



## **Chapter 6**

# **An Intrinsic, Quantitative Case Study of WebCT Developers**

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### **Learning Objectives**

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1. Describe the research question or problem in the introduction.
2. Summarize in your own words orally or in writing the gist of the literature review, including the theoretical framework to support the questions, problem, or need.
3. Describe the gist of the methodology, including:
  - a. The participants [e.g., level, prerequisites, prior knowledge of the dependent variable under consideration, motivation to learn (intrinsic better job, etc.)]
  - b. The materials in depth [e.g., online, tools, software utilities, workbooks, writing materials, verbal instructions, etc.]
  - c. The research design [e.g., hypotheses, sampling method] variables [e.g., dependent, independent]
  - d. The instrumentation [e.g., written test, time stamping, dribble files, interview questions, written work, method of segmentating protocols, etc.]
  - e. The procedure [e.g., “the procedure in this study followed those suggested in previous studies of this kind (reference),” and summary]

4. Describe the gist of the results, including:
  - a. The methods used in collecting the data
  - b. The methods used in analyzing the data
  - c. Pre-test results of prior knowledge
  - d. Predisposition to study style or modality
  - e. Post-test results of treatment effects
  - f. Delayed or retention test results
5. Write a brief statement:
  - a. Linking previous research to the results arising from the analyses of the data
  - b. Conclusions of the study
  - c. Contributing factors
  - d. Implications of the study
  - e. Limitations of the study
  - f. Recommendations, and a summary
6. State whether or not the references in text and in the list follow the current APA standard.

## **Abstract**

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*An intrinsic case study investigated the claim that distance educators at an Eastern Canadian college ( $n = 17$ ) with some knowledge of instructional design but a limited technical knowledge could, without human support, use Web-course management tools to create sophisticated online educational environments. Results of the study showed that these participants needed more assistance in both technical and design aspects of Web-course management than currently offered in the tools and help in the Web management systems. Phase theory was introduced as a teleological taxonomy that describes Web-course management based on the educators' intuition, personal preferences and prior educational experiences with Web-course tools (Mann, 1999a, 1999b, 2000). The principles and underlying assumptions of the theory are discussed in the light of current capabilities and recent research.*

## **Background and Statement of the Problem**

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At the time, there was a range of Web-course management tools used by colleges, universities and training organizations around the world that aspire to offer students a comprehensive online distance education. These included *LearningSpace* (Lotus Corporation, 1998), *Virtual-U* (Harasim & Calvert, 1997), *TopClass* (WBT Systems, 1997), *eWeb* (ECT, 1997), and *WebCT* (Goldberg, 1997). Such systems provided a marking

management system, searchable image archives, student evaluation, timed online quizzes.

Developers of Web-course management systems (Goldberg, 1997; ECT, 1997; Harasim & Calvert, 1997; Lotus Corporation, 1998; WBT Systems, 1997) claim in their promotional literature that educators (with some knowledge of instructional design) and little or no technical knowledge can use their Web-course management tools to develop online instruction. "All you need is an idea FlexTraining takes care of the rest" (Online Development, 2004).

Similarly, TopClass e-Learning Suite, developed by WBT, received the highest overall score for: adherence to accepted technology standards, creativity and originality, measurable productivity gains from usage, ROI achieved by end-users, and productivity improvement. Nothing was mentioned about improving teacher practice or improving learning online.

This study investigated the extent to which distance educators with limited technical knowledge and with some knowledge of instructional design could use Web-course management tools to design instruction for the World Wide Web.

## **Intrinsic Case Study**

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Given the growing number of participants in learning from Web courses, the investment of time, skills, and cost, intrinsic case studies can be seen to be as critical to the enterprise of Web-course management as they are, for example, in medicine or law. An "intrinsic case study" of learning in a Web course is an investigation of a specific individual or group where the aim is to understand the actions and motives of the participants under investigation. Intrinsic case studies are contrasted with "instrumental case studies" and "collective case studies." Stake (1994, 1995) defines the term "intrinsic case study" as an investigation of the particulars of the object under investigation. The case itself is of primary interest. A similar term would be a "snapshot case study" (Jensen & Rodgers, 2001, pp. 237-239) identified as a detailed investigation of one research entity at one point in time.

Wikipedia (2004) refers to an illustrative case study. Illustrative case studies are descriptive. They utilize one or two instances to show what a situation is like. This helps interpret other data, especially when there is reason to believe that readers know too little about a program. These case studies serve to make the unfamiliar familiar, and give readers a common language about the topic. The chosen site should be typical of important variations, and contain a small number of cases to sustain readers' interest. There are pitfalls in presenting illustrative case studies. They require presentation of in-depth information on each illustration. There may not be time on-site for in-depth examination. The most serious problem is with the selection of instances. The cases must adequately represent the situation or program. Where significant diversity exists, it may not be possible to select a typical site.

## Literature Review

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### The Learning Culture

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It is critical to develop a learning culture for Web-course managers. Morrison and Lowther (2004) recommend a student-centered environment where students are actively engaged in the learning process. Similarly, the learning culture for Web-course management requires an environment that is student-centered and encourages students:

- To work physically close to one another
- To help one another solve problems in WebCT
- To openly share information and ideas
- To encourage one another
- To collectively support those who are floundering, or are otherwise anxious
- To extend the working relationship beyond the Web

Another important aspect of developing a learning culture for the Web-course managers is to establish some rules for the participants. Those developed by Mayeski for computer-based instruction can be applied to the learning culture for Web-course managers, namely:

- Make only a few rules for the Web-course managers
- Select rules to establish an orderly environment, and to encourage participants to contribute to successful learning
- Clarify the rules

### Web-Course Management

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Attempts had been made to compare Web-course management systems directly. I independently reviewed Dr. Landon's Comparative Analysis Web Tool (CAWT) and found it to be one of the best methods of comparing Web-course management systems (Mann, 2000). The sequel to the CAWT is "EduTools" (at <http://www.edutools.info/about/>), currently owned by the Western Cooperative for Educational Telecommunications. EduTools is an open resource on the Web created to help educators and administrators research and evaluate a wide range of e-learning products, services, and policies. Use of the resources on the site is free.

The aim at EduTools is to help the higher education community to make well-informed decisions in three primary areas: course management systems, student services, and e-learning policies.

EduTools is a suite of free, easy-to-use Web-based tools that allow users to collect, analyze, and weigh information about a variety of e-learning products, services, and policies. EduTools is based on the Landonline comparisons of course management

systems developed by C2T2 (the Centre for Curriculum, Transfer & Technology) in British Columbia and Bruce Landon of Douglas College, also in British Columbia.

Contemporary Web-course management systems provide a collection of generic tools that can be adapted for this purpose (Mann, 1999). WebCT (Goldberg, 1997) is arguably one of the most popular Web-course management systems in the world today with nine million students in 2,600 universities and colleges in 81 countries around the world using it. “WebCT is a good example of generic software” (Bates, 2000, p. 111). The tools bundled with WebCT include: a bulletin board for posting and replying to discussions (also known as “Bulletins”), a student viewing area (i.e., “Presentations”), a questionnaire (i.e., “Survey”), a message compiler (i.e., “Compile”) and e-mail (i.e., “Mail”).

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## Method

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A case study was conducted to determine the extent to which distance educators with some knowledge of instructional design but limited technical knowledge could use Web-course management tools to create sophisticated online educational environments.

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## Participants

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Seventeen participants (eight males, nine females) teaching courses in Pipe Fitting, Computer Applications, and Business Studies at an Eastern Canadian college volunteered to participate in the study. The College served two groups of students at a distance, namely: traditional learners and teleworkers. Teleworkers were either company employees or self-employed individuals. In general, though some stated reservations about implementing Web management tools in their courses, these participants had stated an interest in learning to use it. Although they could leave at any time, their accessibility during the time period was virtually assured.

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## Researcher: My Roles in the Study

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An important first step in conducting Web-based case study research was to determine my own role in the case study. A good resource for this is Stake’s “case researcher roles” (1995, p. 91) in his book *Art of the Case Study Researcher*. Figure 1 shows a delineation of my roles in this case study research.

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## The Course Platform

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At the time of the study, WebCT (Web Course Tools) had been introduced to participants in two previous HTML Workshops. Like other Web-course management systems,

Figure 1. A delineation of my roles in this case study research

My Role	The Data
Observer	Though I was ostensibly a dispassionate observer, unencumbered by constraints of the template-based suggestions of college management, I had nevertheless been hired by them to develop some measure of expertise in the instructors.
Advocate	As an early beta tester, I was a long-time advocate of the WebCT product. I believed that every organized teaching facility and every instructor of that body should know WebCT.
Biographer	Partly to gain tenure and promotions and keep my job in the university, and partly because I liked to think of myself as a bit of writer, I kept notes of my ideas on everything.
Theorist	I had a theory about how educators learn to use the Web, or maybe how they <i>should</i> learn to use the Web, namely, that instructors new to Web tools have a different mindset and spoke differently designing a Web course than instructors experienced in Web tools.
Instructor	I didn't want them to breeze through two weeks of a lecture with me, everybody obediently pressing the keyboard on queue. As the instructor of this two-week experience, I aimed for knowledge transfer, that is, some evidence that after I had left, these instructors would continue to integrate multimedia into their WebCT courses. So I asked the client to conduct a needs assessment, and to evaluate them afterward.

WebCT provided an array of tools that was purported to enhance learning online (Goldberg, 1997), though the learning part has been recently disputed (Mann, 1998a).

## Design

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The chosen design for this investigation was an “intrinsic case study.” This sample was not intended to be representative of the ability nor of the interest of the population of college participants in these programs, nor of the participants in other programs at the college. Hence the rationale for using a pre-experimental (i.e., case study) approach. The investigator maintained a participant-observer role, and the observations took the form of an open discussion with individuals and small groups. Most participants were contractual employees at the college who said they saw this opportunity to participate in this case study as a means of gaining the respect of the Departmental Head (thereby hoping to increase their teaching hours per semester, or even of keeping their jobs at the college).

## Procedures

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Each participant was given a WebCT account in which to show what they already knew about delivering online distance instruction. First, participants were shown how to create a plain WebCT Shell with three Toolpage icons, and then asked to develop instruction for the Web according to their own perspectives and abilities. Participants were permitted

to receive advice and instruction from one another or from the investigator. The investigator duly recorded their questions, answers and observations.

## Results and Discussion

All participants had attended two HTML Workshops the previous week. Since that time, all the participants reported they had used or seen Web-course management tools used to deliver instruction, and all had used or seen the tools integrated into a course. Group data (i.e., Pipe Fitting group, Computer Applications group, and Business Studies group) were collected to determine if there was a pattern of attempts and statements. An independent rater's opinion was used to improve objectivity in the analysis of the number of attempts and verbalizations.

An overall agreement of 84% on the number of attempts, and 79% on the verbalizations was achieved between the two coders. ANOVA and post hoc comparisons tests showed that participants in both the computer applications and business studies groups made significantly more task attempts  $F(2,14)=42.81, p<.000$ , attentional statements  $F(2,14)=20.68, p<.000$ , intentional statements  $F(2,14)=7.57, p<.01$ , interrogative statements  $F(2,14)=93.07, p<.000$ ; and, evaluative statements  $F(2,14)=214.49, p<.000$  than those in the pipe fitter group. Table 1 shows the descriptive statistics for the number of tasks attempted, and the quality of verbal reports.

These data indicate that the computer applications and business studies groups tried more and said more about their trials than the pipe fitters. Notably there were only two participants in the pipe fitters group. Notes were kept on tasks attempted by all the participants, as well as the quality of their verbalizations during the interview.

**Technical understanding:** Participants were unanimous in stating that despite the two HTML workshops from the previous week, they still could neither write HTML, nor solve

Table 1. Descriptive statistics ( $n=17$ )

Exp.		Attmpd	Attn	Evaln	Intent	Interg
Bus.	M	20.40*	31.70*	21.60*	14.90*	30.7*
	(n = 10)SD	2.27	3.33	1.50	2.68	2.11
Comp.	M	20.40*	33.40*	11.20*	11.80*	22.60*
	(n = 5) SD	2.40	3.84	0.83	2.16	2.88
Pipe	M	4.00	16.00	1.50	8.00	6.50
	(n = 2) SD	2.82	1.41	2.12	1.41	2.12
Total	M	18.47	30.35	16.17	13.17	25.47
	(n = 17)SD	5.87	6.31	7.40	3.33	8.33

\*  $p < .01$

coding problems in HTML. The unfortunate lack of prior knowledge rendered all HTML files created by a Web-page editor during the interview as “Untitled” when uploaded to the Path Editor in WebCT, making meaningful content sequencing difficult. Only two participants showed advanced knowledge of Web-course management tools, with several participants admitting to have lost their files in Windows Explorer (a file management problem) and wanting to give-up in frustration. Others persevered, however, getting their content HTML’ed then struggling through the online manual to find the file manager in WebCT.

Several participants stated reservations about their initial beliefs that somehow the tools in the software would make Web-course management easier.

*As far as I’m concerned, it’s not very user-friendly. The computer is showing all the files I uploaded as “untitled.” How do I fix that? You do have to know HTML programming to fix files! Maybe I need to learn HTML. Should I take a course in HTML?*

Despite its capabilities, some participants wondered whether WebCT was the right kind of technology to deliver “hands-on” courses. One participant stated he wouldn’t trust the software to do his teaching for them. Another could not see how WebCT would serve teleworkers in a Pipe Fitting course faced with the prospect of downloading required WebCT audio and video clip demonstrations.

*I don’t think this would enhance my teaching- no.... Frankly, I don’t see how. I’ve been teaching Pipe Fitting to welders. They live and work on oil rigs. I don’t know if I could make a better course for them than the correspondence materials they take now.*

*As far as I’m concerned, nothing is better than face-to-face meetings with students. Actually, I look forward to them. I like the capability of chatting and sharing discussion with one another. I’m sorry, but I don’t see how typed messages can match face-to-face classroom discussion.*

After some discussion, it was agreed that this problem may be more a consequence of slow modems, poor connectivity in rural outposts, and current bandwidth limitations than WebCT.

**Instructional design:** It was determined through directed questioning that despite the observation, that participants felt they couldn’t do much more with WebCT than click on a button to place an icon on the page. All but two did not feel they had done anything toward developing online instruction.

*At the moment I don’t see how I can make a customized design for my students. I’ve tried it here- but it’s very frustrating.*



*Unless I can get release time from teaching, I don't know how I can take the time to create complete courses online.*

*I don't think my students will automatically begin to study and practice the material.*

Despite their reservations, these participants said that these concerns did not diminish the motivational quality, flexibility and potential of the Web-authoring tools. Participants believed that the chat and bulletin board facilities particularly would permit better student collaboration. Some liked the threaded appearance of the interface, as well as the point-and-click capability of the interface.

*Putting the icons on the page is easy. And I like the built-in threaded discussion capabilities.*

Even here however, some wondered about the time required to reply to students' messages. In this light, the results of the analysis showed that the claims were not supported.

## Summary

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This chapter investigated the extent to which distance educators with some knowledge of instructional design and limited technical knowledge could use Web-course management tools to create sophisticated Web-based educational environments. Results of the study showed that these participants used Web-course management tools to add and delete content and features, but could not develop an educational environment on the Web—asking for more assistance than the tools and help offered in the software. Furthermore, most participants could not apply prior training in instructional systems design to develop a Web course. A theoretical framework was needed that describes how people work and think with a Web-course management system, and to help practitioners to invent new methods or select known instructional methods that might achieve their aims.

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