Integrating an Information-Intensive Website into Pedagogical Practice

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Objectives

Regardless whether you are a teacher, administrator, or designer, the process of integrating new technologies into pedagogical practice has implications. As a teacher, you want to synthesize helpful tools into your current routine with the least amount of difficulty. As an administrator, you want to choose the best technique for the introduction of technology in an aggressive yet realistic timeframe. As a designer, you want to build something simple, powerful, and helpful with permanence and adaptability.

This study followed the introduction of the Arthritis Source website into the existing teaching practice of Arthritis Foundation Helpline volunteers. The goal was to examine what factors may affect a particular group of educators adopt a potentially valuable Internet tool into an existing instructional environment.

Theoretical Framework

Some studies that involve technology and the workplace deal with integrating product design and redesign while focusing on the users and their interactions with the technological artifacts (Bannon & Bodker, 1991; Blomberg, Suchman, & Trigg, 1997; Kling, 1999). Other studies, concentrating more on the theoretical aspects of technology and workplace environment, describe the importance of the social interplay between people, their tasks, and the tools used to perform these tasks (Engstrom, 1990; Gasser, 1986; Norman, 1991). It therefore seems prudent to look at the introduction of new technologies into educational environments as a special case of workplace adoption, since classrooms are the workplaces for students and teachers.

Historically, new technological advancements have found their way into educational practice alternatively in heavy and light doses in pockets of time since the 1920s, each instance of heavy technological advancement ushering forth new waves of advocacy from the public, business arenas, and administrators alike (Cuban, 1986). Emerging in parallel with new discoveries and emerging theories in natural and social sciences have come the textbook and blackboard, filmstrips and video, and most recently computers and the Internet. Each of these new technological advancements in educational delivery method has not, in its truest sense, reformed the way most education is offered, thereby under-realizing their full potential as predicted by many technology adoption advocates (Noble, 1999). This is not to imply that technology and work practice has not met with success. It is suggested, instead, that care must be taken when introducing technologies to improve the job performance and the resulting product of individuals who must learn to integrate these new methods and tools into their existing working—and in this case, teaching—practice.

Methods

People in various geographical locations call the Helpline to acquire information regarding arthritis symptoms, diagnoses and treatments. Questions the volunteers receive cover a variety of topics including surgery, pain management, doctor-patient relationships, disease prognosis, and medications. The Arthritis Source is a website designed to be a personal information source for those who wish to learn about bones, joints, and arthritis (Matsen, 2000). In January 2001, a computer with high-speed Internet access was introduced to the volunteers in the Helpline offices. For two months I explored issues of technology adoption in the context of how volunteers used the tool as a teaching resource in their interactions with callers and in their own learning efforts.

I acted as a participant observer in discovering how volunteers used the Arthritis Source in the course of normal daily activities and I audio taped semi-structured interviews between myself and the volunteers. I also interacted with the volunteers by asking questions about their work during the course of normal daily procedures and subsequently recorded field notes. By participating in discussions soon after their caller interactions, I was able to acquire the volunteer’s ideas about their methods and choices of procedure while it remained fresh in their memory. This way I explored many facets of the participant’s
concerns, pursuing leads when appropriate, while maintaining a sensitivity to the situation at-hand (Becker & Geer, 1969).

Research has documented the value of using qualitative methods such as observations and interviews to study technology adoption (Baher & Ma, 1999). Using descriptive research methods in the diverse setting of arthritis education helped in understanding the complex phenomena associated with the introduction of technology-based tools. I acquired insight into the volunteers’ procedures and routines by interviewing them about specific activities they perform during their daily activities. The interviews were semi-structured in that I asked them general questions about their observations and use of the Arthritis Source website in order to gain the volunteer’s perspective (Patton, 1980). The interviews were conducted individually between participant and researcher and helped illuminate how volunteers decided what information to provide each caller.

The authors of the Arthritis Source proposed that the website will help the volunteers in their work by educating the participants about previously unknown arthritis information and possibly providing them with an additional resource in which to refer the Helpline callers for arthritis information. In developing a coding and analyzing scheme, I grouped instances and events under the broadly based categories of means, motivation, and opportunity, all the while attempting to identify new or parallel factors that emerged from patterns within the data.

Data

To answer the question of what factors influence the adoption of a technological tool into an existing teaching practice, I first analyzed the components of the “existing teaching practice” in order to determine what aspects of the new technology might be helpful and worth the bother of integrating in the first place. Important to note is that two pedagogical duties the volunteers performed were realized in nearly every recorded interaction between the volunteer and the caller. First, each volunteer offered comfort to the caller by providing personal experience and empathy through learned listening skills. Second, each volunteer saw himself/herself as ideally being able to anticipate additional informational needs that arose with each caller. Defining the possible uses of the Arthritis Source in reference to the volunteers’ actual job duties provided a clearer understanding of how the volunteers might use this new technology through a combination of staying abreast of arthritis information and by providing information in a managed environment to each caller.

I focused on three Helpline volunteers who experienced different physical, environmental, and cognitive means that allowed them access to the new tool. Each subject experienced varying levels of inclination of motivation in areas of learning, levels of satisfaction, and responses to outside influences. Each subject had varying amounts of opportunity prompts in which to interact or refer the Arthritis Source website. Following this data summation, it is not surprising that Helpline volunteers experienced different rates of adopting the information-intensive website into their traditional work routine.

Conclusions

It is the job of researchers to make available a more complete picture of the intricacies involved in the effective adoption of technological tools in educational environments. Such knowledge can facilitate improvements in the design of human-computer interfaces, enhancements in the design of technological tools themselves, and the delivery and support mechanisms designed for learners—not for teachers who are charged with showing others their full potential.

What is important to understand from this data is that each individual holds different attributes that will shape his/her adoption timeline; each person possesses the key that will reach and overcome the obstacles that lead to effective integration into his/her own teaching practice, assuming the tool can in itself provide a means of improvement. It should be noted that the Helpline volunteers provide an invaluable service for most of the callers, as one study noted, fulfilling “[t]he most frequent need…emotional support, followed by referral, [and] symptom/test explanation…” (Maisiak, Koplon, & Heck, 1989, p. 1474). These tasks can likely best be accomplished through human-human interaction, to which adoption of the Arthritis Source may provide a limited function. For the pedagogical functions related to the organization and dissemination of arthritis information, we must illuminate what aspects of the Arthritis Source will be most helpful to them. Two pedagogical practices emerged from the data: staying abreast of arthritis information and providing information in a managed environment to each caller.
Volunteers varied in the many different factors that have an effect on the adoption of a new technology into their pedagogical practice, but their experiences can be grouped into three categories of means, motivation, and opportunity. Within each of these categories, some factors can be felt throughout the matrices such as feelings of satisfaction and the comfort felt with different resources.

Novice users of technology commonly feel intimidated by the new elements, both because of its unfamiliarity and due to the fear of making an irrevocable mistake. These fears are often propagated, even accidentally, by coworkers and organizations that have a “black box” mentality of the technology and this will have an adverse effect on the rate of adoption. Without thorough training, or an available means of reference for the most advantageous aspects of a new tool, adopters may feel the tool is obtuse, troublesome, or unhelpful. If a technological resource appears to contain redundant information, or contains “unconfirmed” or “unproven” elements, the adoption of the resource is likely to be slowed. Instead, take care to offer direct examples of how the tool can be used to improve the pedagogical routine, and ensure the patience exists to practice the beneficial uses before integrating them into the job. These are but three prominent claims that emerged from my interactions with the Helpline volunteers and their use of the Arthritis Source and more claims are likely to exist.

The volunteers use of the website increased over the time I observed them, and they found it quite helpful in some instances. And because my goal was to examine the process of adoption and identify factors that affect this process, making a claim of whether or not “successful” adoption occurred does not seem to make sense. Instead, we should focus on the particular nuances of the patterns that each subject experienced. In these patterns lie the basis for individual adoption parameters that might then be identified and embellished into helpful adoption policies and practices.

Educational Importance

The potential learning value inherent in an educational device is derived from numerous design factors such as material, structure, organization, and navigation (Nielsen, 2000). The significance of such factors cannot be overlooked as a crucial aspect of computer-based education. The nature of the learning material is primary with each educational discipline having a distinct and steeped history in the way information is introduced, dissected, and aimed toward eventual comprehension. In addition, volumes have been constructed concerning the effective structure of technological tools, bringing forth entirely new disciplines of communication science and human factors engineering (Norman, 1988). The organization of text and layout is critical to comprehension, as evidenced with the controversial Florida butterfly-ballot, which experts in visual perception and lay people alike have determined to be ambiguous (Bricklin, 2000; Saund, 2000). Thus as the tentacles of technology continue to infiltrate our existence in work, play, and education, the development of a better understanding of the significance and nature built into our devices becomes ever more urgent.

This research benefits organizations wishing to adopt new technology-based tools and those looking for ways to ease the transition of integrating Internet applications into their existing systems. Also interested is the research community concerned with effective information design, technical communication, observational analysis, and human factors. In fact, there are few occupations that do not include the sharing of information, design strategies, and collaborative effort through technological means. Consequently, instructors are providing similar work settings in their classrooms in order to provide the most effective educational environment as possible.

Eventually one may address additional teaching related questions that can be brought to bear with technology and its applications: how does the use of this tool help the educator prepare learning materials in respect to traditional methods? The answers may contradict expectations by pointing to ways in which teaching methods were hindered by technological use. Other “unexpected” results in the study may also emerge. This idea, then, of creating teaching and working environments utilizing technology in its most effective form is the hopeful contribution to theory and practice of this research.

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References


