The demand-driven learning model as a standard for web-based learning

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The advent of the Web and its rapid development from a text-only medium to an expanding multimedia communication system has offered new and diverse opportunities for learning at anytime and in any place. The technological revolution is challenging the common conceptions of the teaching-learning process as more and more training is being made available online. Given the ever-expanding range of possibilities presented with new technologies, educators must be proactive in the development and use of technology in the teaching-learning process. Educators should be the individuals who are dictating the technological needs required to facilitate the attainment of learning goals; they must become involved in the development process to ensure that it is the educational needs that are driving the development of technology, rather than the technology driving the educational process. Sadly, educators often have little experience and limited support when it comes to designing Web-based learning (WBL). Furthermore, extant models developed to guide this process often fail to address the specific needs of the adult learner. Unquestionably, for WBL to become a universally accepted and effective method of learning there must be standards and guidelines for its design, development, delivery, and evaluation. Moreover, these standards and guidelines need to align with specific learner needs and program goals.

What Makes Effective WBL?

In short, effective WBL must be driven by sound pedagogical principles, be flexible to adjust to the needs and goals of the learners, and provide a community. Clearly, the mere use of the Web as an educational tool does not automatically imply effective learning. Indeed, the cornerstone of quality WBL lies in its design. Designing WBL involves planning the learning experience so the desired outcomes are achieved and then identifying a blueprint to guide development and overall program implementation. Ongoing assessment of the WBL also needs to be considered.

Various researchers have suggested key elements underlying effective WBL, including curriculum, pedagogy, technology, support, and interaction. Lists of elements, however, do not define a fully functional model for educators on which to build WBL. Rather, it would be more practical if these were referenced as components and linked dynamically within a fully articulated model for effective WBL. An appropriate model would acknowledge and exploit technology in order to enhance the teaching-learning process while remaining faithful to appropriate educational paradigms. To this end, the outcomes of effective WBL must be operationally defined. A successful new learning model will incorporate these

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outcomes and provide a foundation for the design of WBL, ultimately setting the quality standard for WBL.

How Should WBL be Designed?

Educators and practitioners alike agree that effective WBL begins with effective design. There are a number of design models for WBL on the market and in the literature. Most have philosophical and epistemological underpinnings. Some propose a linear teaching strategy while others offer guidelines for constructivist learning; some emphasise the importance of a learner-centred approach, while others advocate teacher-centered learning; some are process-based, others are procedure-based. Each model has its merits and deserves attention and consideration. Ultimately though, the choice of learning model for guiding program design should be dependent on the goals of the program and the needs of the learners. With these considerations in mind, we acknowledged that there was a gap in the market: No model appeared to address the needs of working adults who wanted to further their education. Accordingly, our objective was to develop a learning model to guide program design that met the needs, interests, and lifestyle demands of the working adult learner. The Demand-Driven Learning Model (DDLM) resulted.

One distinguishing feature of the DDLM is that it was developed as a collaborative process between academics and industry experts. The DDLM was originally conceptualised by an academic research team. As members of that team, we conducted an extensive review of pertinent literature, identified lessons learned by others involved in WBL, and hypothesised the factors that would impact the effectiveness of WBL. Following this, we developed a conceptual framework for WBL with the specification of a high quality standard. Early and continual involvement of end users (industry experts) in the design ensured that the model would be relevant and practical for learners (working adults), secondary beneficiaries (employers), and educators (including program designers or providers). One notable benefit that emerged from the interplay between the academics and industry experts was the recognition that industry considered the inclusion of outcomes in the model to be vital—a component we noticed was absent from the learning models in the literature. Simply stated, practitioners wanted a model that, when implemented and evaluated, would identify not only learner satisfaction, but also whether and to what degree the learners learned from the program, applied what they learned in the workplace, and whether and how their employers benefited. This liaison led to the inclusion of the "outcomes" component in our model.

An additional attractive and unique feature of the DDLM is its companion survey. This online survey was specifically developed to evaluate WBL along each of the DDLM constructs and offers practitioners a valid and reliable tool with which to evaluate their online programs.

The Demand-Driven Learning Model

In an effort to address the concerns of learners and educators in this climate of rapid technological advancement,

we present a condensed version of the DDLM as a framework for WBL. The DDLM can be used to support and guide WBL designers, evaluators, and educators and ensure the most significant challenges of WBL are anticipated and met in practice.

Two premises drove the development of the DDLM:

1. The discriminating consumer (i.e., learner) demands a superior quality of content, delivery, and service that lead to superior learner outcomes.
2. WBL grounded within the constructivist theoretical paradigm engages learners in active learning and encourages them to participate in, and interact with, the environment to construct their own personal meaning of knowledge.

Based on these assumptions, the five main components of the DDLM emerged:

1. superior structure
2. three consumer demands (i.e., superior quality content, delivery, and service)
3. learner outcomes
4. ongoing DDLM evaluation
5. continual adaptation and improvement

Superior Structure

Superior structure is the foundation required to support the superior quality content, delivery, and service the consumer demands. Features indicative of superior structure include:

- Needs of the learner anticipated: WBL is tailored to learners' needs for specific content while accommodating individual learning styles and preferences, experience, and knowledge.
- Sensitivity to what motivates learners: Content is challenging, yet within the learners' abilities. Material is aesthetically pleasing and technology facilitates learning.
- Collaborative and healthy learning environment: Educators are equal partners in the learning community and all voices and perspectives are valued. The WBL environment is regulated by a set of ethical principles that define educators' professional and ethical responsibilities.
- Curriculum is designed according to program goals: Course content aligns with WBL goals. There is a consistent structure throughout the program and a logical progression through the material.
- Appropriate pedagogical strategies for WBL are used: Careful consideration is given to the definition of learning objectives; choice of learning strategies; level of instructor control; type and amount of content, feedback, and interaction; and the evaluation and assessment of learners.
- Learners are regularly evaluated: Evaluation includes a variety of assessment strategies designed to accommodate different learning styles and motivate learners to read, study, and complete assignments.
- WBL is convenient for learners: Online administrative

services, bookstores, and bulletin boards are offered and hyperlinks to related resources are provided.

Consumer Demands

The three consumer demands comprise superior quality content, delivery, and service.

1. *Content:* In the DDLM framework, high quality content is considered to be:
    - Comprehensive. The content covers all the information that the learners need to know, is presented objectively and through unbiased language, matches the learners' level of understanding, and covers topics in appropriate breadth and depth.
    - Authentic/industry-driven. The content faithfully reflects problems and issues that arise in the workplace and requires learners to engage in activities that present the same type of cognitive challenges they encounter in the work environment.
    - Researched. The content is chosen based on input from content experts in both academia and industry and grounded in validated, empirical research to ensure that high quality prevails.
2. *Delivery*: High quality delivery is defined as that which carefully considers:
    - Usability. The user interface of WBL is easy to use. Web pages have strong navigational support and standard Web conventions are adhered to. The site is up-to-date with no dead ends nor stale links and Web page length is fitting
    - Interactivity. Appropriate levels of interactivity exist between and among learners and educators as well as with resources on the Web.
    - Tools. The technological tools are chosen to meet learning goals, while considering bandwidth limitations and time zone issues. Different learning styles are accommodated through the provision of material in different media formats and through the use of different communication tools.
3. *Service*: The DDLM defines quality service as that which provides the necessary resources for learning as well as technical and administrative support:
    - Resources. Resources help learners identify and meet their learning goals.
    - Administrative and technical support. Support is freely available to both educators and learners from skilled and empathic individuals who are experienced, qualified, accessible, and responsive.
    - Staff. All staff are qualified and experienced. They effectively work together as a team, demonstrating effective collaboration, respect for roles, and effective communication; they also share their expertise and have shared values.
    - Accessibility. Access to services and staff is straightforward and hyperlinks provide unconstrained access to services such as libraries, bookstores, and other learning

resources.
    - Responsiveness. Requests for service and help are met with a minimum amount of waiting.

Learner Outcomes

High quality WBL based on the DDLM provides outcomes that meet the demands of the consumer (i.e., learner/employee) as well as their employer. These demands are met when learners:

- are satisfied with the learning experience
- acquire new and relevant skills and knowledge
- apply the new knowledge and skills in their workplace
- add value to their employer.

In DDLM-based learning, there are lower financial and personal costs to the learner. The cost of WBL is comparative to that of traditional education, travel expenses are eliminated or minimised, and learners do not have to take time off work, move away from home, or move their family to further their education.

Ongoing DDLM Evaluation

As researchers and practitioners apply their knowledge of the DDLM to improve existing programs and guide the creation of new ones, the operational definitions of the DDLM constructs will continually evolve and expand. Key stakeholders and diverse groups will explore how to improve each component of the DDLM to ensure effective WBL. The companion survey mentioned above will provide valuable information to guide improvements. Data will continually be solicited from learners using this tool as well as through formal and informal qualitative data collection methodologies.

Continual Adaptation and Improvement

As the DDLM undergoes regular evaluation, the components of the model will no doubt evolve and the DDLM must be revised to reflect these changes. WBL must then adapt in concert with this in order to ensure quality, progressive WBL. Through this continual adaptation and improvement of the DDLM, its longevity and validity as the standard for WBL will be ensured.

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