

Selecting Communications Technology for Delivering Continuing Professional Education (CPE) Programs

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Abstract

Ideally, Continuing Professional Education (CPE) helps us enrich careers by providing access to new information that enhances competence and opportunity¹, but simply providing that information is only part of the equation. Clearly, how information is delivered has as strong an effect on individual success as what is delivered. This paper investigates a proposed study of how Continuing Professional Engineering Educators (CPEE) chose technologies for delivering employee education in high-technology industries, most particularly how or if they integrate human considerations in that decision. Awareness of these issues is critical to a successful instructional design and a supportive learning environment. Understanding human considerations heightens understanding of learner attitude — how, for example, a specific medium affects one's ability to learn and the degree of acceptance or resistance one invests in the process. Sadly, the importance of such human elements is often minimized or ignored. The quality of decisions improves dramatically when human elements are considered, and consequently enhances the learning process.

I. Introduction

For many, the "Information Age" arrived in the blink of an eye, accompanied by unparalleled advances in information technology. Accommodating this rapidly evolving world is a considerable challenge for those seeking to enhance their value as employees and expand their horizons as individuals. Heightened competition with growing numbers of increasingly sophisticated fellow "experts" has affected virtually every profession but is especially critical in engineering, where knowledge has a generally accepted five-year half-life.

Humans learn in different ways, with different attitudes and motivations. Malcolm Knowles refined the art and science of teaching adults into "andragogy," a lifelong process of continuing inquiry². CPE is part of andragogy's evolution. It helps adults satisfy life needs and achieve life goals, but what is the most effective way to teach and learn in this context?

In recent years, communications technology (teleconferencing and multiple conferencing, for example) has been used extensively and enthusiastically. Although advanced technology is often equated with "goodness" and generally assumed to be an improvement, the effectiveness of such systems has not been studied, especially troublesome since industry managers tend to express dissatisfaction with continuing education programs.

When decision-makers consider certain communication technologies, they focus largely on technical issues, rarely or only marginally considering non-technical elements that strongly

influence acceptance and effectiveness. The gap between educational needs and education provided is wide.

II. Choosing From the Menu

Hard data about how CPEEs choose communication approaches is missing from today's research. The first stage is to identify how they make decisions and identify common elements.

Most research follows three basic models. First is the Rational Model, selecting from among thoroughly analyzed alternatives. All choices, individual and organizational, benefit the entire organization and reflect criteria developed early in the process. This model places maximum emphasis on logical thinking. The Bounded Rationality Model, which tends to be less idealistic and accommodates the limitations of day-to-day decision-making, is a second approach. It reflects the tendency toward limited searches for alternatives, situations of inadequate information or control, and selection of the less than best solution (satisficing). Finally, the Political Model is evident when the situation is dominated by bias, distribution of power and self-serving interests. Deception is common, with distorted data used to support predetermined preferences that seldom change.

Each of these models lacks usefulness for studying human elements in CPE decision-making, because they do not reflect the complexity of the business environment. Decisions, whether by groups or individuals, are either routine and structured, or novel and unstructured. In business, routine decisions are dealt with using policies, rules and procedures. Unstructured decisions are more dynamic and complex and do not fit a particular pattern. Ventures into new processes, products, or markets are unique experiences, and are not dealt with in a routine manner. Relatively little is known about decision-making in this context, even though it revolves around complex issues requiring problem solving, judgment, intuition and creativity.

III. The Structure of Unstructured Decisions

The structured model of the unstructured decision³, by Henry Mintzberg and his students, is more realistic. Empirical evidence was collected for more than five years by more than 50 teams of management graduate students. From this, Mintzberg developed a general model of unstructured decision-making, a flow chart of seven steps within three phases and operating in an environment of three supporting routines and six sets of dynamic elements. Using this complex model, he categorized seven types of paths for all unstructured decisions. The model has withstood scrutiny and review.

In this view, selecting an alternative is not a matter of choosing the one or best solution, it is a complete process of screening, evaluation and choice. Selecting is an integral part of evaluating and choosing, has been defined as "crude, at best" in the literature, and is loaded with soft human elements (particularly during bargaining, design and development).

Mintzberg concluded that "selection routines" are mere trimmings in the overall process. Ultimately, "decision support routines," dominated by human issues, have the strongest

impacts.

Furthermore, the most dynamic factors are human elements, active in the total process not just on any single element.

Behavioral influences such as individual values, personalities, propensity for risk, potential for disagreement and ethical intensity all apply. So, the question ultimately is: How do CPEEs deal with human elements when selecting technology to teach technology?

IV. The Inquiry

Data to answer this question will be collected through a written survey of key decision-makers in a purposive sample of 23 leading high-technology Fortune 500 companies. The decision-makers to be studied are CPEEs and officers at Fortune-500 companies serving on the National Technological University (NTU) Advisory Committee, all of whom are involved in planning and programming corporate engineering development programs. Dr. Lionel Baldwin describes NTU as a virtual university⁴, an accredited cooperative effort of 46 major engineering and management colleges linked by satellite and using compressed digital-video technology to provide 25,000 hours of instruction to 115,000 engineering and scientific participants annually.

The questionnaire will be targeted to business-based managers and leaders such as the vice-president of human resources, director of human resource development, director of organizational development, manager of professional and management development and personnel manager. The survey will encompass human, economic and environmental elements in addition to engineering and professional considerations. Telephone and personal interviews will follow for in-depth exploration and ranking of elements in order of importance. Further, focus group interviews, biographical data/reflection questionnaires and personal or telephone interviews will provide in-depth detail-rich data based on individual perspectives and experiences.

A select focus group of three or four individuals will identify relevant elements for the survey questionnaire. Participants will be asked about the process for choosing technology. Potential questions include: □ How is the media selected? On the basis of defined learning needs? Instructional needs? Professional or technical expertise? Available budget? Technological glamour? What are the criteria for selection? □

The survey will concern communication technologies, with questions to define which technologies are perceived to be the best or delivering externally provided competency education. Questions also will cover concerns, reservations and challenges currently known and foreseen. Reference will be made to a leadership model that focuses on the role played by leaders in selection decisions.

Telephone interviews will follow to elicit responses ranked in order of importance. Interviewees will be asked to react to survey responses and to indicate the extent of agreement with mean agreement scores. Finally, results will be compiled, analyzed and summarized into a discussion of the findings □ implications, which will then be distributed for comment to all participating organizations. In keeping with the principles of Delphi study analysis, the final summative

responses of the respondents will be integrated to close the loop and be included as an addendum for future use.

V. Conclusion

Knowledge emerging from the study should include insight into:

- Opportunities for change and the forces driving change;
- The effect of shared vision and outsiders on the decision making;
- The role of human resource professionals;
- The nature of resistance;
- The influence of centralization and decentralization;
- How processes are redesigned; and
- The impact of personal stresses, costs, relationships and hidden agendas.

As higher education goes beyond its traditional boundaries to create programs for lifelong learning, we must become more aware of external influences for a more holistic approach to program planning. Defining the decision-making profile of corporations and then developing a strategy to address that profile will go a long way to helping make these kinds of programs be the most meaningful they can be.

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