

What Systems Design Model Can Be Developed to Guide Course Reengineering?

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Abstract

The content of the paper is based on a development plan currently in design for the U.S. Navy in conjunction with an internationally well-known learning institute at a major state university. Described is a conceptual model for a delivery system within a distributed learning environment, including linkages of performance requirements and appropriate learning theories and models. This conceptual model is embedded in a system approach and reflects a learner-centered educational system. The model is described in terms of a performance framework identified by both a needs assessment and needs analysis and comprised of five major subsystems and the components of each subsystem. An intervention for course redesign is presented as a guidance tool designed for the purpose of guiding U.S. Navy (USN) course developers and designers as they make instructional delivery decisions within the Navy Learning Network.

BACKGROUND

The USN is currently redesigning (i.e., update and revise) selected training/education courses. The course redesign process will use, where feasible, new technologies and delivery methods available in a distributed learning/education environment. The USN contracted with the Learning Systems Institute (LSI) at Florida State University to assist in the planning, analysis, design, development, and evaluation processes.

The value of the delivery systems selection model is to guide the decision-making process for transitioning instructional activities into appropriate learning environments. The decisions made will be based on the placement of knowledge and skill clusters (e.g., cognitive, motor, attitudinal) into learning environments (e.g., same time, same location; same time, different locations; different times, same location; and different times, different locations) based on factors influencing the decision-making process as determined by the economic infrastructure (e.g., costs of course design/development, delivery/implementation, evaluation, and maintenance.) The decision-making process will be embedded within a guidance tool designed and developed by LSI to determine alternative, effective, and efficient instructional delivery systems appropriate for the process of course redesign. The tool will be known as the *Guidance Tool*.

Delivery systems selection is based on a systematic process. The *Guidance Tool* guides the end-users in making decisions via inputs (e.g., skills clusters based on measurable learning objectives and influential factors - resources, and

constraints), processes (e.g., methods and means of instructional systems design), and outputs (e.g., weighted recommendations for delivery system solutions and selection) that ultimately lead to the achievement of learning and performance outcomes as a result of an optimal functioning distributed learning environment.

IMPLEMENTATION/DIFFUSION

It is recommended that the initial focus of distributed learning efforts should be on user-friendly hardware and software -- ones that can be mastered easily and quickly by learners. Success will lead to higher levels of learner motivation, satisfaction, confidence and commitment to learn, whereas failure will give disillusionment and resistance. Further, multilevel support systems must be in place for a significant commitment to the technology environment. The application of technology in the Information Age must be seen as a serious long-term commitment for efficient and effective instruction and not as a novelty or fad. A focus on performance and impact will likely provide additional support.

This long-term transition process to distributed learning will not be easy and will require time, energy, and genuine commitment by stakeholders to design and deliver learning materials and provide practice and feedback that will result in useful mastery. With this in mind, it is imperative that ongoing and comprehensive evaluation/review of technology tools and the distributed learning environment be performed to ensure effective management, high quality learner performance, and on-the-job results, adding value to the Navy and its clients.

CONCLUSION

This document should be used as a starting point and guideline for making decisions about the implementation of a DLE. It serves as a guide for selecting components to be included in a conceptualization of the possible components in this learning environment. The use of needs assessment and analysis would likely provide the designer/developer with information regarding relative effects, problems, and benefits within the whole system. This process will require additional time from the developers. It will offer pre-implementation insight as to the value-added for the accomplishment of organizational performance, training and education goals.

The intended purpose or goal of this intervention is to empirically and systematically design, develop, and test a *Guidance Tool*. This tool and design model will be validated for the purpose of guiding USN course developers and designers as they make instructional delivery system decisions within the distributed learning environment.

This is a working document. The final requirements will be determined by Navy learners, instructors and course developers who report what is working and what is not. Although the effectiveness of technology in different distributed learning applications and settings is currently under much research scrutiny, further study of the practical, social, and cultural implications of the use of technology in

education/training is required (Bechky, 1999). The methods suggested in this paper for selecting effective and efficient instructional delivery systems should provide insight into the context and process of learning and could help shape distributed education/training programs in the future.

These recommendations are steps to solve the problems, when to apply recommended solutions according to situational contingency, and how to support the learning environment and its users to achieve optimal performance. Bear in mind the necessity to conduct and analyze a Front-End Assessment and Alignment to demonstrate that the proper solution to these instructional problems and opportunities is, in fact, distributed learning and not some other intervention.

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