

THE EXPERIENCES OF DESIGNERS OF WEB-BASED LEARNING AT THE POST-SECONDARY LEVEL

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Abstract

The purpose of this study was to gain insight into the experiences of instructional designers at the post-secondary level who are designing for Web-based learning (WBL). Five case studies were considered from the perspectives of work environment, roles and responsibilities, successes and challenges and the designers' reflections on their experiences. The composite of the five designers that emerged from cross-case comparisons was one of the designer of WBL as a team player and collaborator; project manager, leader, and supervisor; agent of change; specialist and expert; researcher; trainer, instructor, and consultant; course, curriculum, and program developer, and course and program evaluator. Implications for practice and research are presented.

Introduction

Whereas Web-based learning (WBL) is a relatively new phenomenon, as Prester (2001) observed, instructional designers have been designing instructional materials since the 1940s. Prester observed further, however, that the practice of instructional design underwent radical change in the 1990s due to the onset of human-performance technology, knowledge management, constructivism and WBL. Current literature supports this new and emergent role of the instructional designer in the design and development of WBL. For example, Liu et al. (2002) noted that the rapid changes in the field of technology are redefining the process of developing technology-enhanced educational materials as well as the roles of developers involved in the process (p. 195). The authors also noted that like the technology [which] a designer learns to manipulate, the requirements of an instructional designer are also evolving to encompass new possibilities, both tangible and theoretical (p. 197). Di Corpo (2001) spoke of these new experiences as focusing on the motivational and developmental aspects, rather than the arguably more traditional and mechanical instructional design model (p. 6). Zielinski (2000) also acknowledged these new experiences, noting instructional designers now need to know how to design for many more media alternatives (p. 32).

McLoughlin and McCartney (2000) argued that when designing for WBL, designers need to challenge the traditional instructional design model whereby learning was fragmented into steps; they must go beyond prescribed sequences and isolated learning episodes to make the learner the centre of instruction, thereby creating constructivist learning environments. Designing and developing

instructional materials for online delivery requires a unique skill set. Morris and Hinrichs (as cited in Conceição-Runlee & Daley, 1998) suggested that designing Web-based environments for learning and communicating is more than just placing information on the Web; it requires new skills to produce Web sites and to communicate with learners (p. 14). Marti (2001) also noted that instructional designers need to possess a diverse range of skills when designing for the Web, namely skills in management and technology, and the ability to adapt to multiple situations and work with diverse populations.

What these researchers and writers are indicating is that the experiences of instructional designers are changing as a result of the emergence and growth of WBL. However, we do not have a clear insight into just what their experiences are. For example, Liu et al. (2002) stated that few know what instructional designers are, what they actually do, the challenges they face, and the skills they need (p. 198). Furthermore, Le Maistre (1998) noted that there appears to be no definition of the expert instructional designer, nor of what constitutes expertise in any component of instructional design (p. 21).

The purpose of the study reported on in this paper was to gain holistic insight into the experiences of designers designing for WBL. The study used a framework derived from a synthesis of the literature which focuses on four perspectives: work environment; roles and responsibilities; successes and challenges; and reflections on the experiences and skills required of an effective designer of WBL. The goal was accomplished using a descriptive case study method with five designers of web-based learning at the post-secondary level.

Methodology

A collective case study method (Denzin & Lincoln, 2000) was adopted to gain insight into the experiences of instructional designers at the post-secondary level who are designing for WBL. The case study method allows for the gathering of comprehensive, systematic, and in-depth information about each case of interest and once collected, involves organizing the data by specific cases for in-depth study and comparison (Patton, 2001, p. 447). The cases of interest for this study were the experiences of five instructional designers. The cases were organized according to the participants' work environment, roles and responsibilities, successes and challenges and reflections on the experiences and skills required of an effective designer of WBL.

The five designers who volunteered to participate in the study all design for WBL at public post-secondary institutions in two urban centers of Newfoundland and Labrador, Canada. The selection of participants reflects sufficient variety and diversity of education and experience and allows for insight into differences in individual context, style, approaches and behaviors. At the same time, there is sufficient similarity between the five cases given that they are all located within the same province and are all designing for WBL at the post-secondary level. These similarities help highlight common experiences.

The data collection process consisted of a structured questionnaire followed by two semi-structured interviews. The purpose of this questionnaire was to elicit background information on each participant which served as an introduction to each case study in the final report. The questionnaire inquired into their education and work experience, work environment and schedule, professional development opportunities, available resources, roles and responsibilities, and successes and challenges in designing for WBL.

The responses were used to devise questions for the second phase of the data collection process. Phase II of the data collection process involved a semi-structured interview designed to provide an opportunity for each participant to elaborate on responses given in the questionnaire and to describe their experiences in designing for WBL. If a designer noted a lack of resources as being a challenge on the questionnaire, then during the interview the researcher would ask him or her what types of resources were lacking (e.g., human, financial) and how this lack of resources impacted on his or her experiences. Thus, some interview questions were customized for particular participants depending on their questionnaire responses. While the questions were written and pre-ordered in advance, the researcher could deviate from this order and ask additional questions depending on the responses provided by the interviewees.

After the first two phases of the data collection process were complete and the data compiled into a case record for each instructional designer, the final stage of the data collection process involved conducting a second interview to clarify information already obtained or to retrieve additional information. During this semi-structured interview, the researcher inquired into inconsistencies in a designer's case data, asked a designer to elaborate on a previous response and/or asked a designer new questions which may have arisen as a result of another participant's responses.

Once all questions were answered and inconsistencies in responses clarified, the case records were then used to write case reports describing each participant's experiences in designing for WBL at the post-secondary level. These reports were then provided as member checks to each respective participant for review and comments. Changes were made where indicated necessary by the participant.

Data from the interviews and questionnaires were compiled into a case record for each participant outlining their experiences in designing for WBL. Next, data in each case record were grouped and reduced for the purposes of analysis into the four categories of work environment, roles and responsibilities, successes and challenges and reflections. These case records were then analysed a second time by "selecting, focussing, simplifying, abstracting and transforming the data (Miles & Huberman, 1994, p. 10) in order to complete a case report. From these case reports, key words and phrases were then extracted and displayed in a grid based on the four categories of work environment, roles and responsibilities, successes and challenges and the participants' reflections on their experiences. Identification of patterns from among the keywords and phrases was used to make comparisons between cases.

Findings

This section presents the case reports grouped according to the framework established for the study. The framework focuses on four perspectives: work environment; roles and responsibilities; successes and challenges; and reflections on the experiences and skills required of an effective designer of WBL. The five designers are Beth, Stephen, John, Katrina and Denise.

Work environment

Four of the designers work at a university and one at a public college. The designers indicated that their work environment is more similar than different from that of their peers in terms of course development teams, level of consultation and collaboration, access to resources, professional development opportunities and quality assurance initiatives. The five designers all work as part of a team during the development of Web-based courses, which they lead. Each development team consists primarily of the instructional designer, subject matter expert and Hyper Text Markup Language (HTML) coder. Other team members are brought in as their expertise is required such as programmers, graphic artists, video producers, copyright officers, librarians, student support specialists, scientific writers and evaluators. These team members may be temporarily or permanently assigned to an instructional designer. Of these team members, the designers stressed it was important to maintain good rapport with the content expert.

The designers not only collaborate and consult with, but also seek advice from these team members during the course development process. For example, they may seek the advice of the graphic artist on their team on a graphic mockup or a media specialist on whether an animation would work or how much time it would take to create. They may also collaborate and consult with many others from within their department. For example, they may ask a manager or another designer to critique a prototype. They may even consult with other designers in the field to learn from their experiences.

In relation to resources, the five designers work with many technologies and rely on the expertise of many specialists (e.g., graphic artists, video producers) during the course development process. Four of the designers have witnessed a shortage in these resources (i.e., technological, human) and would like to see more made available for course development. For example, Beth expressed concern over the lack of graphics and media resources made available in her workplace. Stephen also witnessed a lack of technological and human resources during course development which meant that he had to rely on other areas within the university and outside companies for their expertise. When these resources are not readily available in-house, four of the designers admit to performing these duties themselves (e.g., creating graphics, coding in HTML).

The designers indicated that it was important for them to possess these technological skills, not just so that they could communicate more effectively with team members but also, so that they could easily mock up a Web page or graphic, provide technical support to instructors and/or conduct faculty training workshops in technologies such as WebCT®. In relation to professional development opportunities, all five designers stressed the importance of these opportunities in allowing them to keep abreast of new technologies and new research on WBL. These opportunities also allow them to gain technical skills and interact with their peers in

the field. All five designers indicated a need to stay connected with other designers especially as designing for the Web is a relatively new phenomenon.

To help provide a quality learning experience for students, two of the work environments have put a quality assurance process in place. For example, John's place of work is certified by ISO, meaning constant feedback loops have been integrated into the system. John feels that this initiative has positively impacted the process and product because procedures are continuously being documented, followed and evaluated or audited. Beth helped initiate a quality assurance process at her workplace. This process involves evaluating Web-based courses to determine if revisions (minor or major) are needed. It also involves the use of a standardized course development template to ensure online courses maintain a consistent look and feel. In addition, quality is assured through the use of beta testing on Web-based courses before they are offered.

A measure to help ensure that quality teaching and learning are occurring online is the use of a student satisfaction survey. To also ensure quality, the college dictates that faculty receive WebCT® training and have taught their course previously in the classroom before teaching online. Both John and Beth feel that these quality assurance initiatives positively impact the course development process and product.

Roles and responsibilities

Consideration of the five cases also provided an opportunity to gain insight into the roles and responsibilities of these designers of WBL. In all five cases, the designers assumed multiple roles and responsibilities, in addition to instructional design. These roles and responsibilities differed slightly for each instructional designer with all, to some degree, acting as instructional designers, leaders, project managers, and agents of change; engaging in research activities and committee work; writing and presenting reports; conducting faculty training workshops and performing technical duties and providing technical support. Some were also involved in curriculum and program development; program and course evaluations; instructing; supervising; consulting and writing proposals.

Because of these multiple roles and responsibilities, the designers are regularly required to multi-task with a typical workday for the designers involving performing instructional design duties and communicating with team members via e-mail, phone or in person to monitor how a task or project is progressing. The designers also spent a great deal of time conducting faculty training sessions and attending meetings.

As designers of WBL at the post-secondary level, the individuals work with content experts in readying their courses for online delivery. This role is more of a guidance one, whereby the instructional designers advise and instruct faculty on how to best organize and deliver their course materials online. Once the courses are developed, the designers then guide or advise instructors on how to best teach or facilitate online using the latest Web-based technologies.

To effectively carry out these roles and responsibilities, the participants noted it was important for them to be well versed in instructional design theories and processes, adult learning principles,

learning theories, online teaching and learning practices and Web-based technologies. This knowledge would not only allow them to more effectively design learning experiences for the Web but would also allow them to communicate this knowledge to others including administrators and team members, particularly content experts and instructors. This knowledge is continuously being built on, particularly due to the advent of new technologies and new research into instructional design, adult learning and online teaching and learning practices. Thus, the designers must keep abreast of new Web-based technologies and new research into WBL and lead their development unit in the adoption of new technologies, policies and processes based on this new knowledge. In other words, they act as advocates and agents of change who fuel the adoption of newer technologies or ways of approaching things, as John noted.

As part of their instructional design role, the participants may perform some or all of the instructional design steps depending on the course, program or project. For example, Denise and Katrina often perform all steps (conducting a needs analysis, writing learning objectives, gathering resources, designing learning experiences and evaluating these learning experiences) when working on external projects but may only design the learning experiences when developing online courses.

Not only do the participants play an important role in readying course materials for Web-based delivery but they also play an important role in monitoring the course development process to ensure all course components are completed on time and as required. As both roles are often adopted by the designers as a course is being developed, it is often difficult for them to distinguish between the two. For example, Beth describes her instructional design role as more of a monitoring one, ensuring that a project stays on task and that all pieces are effectively completed by the designated due dates. John terms this role "project lead" as he believes it is only when one exercises total control over a project's resources (human and financial) that the role can be designated project manager. He is often frustrated when his team members refer to his role as project manager and not that of project lead, believing him to have control over the project's resources when in actual fact he does not. Stephen agrees, stating there to be two levels of project management in course development: one carried out by the instructional designer and the other by the actual project manager.

As part of their responsibilities, all five designers engage in research activities and committee work to some degree. For example, because they are well versed in Web-based technologies, they may be asked to sit on a committee whose goal is to implement a new learning management system such as WebCT®. Because they are knowledgeable of best online teaching practices, the designers may be asked to sit on a committee responsible for compiling a guide to facilitating online for new Web-based instructors. And because they are involved in the design of WBL, the designers may be called on to sit on a committee and draft an online exam policy, which was the case for Katrina. As online exams were a new type of assessment being implemented by her unit, Katrina had to research the topic before an online exam policy could be drafted.

Because the five designers are responsible for keeping up-to-date on new Web-based technologies and online teaching and learning practices, when they acquire new knowledge either through research, workshops or conferences, they often have to share this knowledge with others particularly management, team members, colleagues and peers in the field. This process/sharing often involves

the writing and presenting of formal reports. Because the five designers are responsible for disseminating new information to content experts and instructors, particularly information on Web-based technologies and online teaching practices, all five designers regularly hold faculty development workshops where this knowledge is shared.

Not only are the five designers responsible for keeping abreast of, and delivering workshops on, new Web-based technologies but they also perform technical duties and provide technical support as part of their role. For example, four of the designers stressed the importance of possessing such technical skills as being able to create a graphic and code in HTML which allows them to quickly mock up a graphic or Web page. Because they are seen as being knowledgeable of these Web-based technologies, they are often called upon for support by their team members, particularly content experts and instructors.

In addition to the aforementioned roles and responsibilities, some of the designers also engage in program and curriculum development; program and course evaluations; instructing; supervising; consulting; and writing proposals. For example, John engages in program development which he describes as being on a much larger scale than with course development in that you start looking at the particular areas of interest or importance within the program and out of that come courses and then from there, you start doing the curriculum development for the courses. This program mindset helps ensure that every course in the program is consistent and the theme of the program is maintained. John also performs program evaluations which involve assessing whether programs (and sometimes courses) are achieving what they're supposed to be achieving, determining what needs to be changed in order to keep it up to date [if] it is out of date, analyzing feedback from instructors and students, determining what they are saying about the courses, what works, what doesn't work and then making changes to the program accordingly. John really enjoys these aspects of his job believing both to be beneficial to students.

John and Stephen also teach online in their areas of expertise. This experience allows them to gain the perspective of an online facilitator which, according to John, allows him to develop more effectively. In this role, he quickly realized that a lot of theory did not work in practice. Many of the designers also supervise the work of others as part of their job. These may be publication specialists, as is the case for Katrina, or other designers, as is the case for Beth. They may also act as consultants as part of their role. For example, Stephen often consults with provincial and federal government departments in the areas of e-learning, distance learning, continuing professional health education and interprofessional education. Denise may also be called on to act as a consultant on teaching practices and program and course design. Some of the instructional designers may also be required to write proposals to obtain external projects, as is the case with Stephen and Beth.

To effectively carry out these multiple roles and responsibilities and/or ensure a course or project is ready by its due date, four of the designers work outside of regular hours during the evenings and weekends. The designers are, in turn, provided a flex-time option to compensate for these extra hours worked. As the roles and responsibilities vary for every designer in every institution, it is often difficult for other designers to pick up their workload when they are off sick or on vacation. Thus, the

designers have to catch up on work when they return or schedule their leave around peak development times.

Successes and challenges

The five cases provided an opportunity to identify some of the successes experienced by designers of WBL. The majority of these successes involved the design and development of a learning experience, within the allocated time frame and budget. Three of the participants attributed their product's success not only to their instructional design role, but to their project management role as well. Other successes experienced by the instructional designers include forming favourable relationships with faculty, clients and other team members; engaging in international consulting; planning for large-scale WBL projects; engaging in research activities; and designing for international students.

The cases also provided an opportunity to identify challenges faced by designers of WBL. Two such challenges faced by three of the designers include designing and developing within accelerated time frames and with limited resources (human, technical, financial). This may mean producing a product of lower quality than if the development cycle were longer and the resources more abundant.

Three of the designers found working with difficult team members (e.g., content experts) particularly challenging, especially those who do not produce on time or as required. The designers indicated that maintaining a positive rapport with team members while ensuring their tasks are efficiently and effectively completed as an important role of the project manager or project lead. Keeping current with technology is also a challenge faced by three of the designers. Because WBL is an area where new technologies are continuously being implemented, it is important for instructional designers to keep abreast of these technologies so that they may work with them and/or instruct others in their use.

As designers of WBL are often required to develop courses in a number of subject disciplines, the participants may find it challenging to acquire enough knowledge of a discipline to write learning objectives and design activities. Such was a challenge for two of the designers. Two of the five designers found selling online assessment as a viable option a challenge. These designers question why exams for online courses are still invigilated and have experienced considerable success in designing courses where assessment occurs totally online. They argue that there is a lack of faith amongst faculty and students for this type of assessment and often find it challenging to come up with assignments and online exams that evaluate WBL.

While many of the challenges faced by the five designers were similar, others were different. Some of these additional challenges include: being assigned too many courses to develop; learning the instructional design process; performing project management duties or not doing so; selling hybrid courses; designing flexible learning strategies; designing for truly flexible learning; and incorporating real-time activities into online courses.

Reflection on the experiences and skills of an instructional designer

Consideration of the cases also provided an opportunity for the designers to reflect on their experiences: Do they enjoy designing for the Web? How has their role changed with the transition to WBL? What qualities and skills do they feel someone in their position needs to possess? How do they feel their education and prior experiences have prepared them for this position? What would they change about their experiences to make them more positive? These reflections help provide further insight into the experiences of designers of WBL.

All five designers described enjoying designing for WBL and all take great pride in the learning experiences which they helped develop. Even though they find the job stressful at times, they describe their experiences as being "overwhelmingly" positive, challenging, educational, interesting and fun. They particularly enjoy the social aspect of their job where they get to work with many different people on a daily basis. According to Stephen, many of these team members emerged with the move to WBL (e.g., HTML coders, programmers, animators).

Not only did the evolution to WBL bring more members to the course development team, but it also brought more technologies to develop with, more steps in the development process (e.g., product testing), more time needed to develop, and more roles and responsibilities for the designer of WBL. As Katrina notes, there has not only been an evolution to WBL but also an evolution in the design and development of WBL and how the product looks online. For example, instead of putting only text on the Web, designers are availing of some of the multimedia technologies and communication tools to illustrate concepts and ideas and actively engage the learner. Beth stresses that her experiences as a designer of WBL are always changing due to the emergence of new technologies. John feels it is the role of the instructional designer to fuel the adoption of [these] newer technologies or ways of approaching things and once the new technology or process is implemented, pass the responsibility on to another team member.

All five cases describe a designer of WBL as one who is flexible, adaptable, practical and innovative, able to change. In terms of personal skills, the designer needs to be enthusiastic, dedicated, motivated, personable, social, tactful and confident. The designer should be an analytical thinker who is able to multitask, plan, work in challenging environments and be willing to learn. He or she should also possess excellent organizational, communication, technological and team management skills, and an adult learning background.

The cases also provided an opportunity to consider the design of WBL from the perspective of art and science. Two of the designers described the design of WBL as more of an art while the other three described it as a combination of both. All five participants recognized that effective designers of WBL possess certain qualities, many of which are innate. John ranks these qualities higher than their educational counterparts stating that anybody can learn the science of instructional design. All five individuals also recognize that effective designers of WBL possess certain skills that can't be totally learned in the classroom but that are acquired on the job.

Even though all participants described many successful experiences in designing for WBL, they described many challenging ones as well. Thus, consideration of the cases also provided an

opportunity to gain insight into how to alleviate some of these challenging or negative experiences. When asked what they would have changed about their experiences to make them more positive, three of the participants responded they would have communicated more with their peers in the field to share their experiences with, and learn from, one another. The designers would have also engaged in more professional development opportunities, made better design decisions, worked in industry, taught online and made others aware of their many and varied roles and responsibilities.

Discussion of the Findings

The purpose of this study was to gain insight into the experiences of designers of WBL at the post-secondary level. To accomplish this goal, the cases of five designers of WBL in two urban centres of Newfoundland and Labrador, Canada were considered from the perspective of their work environment, roles and responsibilities, successes and challenges and reflections on their experiences. From this synthesis and comparison, a composite view emerged of the experiences of the five designers of WBL at the post-secondary level. This composite view or portrait of the designer of WBL was one of a team player and collaborator; project manager, leader, and supervisor; agent of change; specialist and expert; researcher; trainer, instructor, and consultant; course, curriculum, and program developer; and course and program evaluator.

As a team player and collaborator in a Web-based environment, these five designers work with many others during the course development and delivery process including content experts, instructors, and Hyper Text Markup Language (HTML) coders. Many other specialists are brought in as part of the course development team as their expertise is required including programmers, graphic artists, video producers, copyright officers, librarians, student support specialists, scientific writers and evaluators. As part of this course development team, it is important for the designers to maintain good rapport with all team members specifically content experts. To be successful in this role, they may also need to possess good communication and interpersonal skills and be enthusiastic, dedicated, motivated, personable, and social when interacting with other team members. It is also important that they be able to work in these challenging environments, where they are willing to consult with, and seek advice from, other team members on a regular basis in their area(s) of expertise. In this regard, they have to be willing to consult and collaborate with others in their workplace and peers in the field.

The five designers of WBL are also leaders and managers of this course development team. In this role, they ensure course components are effectively and efficiently completed by the various team members. This may also involve supervising the work of others such as publication specialists or other designers. This management role can be somewhat challenging, particularly when team members do not produce on time or as required or if resources (human and financial) are limited. To successfully carry out these project management duties, they need to be well organized and possess excellent communication and team management skills. They must also be able to plan and adjust those plans as needed. In their interactions with content experts, they must also act as leaders in guiding faculty through the course development process, advising them on how best to organize and develop their course materials for online delivery. In this leadership role, the designers need to appear

knowledgeable of their field and exercise tact and confidence in their interactions with team members, particularly content experts.

The designers are also leaders in promoting the adoption of Web-based technologies, policies and processes by their course development units. In this role, they act as advocates or agents of change. For example, they may help initiate a course development quality assurance process or help put in place an online exams policy. They are also specialists and experts who are knowledgeable of the technologies used to develop WBL, possess skills in the use of some of these technologies, and possess the expertise required to effectively design Web-based instructional materials and learning activities. As Katrina noted, designing for WBL is more than merely placing text online, it also involves looking at different ways of representing text visually such as through the use of video, audio, animations or graphics. For this reason, they need to be knowledgeable of the technologies used to develop multimedia components. Possessing such knowledge will allow them to more easily communicate with the specialists who use these technologies and more easily storyboard multimedia pieces for development. They may also need to possess HTML coding skills so that they can easily mock up a Web page for clients to view. They need to be knowledgeable of the learning management system (e.g., WebCT®) used to design and deliver Web-based courses for their use and to provide support to other members of the course development team.

Possession of these technical skills (graphics design, HTML coding) will also allow the designers to perform these technical duties if human resources are low or to meet a deadline. To effectively develop for WBL, they need to be knowledgeable in instructional design processes, learning theories, adult learning principles, and online teaching and learning practices. They need to be willing, and able to learn, regularly engaging in professional development opportunities (e.g., workshops, conferences, communications with other designers) to keep abreast of new knowledge.

As experts, the designers multi-task and often work outside of regular hours. They may also choose to work at home, when reading or editing, to avail of fewer interruptions in this environment. A typical day for these designers might involve performing instructional design duties and communicating with team members to monitor how a task or project is progressing. Because they are specialists in what they do and because their assignments differ, it is often difficult for them to step in and perform the duties of another. Thus, they need to be able to work in this type of demanding environment and be able to multi-task, cope with stress, be well organized, and possess excellent time-management skills.

The designers are also researchers who seek new knowledge on Web-based technologies and online teaching and learning practices. For example, they may research learning management systems if part of a purchasing committee or online assessment if an instructor wishes to include this new form of assessment in his or her Web-based course. When new knowledge is acquired, they may be called on to write and present reports or sit on committees where this information is shared. To successfully engage in research activities and report results, they may need to possess excellent research and verbal and written communication skills.

The composite of the designer that emerges from these five cases is of individuals who are also trainers, instructors, and consultants in sharing their knowledge with others. For example, they may conduct workshops or one-on-one sessions with faculty on Web-based technologies (e.g., HTML coding, WebCT®) and online teaching practices. They may give presentations to their colleagues on new Web-based technologies and current projects or be asked to instruct online or in the classroom in their field of expertise. They may act as consultants in E-learning, course or program development, and online teaching and learning practices.

The composite of the designer also highlights their role as course developers. This role may involve performing such instructional design duties as conducting a learner needs analysis, writing learning objectives, gathering resources, designing learning experiences and evaluating these learning experiences. It may involve designing with the adult learner in mind using activities that engage the learner with content presented using various forms of multimedia. To effectively develop for WBL, the five designers needed to be innovative and creative in their designs and possess an analytical as well as creative approach to thinking. They also needed to possess knowledge of Web-based technologies, instructional design processes, learning theories, adult learning principles, and online teaching and learning practices.

Finally, the composite or profile of the five designers is that of curriculum and program developers. Developing at the program level helps ensure courses are consistent and that the program theme is maintained. They may also engage in program and course evaluation whereby they determine if programs and/or courses are achieving their intended goals. To successfully carry out these roles, they may need to be knowledgeable of program and curriculum design and program and course evaluation methods.

Conclusions and Implications

The five cases of designers of WBL profiled in this paper wear many hats and need to possess many qualities and skills to effectively carry out their day-to-day duties. They are team players and collaborators; project managers, leaders, and supervisors; agents of change; specialists and experts; researchers; trainers, instructors, and consultants; course, curriculum, and program developers; and course and program evaluators. Some of these roles and responsibilities have emerged with the transition to WBL, as have some of the team members and technologies used to develop materials for online delivery.

The study's findings are limited to consideration of five cases in one geographic location and only at the post-secondary level. The purpose of the study therefore was not to produce generalizable findings. The purpose was to present what Stake (1995) refers to as the particularity and complexity of cases. Readers of these cases may choose to generalize or not to their own contexts. In contexts where there are similarities to the cases presented in this paper, the implications for practice and research that apply for these five designers may also be applicable.

In contexts where designers of WBL occupy numerous roles and responsibilities as did the individuals profiled in this study, managers or employers may need to recognize the many and varied roles and responsibilities and provide the necessary support. Designers will need to avail of adequate professional development opportunities so that they may successfully carry out these roles and responsibilities. Likewise, institutions that train designers of WBL might focus programs on the qualities, skills and knowledge required to effectively perform these roles and responsibilities.

In situations where designers of WBL work as part of a team in the course development process, both pre-service and in-service training might focus on building designers' skills in collaboration, consultation, communication, and interpersonal interactions. To promote effective interaction with content experts, training might be geared towards teaching designers ways of maintaining positive rapport with content experts while also getting them to produce on time and as required. Designers of WBL who lead their course development teams, may benefit from both pre-service and in-service training that focuses on management of projects, teams, time and resources management as well as on organizational and communication skills.

Designers who serve as specialists and experts in the development of online instructional materials will need access to educational opportunities that focus on instructional design practices, adult learning principles, learning theories, and online teaching and learning practices. Training might also focus on strengthening their innovative and creativity skills while building their analytical and systems' thought processes. Where designers work with many technologies and specialists who use these technologies during the development process, training might focus on building designers' technical skills. Possession of these skills will allow them to communicate more effectively with other team members and step in when resources are limited. In cases where designers are required to work extra hours, they may wish to avail of more flexibility in their work schedule and environment. Pre-service and in-service training might also focus on strengthening their time management and concentration skills.

In terms of research, given that designing for WBL is an emerging profession, further research might focus on the knowledge, qualities and skills required of designers developing for this new form of learning and on determining which roles need to be carried out by instructional designers and which can be performed by other individuals. As designers of WBL may also act as project managers or team leaders, further research might focus on the benefits of the project manager versus team leader role.

Whereas the data collection method for this study consisted of a questionnaire and two interviews, a study which observes its participants in practice would provide further insight into the experiences of instructional designers. This approach might provide more in-depth and an alternate perspective on the experiences of designers of WBL at the post-secondary level.

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