

PERSONAL STORIES WITHIN VIRTUAL ENVIRONMENTS: CREATING THREE EXPERIENCES IN CANCER INFORMATION SOFTWARE

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Abstract. Virtual environments can create a relaxed mood, increasing a patient's receptivity to learning. Personal stories and an individual approach to the content, rather than abstract facts, make the CD-generated experience vivid and informative. With the user in control, selecting content and interacting constantly with the program, the virtual experience is more meaningful than the one created by simply retrieving information. This chapter explains how three CD-ROMs containing cancer information - Breast Cancer Lighthouse, Easing Cancer Pain and Cancer Prevention Park - embody personal stories and medical information in virtual environments.

1. Introduction

The Michigan State University Communication Technology Laboratory - CTL [1] began considering multimedia design for cancer patient information when we learned that the state of Michigan has a law [2] that requires physicians to give newly diagnosed women with breast cancer a multi-page brochure on breast cancer treatment options. Then a woman signs a form stating she received the brochure and that she has had an opportunity to ask questions.

The form goes in her chart. Both health care professionals and patients expressed dissatisfaction with the brochure. Although it provided factual information on treatment options to every woman diagnosed with breast cancer, it did not meet the emotional needs of a newly diagnosed woman and her family and friends.

We wanted an alternative experience that would accomplish several goals:

- 1) replace the sense of terror invoked by the word "cancer" with a realistic, but calming and hope-filled sense of what it is like to be diagnosed with breast cancer and treated for it;
- 2) offer current medical information about diagnosis, treatment options and recovery;
- 3) provide a "virtual support group" made up of personal stories from real people;
- 4) be feminine and calming.

2. Purpose

We examined current breast cancer information dissemination products and derived the following premises:

- Traditional patient information brochures have a fairly standard format, typically using the voice of medical authority to convey facts about a disease or condition. Color schemes, graphics and typography help customize the content.
- Traditional patient information instructional videos are linear, to be watched from beginning to end, and tend to be filled with dry facts. Sometimes patients are quoted briefly, but mostly health care professionals present information. Overall, instructional patient information videos look alike.

- Interactive multimedia is a richer medium than video offering greater potential of experience because the user controls the nonlinear presentation and the diverse media that can be incorporated into the experience.
- CD-ROMs can be a richer, more diverse experience than web pages, at least with today's networking limitations and slow speeds.
- It is possible to create patient information CD-ROMs that mimic instructional patient information videos or instructional patient information brochures.
- Creative use of CD-ROM technology can produce very different patient information experiences because the user must constantly interact with the CD, creating her or his own experience. The CD is engaging and involving, and the design can encourage that involvement.
- CD-ROMs can be designed to convey a mood or feeling. This can be accomplished through "look and feel" elements such as audio, narration and graphics.
- Environments evoke different moods or feelings - the Grand Canyon is breathtaking and vast. Oceans are powerful, pensive, peaceful. A garden is sensual and beautiful. An office may be professional, elegant or nondescript.
- Humans choose their environments in part to meet emotional needs. Office and living spaces are designed to fit personal preference, with different rooms designed for different moods and functions. Trips and vacations are chosen to seek a particular experience.
- Designing CD-ROMs to reflect a particular environment can invoke a desired mood or feeling and enhance the sense of participating in an experience.
- The language in the CD can speak directly to the user, addressing her or him as "you." Each word of description and narration can be written with the user in mind, addressing her or his concerns directly and warmly. The tone of the words can be sensitive and caring. For example, the following is a factual sentence: "The dose of radiation used in mammograms is minimal and should not create a problem. Regular mammograms result in earlier detection and decrease the chances of dying from breast cancer." A more personal approach is: "The dose of radiation used in mammograms is minimal and should not create a problem for you. Regular mammograms result in earlier detection and decrease your chances of dying from breast cancer."
- Hearing facts about how a disease or condition will affect the body does not give someone an understanding of how having that disease is going to affect her or his life.
- Support groups give people with diseases the chance to hear what other people have been going through, and how they cope. CD-ROMs cannot provide a live support group. But, they can provide the experience of listening to a support group.
- The Internet is being used for online support groups, primarily through text chat-rooms and email. CD-ROMs that use audio and video clips can let patients and their families listen to stories of people who have faced similar life circumstances.
- Some instructional videos and CD-ROMs construct sample patient quotes and hire actors to read those lines. Even when they use real patient stories, a linear video production tends to pick short quotes that fit exactly the point they are trying to make at that point in the program.
- CD-ROMs can use real personal stories and include the entire interview. Because the user is in control, she or he can pick the part of each person's story to which to listen.

Based on our findings on brochures, videos, web sites and CD-ROMs, we decided to use CD-ROM technology to design very different cancer information experiences. The products are called "experiences" because the user (people with cancer and their families, friends and caregivers) must interact with the CD, thus creating her or his own experience. Careful design can encourage involvement. Mood and feeling can be accomplished on a CD-ROM through "look and feel" elements such as audio, narration and graphics.

This chapter will describe the Creativity-Driven Design Model [3] for multimedia and how it was used in the designing of three cancer information CD-ROMs: *Breast Cancer Lighthouse* [4] *Easing Cancer Pain* [5] and *Cancer Prevention Park* [6].

3. Methods

3.1 *Creativity-Driven Design Model*

We used a Creativity-Driven Design Model developed by Heeter and the CTL team [3]. Creativity, intuition and flexibility are at the center of every phase of software design. Because no model can create exciting interface design on its own, designer background and intuition are additionally important considerations. The Creativity-Driven Design Model has five steps that are organized in a linear fashion but are meant to be revisited many times throughout the design process:

Step 1: Defining the problem statement: Interesting problem statements encourage interesting projects. Negotiating a powerful problem statement is the first creative act of software design. We start with a general content domain or problem space and begin a process of clarifying intended users and emotional and informational goals. We immerse ourselves in the topic, reading, seeking media examples, observing and interviewing people involved with the content, getting to know users, and brainstorming with content experts. From this base, the project director and other relevant stakeholders reach agreement on a problem statement that defines the intended users and goals of the software. We bring our familiarity of the potential of interactive media to the problem domain to allow us to advise our stakeholders about what the medium can do best as we refine goals and audience definition of the software to optimize both stakeholder needs and the potential of interactive media in the problem domain.

Step 2: Finding a vehicle. This is a period of brainstorming core defining elements of the software. For example, we look at metaphor, function, point of view and style. The intent is to find a powerful mix of the potential of technology, art and function. The whole project should not be mapped out too early because each stage should be allowed to introduce changes.

Step 3: Prototyping. Initially we develop one small chunk of the project, to test drive and revise the vehicle. At this stage we also experiment with artistic and technical methodologies before engaging in large scale implementation

Step 4: Implementation. At this stage, we more specifically define the scope of the content and then replicate and expand upon the successful prototype, maintaining harmony and balance as it grows. Stages 1 through 3 are repeated on a much smaller scale during the implementation phase each time we encounter undefined elements of the design or find reason to redefine elements.

Step 5: Questioning Assumptions and finishing. Implementation tends to be a long process of mostly doing more of what was planned. Toward the end, it is helpful to stop and question the entire interface. Significant changes in form and function are often made in the final two months of a multiyear project. The designers' and programmers' perspectives have changed. We have observed users with the software. The interface may no longer be efficient. Methods of programming that made sense at the beginning can be much more elegant and flexible. We at least stop and consider changing the look and feel and function of the software, though usually not the content, in the final phase.

3.2 *Creativity-Driven Design Model and Breast Cancer Lighthouse*

We used this model on the first cancer information CD-ROM, *Breast Cancer Lighthouse*, and were able to build upon that design experience when developing *Easing Cancer Pain* and *Cancer Prevention Park*. The CD-ROM is discussed briefly, followed by a discussion of how these steps in the model were implemented. *Breast Cancer Lighthouse*, the first interactive CD-ROM, offers newly diagnosed women and their families, friends and caregivers the experience of walking along a sandy beach to meet women and hear their personal stories or

walking along the paths through different gardens to learn more about diagnosis, treatment and recovery issues. The mood of the virtual environment is calming and feminine.

Step 1: Defining the Problem Statement. We worked with a content consultant to brainstorm on medical topics, spoke with breast cancer survivors to discover their needs and gathered reference material on all aspects of breast cancer. Based on the findings, we reached a problem statement: to design a virtual environment where women with breast cancer, their families, friends and caregivers could have an experience that would give a realistic, yet calming and hopeful sense of what it is like to be diagnosed with breast cancer and treated for it; to offer current medical information about diagnosis, treatment options and recovery, and provide a “virtual support group” made up of personal stories from real people. Above all we wanted the experience to be feminine and calming.

Step 2: Finding a Vehicle. We searched for a virtual setting that would be consistent with our goals of a feminine and calming environment. We decided on an island metaphor with sandy beaches, colorful gardens and a lighthouse to act as a beacon to guide the way. We wanted to provide an experience that was common and comfortable to many people. Walking on a beach was a natural choice. The style of all the elements had to be consistent with the problem statement. We decided to use actual photographs of beaches and plants and combine them using Photoshop software to make our virtual island environment. The resulting experience was realistic yet, calming and feminine. There were two experiences within the island environment: personal stories and medical information. The lighthouse was the navigational icon for moving between the two experiences and was always visible in the background of every scene. The seabird, also in each scene, allowed the user to quit the program. The personal story experience was on the beach. By walking along the virtual beach, the user met women who had survived breast cancer and listened to their stories concerning diagnosis, treatment and recovery of breast cancer. Each scene showed a woman resting, looking out at the water with “go on” or “go back” wooden signs in the sand. A gentle voice introduced the woman with her name and cancer information. The user could choose to click on the woman to hear her story or click on the signs to go hear other stories. Each beach scene visually led into the next as if the user were rounding a vista on a real beach walk. The medical information experience was in the interior of the island. Signposts guided the user down a path leading through gardens containing information on diagnosis, treatment and recovery issues. For example, in the recovery garden, the user could choose to learn about physical recovery, family adjustment, long term follow-up and emotional recovery by clicking on the labeled signs. Each signpost on the path was located in its own bed of colorful flowers. An enlargement of the flower bed became the background for the detailed medical information screens. The medical information was presented in both written and audio form. The text was read by a compassionate and competent voice and could be turned off by the user at any time. Stories by the women pertaining to specific medical information could be accessed from these screens.



Figure 1. Breast Cancer Lighthouse CD - Beach walk for personal stories

Step 3: Prototyping. We began to put the idea together in a concrete form. Photographs from Brazil were manipulated in Photoshop software to create the virtual island and beach walk. The same process was used to create the colorful interior scenes from various garden photographs. We researched and wrote the content topics, which were reviewed by a content consultant. Questions were drafted and interviews were conducted with breast cancer survivors. We used Hi 8 video cameras to tape the interviews and processed them in Sound-Edit software. The elements were integrated and made interactive in Director. We processed the opening navigation, three interviews and one topic area, and tested the prototype. We evaluated the feedback, made some changes and adjustments and felt we were ready to implement the design.

Step 4: Implementation. By this step the design team was confident about the direction of the project. Each person knew his or her job titles and the description of the work needed to implement the design and create the multimedia experience:

- Executive Producer: maintained a clear vision of the project.
- Project Director: led the design team through the design process, directed the team, created and updated flowcharts/progress maps/milestones, assisted with all project components as needed.
- Art Director: provided a consistent vision and style and directed the art staff.
- Writer: researched and wrote the content in a style consistent with the goals of the project; got final approval from the content consultant.
- Programmer: integrated the elements into an interactive product using Director software.
- Interviewer: scheduled and conducted interviews with breast cancer survivors and family.
- Audio/video staff: taped interviews, digitized and edited audio and video.
- Support staff: provided support where needed.

Step 5: Questioning Assumptions and Finishing. With the *Breast Cancer Lighthouse* nearing completion we looked at it carefully and questioned the original assumptions. Was the metaphor still strong? Did the navigation get sluggish as the product evolved? Did recent changes in technology merit upgrading the product? Was the product consistent with the problem statement goals? Was the content clear and accessible? Were the personal stories strong and supporting? We dealt with the above questions and made changes where necessary. Overall, we were quite satisfied with the breast cancer experience. We reflected on the interview process for the personal stories. We went to support groups and invited women to participate. Soon women were contacting us, offering to tell their stories. The breast cancer survivors were asked about their experiences of being told they had breast cancer, of making treatment decisions and of going on with their lives. Our interview questionnaire was only a starting point. The women gave us more than we asked and greatly enhanced the experience of the CD. We were also able to interview children, a spouse and a partner of the survivors who gave us their stories. Based on informal feedback, the storytelling process was as beneficial to the woman telling her story as the stories were beneficial to the woman experiencing them on the CD-ROM.

3.3 *Designing Easing Cancer Pain (ECP)*

We based the next two cancer information CD-ROMs, *Easing Cancer Pain* and *Cancer Prevention Park*, on the Creativity-Driven Design Model. Below, are brief descriptions of the products followed by a summary of their design differences and special challenges in the design process.

Easing Cancer Pain, the second interactive CD-ROM, offers people with cancer and their families, friends and caregivers the experience of sitting at a campfire circle at a retreat center to meet other people with cancer who have experienced pain and hear their personal stories, or walking the retreat grounds on a path through different terrain to learn more about assessment of pain, barriers to seeking pain relief and treatment of pain. The mood of the virtual environment is empowering and hope-filled.

Step 1: Defining the Problem Statement. The set of problem statements that launched *Easing Cancer Pain* were to: 1) replace the feeling of despair that comes from uncontrolled pain with the feeling of empowerment from understanding pain and its varied treatments; 2) offer information on assessment of pain, barriers to seeking pain management and treatment of pain; 3) provide a “virtual support group” made up of personal stories from real people; 4) be hopeful and caring.



Figure 2. *Easing Cancer Pain CD - Kiosk level showing pamphlet titles*

Step 2: The Vehicle. In the search for a virtual setting that would be consistent with the goals of hopefulness and caring, we decided upon a natural retreat center composed of a lodge, a lake, sand dunes, a forest and a campfire circle. We wanted to provide an experience that was common and comfortable to many people. Walking on a path through natural environments fit the need. There were three experiences within the retreat center environment: personal stories, factual information and an expert interview. The main navigational icons were maps and a navigational bar was at the bottom of each content screen. The program opened in the lodge or welcome center where the user could choose to click on an expert to hear her comments or click on the main map of the retreat grounds. The map would take him or her to an enlarged view of the selection. These selections included the Assessment Lake, Barrier Dunes and Treatment Forest. The user could also click on the Campfire to go to the campfire circle to hear personal stories or on the Lodge to return to the Welcome center. The enlarged view showed kiosks that identified a topic. Assessment Lake topics included pain assessment, pain caused by cancer, pain caused by treatment, and pain caused by other illnesses. Barrier Dune topics included barriers to reporting pain, concerns about addiction, concerns about side effects, and getting the help you need. Treatment Forest topics included narcotics, non-narcotic pain relievers, other medications to relieve pain, complementary treatments, and structured supports. Clicking on a topic took the user to a virtual kiosk that contained informational pamphlets and was on a path that wound through the retreat grounds. The user could choose to click on a pamphlet to get specific information, click on the path to move to a different kiosk or click on the map icon to return to the map overview. The Campfire Circle represented the personal stories. The people found at the campfire were people with cancer, their children, spouses and caregivers. They were available to tell their stories concerning pain assessment, barriers to seeking pain management, pain treatment and outcomes of their pain management experience. The personal stories were also accessible through the information kiosks. For example, if the user selected the Acupuncture pamphlet in the Complimentary Treatments kiosk found in the Treatment Forest, he or she would have the option of clicking on Valerie to hear her acupuncture story.

Step 3: The Prototype. Similar to the *BCL*, *ECP* required the immediate work of an artist. Maps needed to be drawn and a visual tone established. The virtual environments of the lake, dunes, forest, campfire and lodge were created from photographs of places in Michigan and manipulated in Photoshop software. Unlike the *BCL*, the content was determined and

produced by a content expert. Questions were drafted and interviews were conducted with people with cancer, their family and caregivers. The navigation was implemented. The prototype was tested and evaluated. Changes were made. We went forward with the working design.

Step 4: Implementation. The main difference in the design and implementation of *ECP* from *BCL* was the addition of a content expert as a co-author of the CD-ROM. The content expert worked with the design team. She identified and researched the topics, wrote the copy in a style consistent with the goals of the project and sent the copy out for peer review. Her active presence brought a heightened credibility to the product. The process was more efficient than the one used in *BCL* where a staff member researched the topic, wrote the copy and passed it by a content consultant for approval. Also, due to commitments to other projects, a student artist was used in *ECP* rather than a professional from the CTL team. Although we routinely used students throughout projects in different capacities, this experience made us realize the difficulty of relying on a student to play a key role. We found that most students did not have a long term commitment to a project, they had time restrictions due to class loads and other activities, they needed guidance and instruction and they lacked the experience and vision of a professional.

Step 5: Questioning Assumptions and Finishing. We made many decisions as we were finishing *ECP*. A major software upgrade occurred during the course of the project and we decided to upgrade as well. The navigation had always seemed sluggish and we took the time to solve the problem. We had to accept the fact that art for certain screens was never going to be available and rethink the presentation. Problems were encountered in the interview process for the personal stories that needed to be addressed before starting future projects. For both *BCL* and *ECP*, we conducted interviews, gathered information and edited it into usable pieces for the personal stories. We went to support groups and invited people with cancer to participate. Additionally, for *ECP* we contacted hospice, pain centers and radiation clinics and asked for referrals. Unlike the breast cancer survivors who were eager to tell their stories, we found that the people with cancer pain had less desire to be interviewed. Those who agreed to participate did so saying that they were happy to be able to help others understand cancer pain. Often, the family and caregivers were present and were included in the interview as well. We found that the difficulties of finding people to interview were because some people with cancer pain were too ill to be interviewed, some family members were very protective of the person with cancer and refused an interview and few referrals came from professional sources.

3.4 *Cancer Prevention Park*

Cancer Prevention Park, the third interactive CD-ROM, offered people who wanted to learn more about cancer prevention, the experience of a theme park where they could enter pavilions to play games that reinforced good cancer prevention habits, to hear personal stories from people who had made positive changes in their lives and to hear experts answer frequently asked questions concerning cancer prevention. The four topic areas were nutrition, physical activity, exposure to sun and exposure to tobacco and second hand smoke. The mood of the virtual environment was motivating and fun.

Step 1: Defining the Problem Statement. This project was intended to motivate low income, under-served people to take steps to prevent cancer in their lives. However, the project can benefit anyone who wants to learn about cancer prevention. The set of problem statements that launched *Cancer Prevention Park* were to: 1) encourage positive changes in life style that would promote cancer prevention; 2) offer cancer prevention information in the areas of nutrition, physical activity, exposure to sun and exposure to tobacco and second hand smoke; 3) provide a “virtual support group” made up of personal stories from real people; 4) be fun and motivating.

Step 2: The Vehicle. In the search for a virtual setting that would be consistent with our goals of the experience being fun and motivating, we decided upon a theme park with pavilions that included interactive games, a booth for experts and a slot machine. A ticket was

stamped after each activity and kept track of the user's journey through the park. A rendering software was used to create art with a photo-realistic look. The colors were bold and primary. The music was lively. The entire "look and feel" was fun and inviting.



Figure 3. *Cancer Prevention Park CD- Overview of theme park*

Three kinds of experiences were designed in the theme park environment: personal stories, games and expert answers to questions. A ticket stub served as the navigational icon, allowing the user to exit the game, go to main view, look at the entire ticket or quit the program. The program opened with a view of the entire park with its four pavilions and welcome center. In the background, a user could hear music, sounds and a loud speaker voice announcing the events at the park. Each pavilion was designed to reflect its theme: a nutrition pavilion in the shape of a giant tomato, a physical activity pavilion designed as an Olympic stadium, a sun pavilion represented by a fire ball and a clean air pavilion that was a sky needle. Each pavilion had one or two games containing cancer prevention messages, a personal stories slot machine and an "Ask the Expert" booth with answers to frequently asked questions dealing with its topic (i.e., nutrition, physical activity, exposure to sun, and exposure to tobacco and to secondary smoke). The personal stories are also organized by topic and were found in a virtual slot machine. The user pulled the handle and got a winner—a person who had taken steps to make positive changes in his or her life. The pavilion games reinforced the cancer prevention messages. The nutrition games in the Giant Tomato were "Create Your Plate Cafe" and "Find the Fat." "Physical Activity Calculator" and "Physical Activity Weekly Planner" were in the Olympic Stadium. The "Sun Hat Game" and "Dressed at the Beach" were in the Sun Dome. The Sky Needle housed the "It's Your Choice Video Adventure."

Step 3: Prototype. Since a goal of *ECP* was to be fun and motivating, we decided to present the content in the form of games rather than narrated information pamphlets as in *BCL* and *ECP*. Each game was rendered in a photo-realistic style and required interaction on the part of the user. In "Create Your Plate Cafe" the user walked down a cafe line and selected food from a shelf, put it on a tray and continued to the checkout counter. The personal stories were presented by topic not by person as in *BCL* and *ECP*. At the *ECP* campfire the user chose an individual and selected his or her statement from one of four categories: assessment, barriers, treatment and outcomes. In *CPP*, the user chose a category (i.e., nutrition, physical activity, exposure to sun, exposure to tobacco and second hand smoke) and selected a statement from a person who appeared in the slot machine. The storytellers could be in more than one slot machine depending on the topic of their stories. The "Ask the Expert" booth provided a way of presenting direct content, similar to the information pamphlets in *ECP*. However, instead of written content presented on a single screen, in *CPP* the content was presented orally by the content expert in response to an oral and written question.

Step 4: Implementation. Both *BCL* and *ECP* had a standard visual format. Once the beach or path scenes were designed, it was easy to produce the next screen. *CPP* had only two standard formats, the slot machine and the expert booth. All the games had unique graphics

and the art director had a big responsibility to keep all the elements in harmony within the game, the pavilion and the theme park environments. The programmer was a seasoned professional with excellent problem solving skills. While eager designers brainstormed on game possibilities, the programmer reeled them into reality and addressed the question of “how does this work?” We wanted the games to be realistic and to function normally. The slot machine, the physical activity calculator and the mechanical device that managed the baseballs in the “Ask the Expert” game were very successful.

Step 5: Questioning Assumptions and Finishing. With the product nearing completion we looked at it carefully and questioned our original assumptions. Cancer Prevention Park was a highly creative product. The majority of elements were unique and not reusable. The games each had separate art and programming. Only the expert booth and slot machine had repeating elements. The art director had kept the visual tone consistent. Sound effects and theme music became dominant elements in the games and overall program. We considered changes up to the deadline to ensure a strong presentation. The audience was low income under-served people in Michigan. The Extension Office at MSU was working with this population. For the personal stories, we interviewed people from the extension programs and asked them questions concerning their experiences with nutrition, physical activity, exposure to sun and exposure to tobacco and second hand smoke. For the “Ask the Expert” questions, we arranged for the experts to attend extension program sessions and allow the people to ask questions that concerned them. Of the three CD-ROMs, *CPP* was completed in the shortest amount of time. We had ten months to complete the project. By the time we had met with content experts, defined the problem statement, found a vehicle and created a prototype we only had 6 months to do the actual game designs, implementation and testing. Although we had to plan around vacation schedules, we kept the project moving full time through the summer. There were advantages to a tight deadline: the team was focused on one project; the elements were created and implemented quickly; problems were identified and changes made as necessary; the project had a momentum of its own.

4. Conclusions

This chapter was written from the perspective of multimedia designers, not cancer prevention researchers. We welcome studies of the CD experiences described in the chapter, and we describe the design process and assumptions in sufficient detail to allow others to adopt the personal stories and embodied information techniques in their own patient information product design.

We have shown Breast Cancer Lighthouse and Easing Cancer Pain to hundreds of health care professionals, patients, family members and multimedia designers. The response overwhelmingly is “I want to use this with my patients” or “I wish I had this when I was diagnosed.” Breast Cancer Lighthouse was a finalist in the MacroMedia People’s Choice Awards in 1996 and was selected by peer review for exhibit at the annual SIGGRAPH society for International Computer Graphics Convention. It was also exhibited at the Virtual Reality and Medicine Conference in 1996. In 1998, Easing Cancer Pain was presented at that same conference. American Cancer Society created 2,000 copies of Breast Cancer Lighthouse to use at ACS centers national-wide. The State of Michigan has purchased 20,000 copies of Easing Cancer Pain for statewide distribution.

We created three interactive multimedia experiences that welcomed users into virtual sound and visual environments that were designed to help newly diagnosed women, their family, friends and caregivers understand and deal with breast cancer, empower people with cancer by providing them with information on cancer pain and motivate people to take steps to prevent cancer in their lives. The navigation was carefully constructed to help users get to the information they most want and need. Integrating personal stories with factual information was a unique and important part of these CD-ROMs. The personal stories provided a virtual support group with stories relevant to the users. We learned from each new project and are confident that the Creativity-Driven Design Model will continue to be a sound structure in the future. We feel that interactive multimedia has the potential to help people more than ever by providing an individualized experience.

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