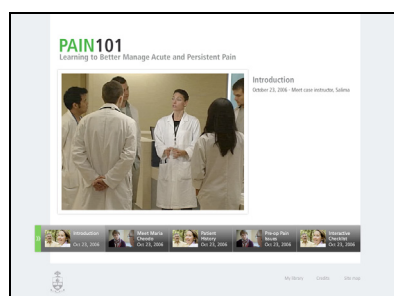

Figure 1. A Sample Screen of the IPER.

Figure 2. Pain Beliefs/Misbeliefs Checklist.

In the development of the IPER improvement of pain knowledge and correction of misbeliefs was identified as the main educational goal. Educational objectives around pain mechanisms, assessment and management and initial content scripts were considered alongside educational theories to support pedagogic design. Interactivity and video commentaries were designed around learning objectives. For example, in the pre-operative section of the IPER, an interactive, pain beliefs/misbeliefs checklist was created (Figure 2). Students would read the list of statements and check "true" or "false" box for each statement. Whether students answered correctly or incorrectly, responses would be indicated and concurrent, explanatory feedback provided. An illustrative video commentary would be immediately displayed to highlight the misbelief in a typical health care scenario and how this in turn results in poor practice. A voice-over explanatory commentary then explicitly address the pain misbelief, the relationship to care, and clarifies best practice.

Collaborative Design

Our design team consisted of experts from a variety of disciplines, including nursing, physiotherapy, education, videography, and design and Web-development. This necessitated the establishment of a common language in our discussions concerning the resource. Another consideration was the complexity of the design and the need to organize emerging ideas. The goal was to create a rich, highly interactive educational resource that incorporated a number of different media (e.g., video, animation, interactivity, slides). In order to facilitate our collaborative discourse, we developed a design map to represent the content scripts, interactivity and application flow of the resource (see Figures 3, 4).
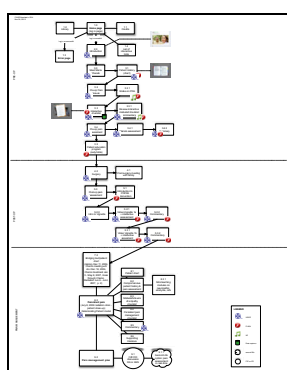

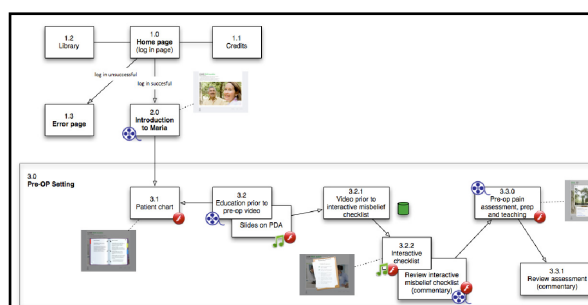Figure 3. Collaborative Design Map.   Figure 4. Close-up of Pre-operative Section in the Design Map.

Drawing from Web conventions in flowcharting sitemaps (Iuppa, 2001) and film and animation storyboarding (Tumminello, 2005), our design map allowed ideas to be visualized, added, deleted and shifted during our ideation process. Each box in the map represents a unit of content (i.e., sections and subsections) and lines between the boxes represent how content is linked throughout the application. We used symbols to identify the type of content in each box (e.g., blue film wheel representing video, green music note for voiceovers, and a Flash icon representing interactive content). Designed screenshots served to quickly describe the content with relatively little screen real estate. While nodes and links convey high-level overview information as well as relationships between elements, for documenting detailed content information we incorporated a numbering system in the maps. Numbers in the maps correspond to those in a text file, known as a copy deck. Typically, there are two columns in a copy deck, delineating audio content and visual content. The beginning of a section is marked by the number and title of the section followed by the appropriate content. For example, in one of the sections, the narration script for video content is on the left and the description of the hospital scene is on the right. The combination of copy deck along with the design map allowed the team members to discuss everything from broad application flow to interactivity and detailed content scripts in the IPER, and provided the team with a shared artifact and common language for continued development.

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Acknowledgments