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ABSTRACT

A review of the research on online education was conducted to determine whether online education could serve the self-development requirements of the U.S. Army's Armored Forces Research Unit. Self-development needs for the organization are determined annually and met on an individual basis for the organization's membership of 13 behavioral research scientists and supporting staff. Internet search engines were used to search for information about online education, including topics covered, sources, and sophistication. The search results suggest that currently available online courses appear very suitable for many target audiences and their workplace environments. However, for the organization in question, which has no novice members, instructional needs match closely with only a few online offerings. It appears that online information can be of considerable use for some training needs of this organization, but not all. The major points of this presentation are summarized in handout or slide form and attached (12 attachments). (Contains 13 references.) (SLD)

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ONLINE EDUCATION AS A MEANS FOR WORKPLACE LEARNING:  
A CASE STUDY

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Fort Knox, Kentucky

26 April 2000  
American Educational Research Association Annual Meeting

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(a) Objectives/Issues: Address the question of, "What currently constitutes online education?" The objective was to determine if online education could serve self-development requirements for our organization.

(b) Perspectives: Offsite education in the form of correspondence courses has, in recent history, often made use of e-mail, FAX, video tape, and telephone media for information exchange in addition to the traditional postal transactions. Now, the World Wide Web (WWW) on the internet is also being used as an information exchange medium for correspondence courses. A rather loose set of qualifications for correspondence courses will be used here to better fit it in with the concept of "workplace learning": education that is recognized as useful and valid by management; is formalized in some manner; usually provides some form of grading and/or feedback; and, as a minimum, can provide some record of the student's effort.

A question was raised in our office as to whether online education could serve at least some self-development requirements for our organization. Our self-development needs are determined and met annually on an individual basis. They can cover a wide variety of topics and can range from being introductory or procedural in nature to further refining specialized areas of expertise. Examples of our needs include: personnel administration procedures, new software programs, statistical analysis concepts and procedures, and theoretical developments in such areas as training or the decision sciences.

As a target audience, our membership consists of 13 persons. These persons include behavioral research scientists (N = 9), an Army officer, and a small supporting staff responsible for automated data processing (ADP), administration, and clerical tasks (N = 3). All of our members are very knowledgeable and experienced in their respective areas. We are all novices, however, whenever: new concepts, methods, or software are introduced; we begin a new area of research or development; and/or our job responsibilities change. The workplace environment has: individual offices in a building on an Army post; excellent inhouse ADP capabilities and support; WWW access that can be limited during periods of high internet

use by the military; and reasonable access to libraries having WWW capabilities.

(c) Research Techniques/Data Sources: WWW search engines were used to initiate the search for information. This was followed by extensive use of inter- and intra-hyperlinks, web messages, e-mails, and even a few phone calls. Attention was focused on websites offering a wide array of sources and/or topics of potential interest to the members of our target audience, especially the research psychologists. A number of potentially relevant online courses were examined in detail. The obtained information was analyzed, yielding a set of descriptors that could be related to our target audience. These descriptors were used to organize, describe, and discuss the collected information.

(d) Results/Conclusions: The set of descriptors developed to address the question, "What currently constitutes online education," were: (1) types of online courses, (2) costs and benefits, and (3) accreditation. Here, I will present only those findings regarding types of online courses and relate these to our target audience's requirements. With regard to types of courses, I will first discuss a few general findings and then describe the range of topics instructed, media and media features employed, entry requirements, and constraints.

#### Findings: Types of Online Courses

The variety of topics covered, sources, and sophistication of the WWW sites are increasing rapidly. For example, New Promise (1999), a cataloging service, now lists over 3700 courses and identifies over 100 schools having accreditation. Globewide Network Academy Catalog (1999) is even larger, being global rather than restricted to the USA, and includes courses that are more postal-based as well as internet-based courses. Courses are offered through colleges and universities, government and military agencies, and private industry. Use of the WWW has evolved to the point where one can not only take online courses on how to develop, administer, and instruct online courses - now, one can even complete programs for the purpose of becoming certified to perform these particular jobs.

Use of the internet for coursework ranges from being a minimally supplemental activity to being practically the only medium used. These variations in media use stem in part from the technological sophistication and resources held by the developing and implementing sources. They also, however, appear to stem from the intended content of the course. Courses providing basic or rote knowledge or procedural skills lend themselves easily to simple and less interactive computer-based instruction approaches. Such courses can readily be programmed, placed on a website, and the instruction, testing, and administration functions automated. Other courses (e.g., those providing indepth knowledge and understanding of theory,

principles, or tactical decision-making) seem to require study that is more book- or scenario-based and is accompanied by discussions with the instructor and fellow students. These courses can often make effective use of WWW features supporting interactions, and can offer additional electronic resources such as libraries and data bases. While the simpler courses were the early front runners in online education - and appear to still be so - the latter, more challenging, types of courses are increasingly becoming available as well.

One well-established axiom of training development seems pertinent to the foregoing. That axiom, especially for instruction which is intended to be andragogical, or learner-centered, is to perform a needs assessment first (Finley, Sanders, & Ryan, 1996; Knowles, 1980). The real needs of a particular training audience must be carefully identified to assure that WWW features are used only as appropriate for satisfying their particular instructional needs. A caution, well expressed by Arendt & Abbot (1998) and Arendt & Brown (1998), is to avoid using technological features for technology's sake in online education courses and then evaluating it accordingly.

Topics Instructed The range of topics was found to be incredible. This review focused on only a few topics, ones likely to be useful for our organization (e.g., educational philosophies and techniques, training development methods and use of alternative media). Examples of other topics discovered quite coincidentally, just to name a few, included accounting, agriculture, music, mathematics, computers and programming, fire fighting, and equipment repair. There did not seem to be any topical area that predominated. Noted above was the general finding that simpler and more programmed courses did appear to predominate at this time. It is obvious, however, that more challenging courses (whether or not the WWW is the primary medium) and ones using more sophisticated interactive technology are rapidly increasing in numbers. It seems safe to say that, if there is a market for that topic, it will appear as soon as someone qualified to instruct it is teamed with an organization interested in presenting it, and having the minimum necessary computer and online education development resources.

Media and Media Features Employed WWW use in largely postal-based courses may be limited to descriptions of the source and available topics along with a means for registering or requesting information. At the other end of the scale are those websites having very attractive, informative writeups and graphics; well designed intra- and inter-hyperlink systems; online use of a library and/or other data bases; audio and video presentations; and communications means like electronic bulletin boards, personal lockers/mail boxes, and online interactions between students, professors, and administration personnel. One source, University of California at Los Angeles (UCLA) Extension Online Courses (1999), even provides an WWW-based course

demonstration. While WWW-based communication exchanges are generally asynchronous, there are a few sites experimenting with synchronous communications as well - but only on special occasions. After all, a major selling feature of correspondence courses is the ability for students to choose their own times for doing course work.

Entry Requirements There are three types of requirements: time that must be spent onsite; matriculation mode (e.g., earning a degree vs. auditing a single course); and prerequisite knowledge, degree, or employment status (e.g., being a member of the military or government). Increasingly, internet-based courses do not have any residency requirements. Of those requiring time onsite, these usually specify frequency of visits with the professor and/or dates for the class to meet as a whole.

Constraints One major constraint affects those whose available time is very limited and/or varies unpredictably in terms of schedule and amount. That is, some course offerors are quite restrictive with regard to calendar schedules for starting and completing a course and its homework assignments. Other offerors range from having no time restrictions at all to those willing to grant extensions of three to six months for completion of work. Currently, these appear to be the more prevalent. The extent to which restrictions are imposed appears to be a function of three factors: (1) degree of adherence to educational and administrative scheduling traditions (especially found with university offerors having fixed facilities); (2) whether or not there is a dedicated instructor and their terms of employment (e.g., tenured versus contracted); and (3) the number of assignments requiring interaction with the professor and/or fellow classmates.

The dilemma is that, as one moves from online instruction consisting of automated instruction and testing towards richly interactive online learning experiences, one is more likely to encounter these time constraints. The latter begins to approximate the excitement of a "real" onsite classroom experience but with the advantage of being able to reflect before responding. For some educational needs, this can be a more rewarding situation.

Another constraint, that can exacerbate the impact of time constraints, is internet and, hence, WWW accessibility during peak usage hours. This constraint is particularly a feature in Army workplaces due to the Army's necessary internet access infrastructure. As internet use increases, this constraint may begin to affect other workplaces operating during normal business hours as well.

## Online Courses Matching Our Training Audience's Requirements

The limiting factors for our organization are the already high skill levels of our membership, and the relative unpredictability of high workload periods and schedule variations for several members. While our expertise in several areas of specialization make the more interactive and technically challenging courses attractive, this conflicts with the fact that these are the courses which generally impose stricter schedules for coursework. Even so, the bottom line for our organization is: Whatever our self development needs for any particular year, it is likely that at least one of these can be met through online education. Wishful thinking for the future is that courses will be offered over the WWW emulating the formality and content of short seminars offered by an instructor (e.g., 8-16 hours worth), and requiring students to make serious contributions as well. Given an appropriate topic, such courses would be very attractive to our organization.

In contrast, those organizations having some relatively novice members whose job performance would benefit from further education are likely to find that many of their needs can be met by online education. The requisite condition would be availability of online courses with appropriate content. Given the rapid increase in the number of topics becoming available on the WWW, the number of workplace educational needs that can be satisfied can be expected to increase over time. This statement should be especially true for organizations having ready access to the WWW, and whose members have flexible work schedules and a continuing need to enhance/update their skills.

To summarize, currently available online courses appear to be very suitable for many target audiences and their workplace environments, given existing topic coverage meeting their requirements. For our organization, however, with no novice members, our instructional needs match up closely with only a few of the currently available courses. This can be translated to say: Online education can be of considerable utility to our organization for some of our training needs - but not all.

(e) Educational or Scientific Importance of the Study: In this case study, the target audience was one where correspondence courses, using whatever media, would not be expected to meet a large number of instructional requirements. This is primarily due to the high levels of on-the-job expertise already possessed. Even so, it is apparent that online education can already meet some of our varied needs and will probably meet more in the future. Given this finding, it appears that online education could meet the instructional needs of many other workplaces. This is due to: the increasing availability of courses, whatever the topic; increasing WWW accessibility in the workplace; and the blurring of distinctions between programmed instruction, correspondence courses, and classroom instruction

and debates. Research could fruitfully address questions regarding: (1) What WWW features might best meet the needs of which types of target audiences and/or content areas; and (2) How can online education be best integrated into the workplace given various operational and WWW accessibility factors.

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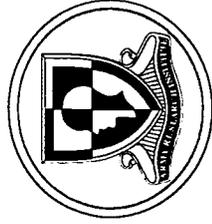
26 April 2000  
SIG Workplace Learning  
2000 Annual Meeting  
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## **Objectives/Issues**

**QUESTION:** What currently constitutes Online Education?

**OBJECTIVE:** Determine if Online Education could serve self-development requirements for our organization.



## What Constitutes Online Education? Definition, Media, and Resources

Traditional correspondence courses, programmed instruction, and classrooms are all analogs to online education courses. The distinction is that internet's World Wide Web (WWW) is at least one of the media employed.

**MEDIA:** WWW, e-mail, telephone, FAX, video tape, and/or U.S. mail.

**ELECTRONIC RESOURCES:** bookstores, hyperlinks to libraries, data bases, and ERIC.



## What Constitutes Online Education? Offerors and Work-related Topics

OFFERORS IN AN EXPLODING MARKET PLACE: Private Industry, Colleges and Universities, and Government and Military Agencies.

### WORK-RELATED TOPICS, EXAMPLES OF THE WIDE VARIETY:

- UCLA Extension Online offers, among other courses, entire programs to gain certification as developer, administrator, or instructor of online courses.
- Kentucky Commonwealth Virtual University, a few initial offerings: firefighter training, speech pathology, and rehabilitation counseling.
- A commercial firm offers preparation for certification in: environmental health and safety, health physics, inventory management, and ergonomics.
- Army offers more than 800 information technology courses.



## **What Constitutes Online Education? Levels Of Instruction, Types of Learning, and Strategies**

### **LEVELS OF INSTRUCTION:**

***from*** Microsoft's Beginning Word 97 →  
***to*** Ph.D. in Applied Management and Decision Sciences with a  
specialty in Leadership and Organizational Change.

### **TYPES OF LEARNING:**

***from*** Basic Knowledge and Procedures →  
***to*** Understanding of Theory and Principles.

### **INSTRUCTIONAL STRATEGIES:**

***from*** Programmed Instruction →  
***to*** Challenging Subject Matter + Asynchronous Live Interactions +  
Resource-rich Websites + Technologically Advanced Features.



## **What Constitutes Online Education? Constraints**

- ◆ **CALENDAR-BASED SCHEDULES**
- ◆ **INTERNET ACCESSIBILITY**



## Can Online Education Serve Self-Development Needs for Our Organization? Our Target Audience - Representative of Many?

**REGULAR LEARNING REQUIREMENT:** Job-related self-development needs are met annually on an individual basis.

**MEMBERSHIP:** A variety of expertise types are represented. Expertise levels are very high except when new methods or assignments encountered infrequently.

**WORKPLACE:** Individual offices housed together on Army post; excellent inhouse ADP capabilities and support; WWW access sometimes limited at workplace, but libraries also provide WWW access.

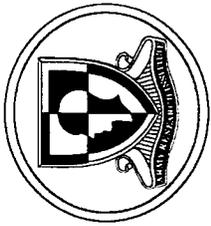


# Can Online Education Serve Self-Development Needs For Our Organization? Findings and Their Generalizability

**BOTTOM LINE:** Whatever our self development needs for any particular year, it is likely that at least one of these can be met through online education.

## GENERALIZABILITY:

- ♦ Limiting factors for some organizations:  
High levels of expertise + Relatively unpredictable workloads and schedules = Conflict between course suitability and scheduling constraints.
- ♦ Online education may be especially useful for organizations where:
  - Membership is more novice or
  - Work schedules can be planned.

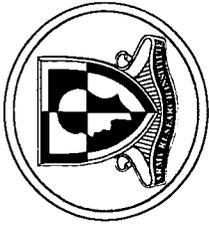


## Summary

- ◆ Online education can be useful to our organization for some training needs.
- ◆ Online education appears to be suitable for many organizations, given adequate workplaces and topic coverage.

**GIVEN THE CURRENT GROWTH RATE IN THE NUMBER AND TYPES OF ONLINE COURSES AVAILABLE →**

**THE NUMBER OF WORKPLACE EDUCATION NEEDS THAT CAN BE SATISFIED BY ONLINE EDUCATION CAN BE EXPECTED TO INCREASE AS WELL.**



## Backup Slides



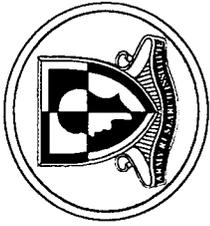
## **Backup Slide Online Education Course Data**

U.S. Army Information Technology Course Examples:

- 2 hour Microsoft Office 97
- Beginning Word 97
- 12 hr, Technical Support
- Window 3.1 Networking and Troubleshooting

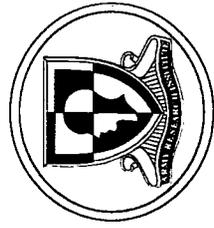
UCLA Extension Online increased their number of courses from ~40 to ~65 in number in just 8 months.

Among accredited colleges and universities: One cataloging service recently listed over 100 of them offering over 3700 online courses - and this list was not complete.



## **Backup Slide Limiting Factors**

- ◆ **SCHEDULING REQUIREMENTS:**
  - Most prevalent: No schedule constraints or will grant 3 - 6 month extensions. Especially true of programmed instruction courses.
  - Some few are quite restrictive. Especially true of courses featuring a high degree of interaction with live instructors and fellow students.
- ◆ **SUITABILITY OF COURSE MATERIAL**
- ◆ **ACCESS TO INTERNET AND SELECTED WEBSITE**
  - A problem in some Army workplaces during peak usage hours.
  - Some workplaces have fewer workstations, less ADP capability, and lack other facilities with WWW access.
- ◆ **ABILITY TO QUICKLY ACCESS INFORMATION WITHIN A WEBSITE**



## **Backup Slide Technological Caution for Online Education Course Development**

**TRAINING DEVELOPMENT AXIOM:** Do a careful learner needs analysis before designing the course and making technology-related decisions. Another axiom, following from this:

**AVOID USING TECHNOLOGICAL FEATURES FOR TECHNOLOGY'S SAKE!**



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