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Design practices business organizations employ to deliver virtual classroom training

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Design practices business organizations employ to deliver virtual classroom training

Abstract

The purpose of the literature review is to investigate what instructional design practices organizations employ to deliver virtual classroom training to their workforces. The review examines why companies are implementing virtual classrooms, positive and negative elements of implementing, instructional design strategies companies use to deliver effective virtual training and how learners perceive virtual classroom training compared to traditional face-to-face settings. Best practice with research shows that the most critical factors in successful virtual classroom training are engaging learners, using the software technology effectively, applying instruction design practices and accurately evaluating learner perception. By understanding the best practices, instructional designers can enhance the participants' learning experience, demonstrate return on investment and improve efficiency and employee effectiveness.

DESIGN PRACTICES BUSINESS ORGANIZATIONS EMPLOY
TO DELIVER VIRTUAL CLASSROOM TRAINING

A Graduate Literature Review

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Division of Instructional Technology

Department of Curriculum and Instruction

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts

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by

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INTRODUCTION

In the past couple of decades, distance education offerings for adult learners in higher education have increased enormously. These days taking online distance courses has become widespread and appealing for many adult learners due to more sophisticated technology and the flexibility of taking a class from the comfort of home.

The attraction of distance learning is that it allows the learners more flexibility in being able to take classes at their convenience and permits them to structure their class work time around personal and professional commitments. In addition, academic distance education targets a wider audience of non-traditional students, which in turn increases student population and serves as an inexpensive way to increase university revenue (Singh & Pan, 2004). This aspect of higher education is also attractive to those students who are geographically dispersed from the school or university offering the course(s) (Hung, Chang, Chung, & Lin, 2005). Other benefits to distance education include less money spent by the student traveling to a university and less time spent sitting in a traditional classroom (Beard, Harper, & Riley, 2004).

Distance Education in Organizational Settings

In spite of all advantages distance education has to offer in the university setting, there still exists a general notion that the same principles of virtual learning do not weave as well into a business organizational environment. The advantages and attractions of distance learning in business organizations are similar to the benefits of distance learning in higher education. For example, distance education delivery methods allow organizational learners to be geographically dispersed and offer cost saving when used as organizational delivery methods. Yet, despite this, the practice of using distance

education delivery media is not commonly seen as a feasible alternative when compared to traditional in-person classroom training delivery methods. Many times this erroneous perception that organizations have towards distance education is due to the lack of research-based knowledge that supports using distance education as a delivery method, and the lack of best practices/trends in distance delivery methods.

Virtual Classrooms in Business Organizations

Distance education in organizations describes virtual classrooms in which live online learning is taking place (Hoffman, 2005) similar to synchronous distance education in higher education settings. In today's world of economic turmoil and reduced training department costs, the topic of organizational virtual classrooms is a significant issue that demands further research into best practices / trends (Corporate Executive Board, 2009). "Training professionals have been creating programs without the benefit of successful models, without best practices, and without full knowledge of how to use the technology to its best advantage" (Hoffman, 2005, p. 7).

Knowledge of successful trends in implementing virtual classrooms is crucial to understanding how to design a virtual classroom setting. Correctly designed virtual classrooms can positively affect a student's motivation, commitment to the training, learning, future enrollment in other virtual courses, and performance back on the job (Clark, 2005).

The areas in which virtual classrooms have been shown to work successfully are multi-faceted. By understanding the best practices that other companies have successfully accomplished in their virtual classrooms and what pitfalls to avoid, instructional

designers can better design a virtual learning environment that will enhance the participants' learning experience.

The key areas in which an organizational virtual classroom can fail are multifaceted as well. If a virtual classroom experience is negative, organizations may see that students no longer self-select into additional future on-line learning opportunities. Additionally, if an organization does not see the return on investment in offering virtual training, they may not fund future virtual training delivery.

For this paper, professional literature articles, organizational case studies and scholarly studies were researched that measured best practices, organizational perceptions of virtual classrooms, and studies in higher education and trends in effective instructional design methods for a virtual classroom environment. Most of the literature focused on strictly synchronous modes of learning in organizational settings.

This literature review will address the following questions as related to organizational virtual classrooms:

1. Why are companies implementing virtual classrooms?
2. What are the positive and negative elements of implementing this delivery method?
3. What strategies do companies use to deliver effective virtual classroom training?
4. How do learners perceive virtual classroom training compared to traditional face-to-face settings?

Future recommendations include exploration into the learner's perception of virtual training, design of assessment instruments used to measure learners' attitudes to

online learning, and instruction, best practices / trends data, and return on investment for implementing virtual classrooms.

Terminology of a Virtual Classroom in an Organizational Setting

This literature review will examine a selection of professional studies regarding the strategies and trends seen in virtual classroom settings in business organizations. The identified research focuses on instructor-led synchronous web-based e-classroom environments whereby the instructor and students are separated by time, location or both, and there is only one person per online connection (Corporate Leadership Council, 2004; Hoffman, 2005; Huggett, 2010).

A synchronous training event involves use of an Internet-based software program distinctively created to host online training (Huggett, 2010). In particular, the type of virtual classroom environments discussed in this paper will include those that support the projection of video images, instructor-participant audio support, desktop, and application sharing, and interactions with voice, chat, and white board capabilities (Clark, 2005). “The terminology virtual training and online training are used interchangeably” when referring to interactive training that uses an internet connection (Huggett, 2010, p. 1). Both expressions are used throughout this review when referring to instructor-led, synchronous, web-based learning via an array of collaborative technologies.

METHODOLOGY

The primary rationale for selecting the sources for this paper was their relevance and timeliness to the content. The majority of the resources used in this paper are current and published within the last 10 years. Information found for this paper was evaluated based on the quality of the content, the source of the data, and the relevance to the topic of corporate learning environments using synchronous, web-based, e-classroom technology.

To locate the resources for this paper, various online databases and professional materials were used. The sources were selected based on past experience with the various databases and awareness of professional learning associations/research.

Journal and periodical articles were located through The Panther Prowler search engine at The University of Northern Iowa Rod Library. The identification and location of sources were located using online academic databases that included ERIC, EBSCO, and Education Full Text. A majority of Internet searches were done using Google Scholar.

Other sources included adult learning and business professional material related to virtual classrooms in organizations. Professional corporate learning references were found in places such as ASTD (American Society of Training and Development), CLO (Chief Learning Officer), and professional memberships through SHRM (Society of Human Resource Management), Brandon Hall research, Bersin research, and Corporate Leadership Council research. Additionally, at the Learning 2009 conference held in Orlando, FL, in October 2009, training seminars were attended which focused on best practices in virtual training.

The descriptors/key words used for this research were: *Adult Education, Virtual Training, Design Practices in Virtual Training, Live Online Classroom, Learning Styles, Corporate Training, Business Learning, Adult Learning, Social Learning, Young Employees, Generations in the Workplace, Workplace Training, Corporate Training, Corporate e-learning, Virtual Classroom Delivery, Best Practices/Trends in Virtual Classroom Environments, Distance Education, Distance Education Evaluations, and Learner Perception to Virtual Classroom/Distance Education.*

Since the delivery and design of virtual training in the workplace is still fairly new to most learning organizations, the peer-reviewed academic research available is generally limited in scope to higher education learning rather than corporate learning. Some results/data on higher education students was incorporated into this paper due to the reality that: (1) higher education students are within a couple years difference in age to adult Generation Y employees; and (2) the practice of synchronous distance education is more prevalent in higher education than in organization training environments.

ANALYSIS AND DISCUSSION

The recent emergence of the online virtual classrooms in many organizations is straightforward. Modern technology has helped to make it logically possible to conduct business with a globally dispersed workforce and this has in turn affected the way training is delivered (Van Der Schyff, 2003). “Although traditional classroom instruction still occupies a prominent space, learning professionals are turning to technology to help streamline operations and deliver learning at less cost and with greater reach” (Rossett, 2010, p. 65). It has become a business necessity.

Transition to Virtual Classrooms

Nonetheless, for business organizations, the transition process “from face-to-face to online events often brings up a sense of fear and trepidation” (Young, 2009, p. 21). This does not need to be the case. As learning organizations begin to explore virtual classroom instruction, they need to step back, and investigate the transition, and design process. In order to fully understand and implement effective virtual delivery, organizations will be better equipped if they understand why they are implementing virtual programs, the benefits along with the pitfalls to avoid in e-synchronous training programs and best strategies to design their programs for virtual delivery (Van Der Schyff, 2003). Lastly, it is imperative to also understand the learner perception of virtual classroom delivery versus traditional instructor-led training.

Reasons for Implementing Virtual Classrooms

For the past seven years the American Society of Training and Development (ASTD) has been collecting data on the state of corporate training. ASTD research has consistently shown a steady decline in the use of traditional instructor-led training

courses in corporate organizations (Galagan & Adams, 2010). As cited in Galagan and Adams, (2010), a possibility for the decline could be, “pressing economic realities, an inability to scale classroom training, an increasingly mobile workforce, and progressively easier-to-use technologies” (p. 30) that are all pushing training to a “myriad of web-and-computer based delivery vehicles” (p. 29).

According to numerous Corporate Leadership Council (CLC) studies, research shows a narrow spectrum of reasons why organizations implement distance learning programs. The CLC studies over the past few years have shown the main reasons profiled organizations are moving to virtual classrooms has remained constant: (1) cost-savings, and (2) geographically dispersed workforces (CLC, 2003; CLC, 2004; CLC, 2009). In sum, global and technological changes are driving the business case for distance learning.

Several researched global organizations (companies with employees located both inside and outside the U.S.) stated the number one cited reason for distance education was the increasingly dispersed workforces and that companies with geographically dispersed workforces are facing challenges in developing cost-effective training delivery channels that actively engage trainees (CLC, 2009). Additionally, another reason to implement distance education is the reality that virtual online training offers instruction to globally dispersed employees who may otherwise not have the opportunity to participate in a learning event (Hoffman, 2005). The trend towards implementing virtual training will continue to grow. Organizations project a continuing increase in use of technology as a training delivery method, and plan to offer more virtual classroom training opportunities that will blend the traditional classroom with newer web technology (CLC, 2003).

Other business case reasons to implement virtual classrooms include the learners' timely access to information, easily updated content, increased amounts of training opportunities, and reduced costs in non-evident areas (CLC, 2003; CLC, 2004; Leiser, 2009). Non-evident cost savings include the benefits of less travel and the correlation to virtual classrooms addressing larger *green* initiatives. Virtual classrooms mean less travel, reduced CO2 emissions, and "less buildings to heat, cool, furnish, maintain, landscape, or supervise" (Leiser, 2009, p. 1).

Positive Elements for Implementing

Although there are drawbacks to virtual education, research has shown that there are abundant positive reasons to implement virtual classrooms. These include availability of a wide range of software tools, a cost effective delivery medium, and learner retention rates.

Software Technology

1. A trend report by the Corporate Executive Council (CEC) in 2009 showed that the learning technologies/e-learning technology market had grown by 27% annually over the previous four years (p. 13). The virtual classroom technologies market contains a large selection of off-the-shelf software to leverage and deliver a virtual classroom experience (Marie & Orgill, 2009). The current and most widely used software includes Elluminate Live, Saba, WebEx, Centra, Adobe Acrobat Connect Pro, and Live Meeting (Clark, 2005; Corporate Executive Board, 2009; Marie & Orgill, 2009). Almost all virtual classroom technologies offer the same or similar features. Most virtual

classroom technology packages offer the instructor the ability to: Display presentations, such as PowerPoint slide shows;

2. Share the facilitator's desktop or an application;
3. Use a whiteboard for drawing and charting;
4. Hold conversations in a chat room or sub-chat room;
5. Create voice sub-conferences, often called breakout rooms;
6. Document and slide markup tools (Highlighters and drawing tools);
7. Administer surveys and quizzes;
8. Download documents and reference materials;
9. Connect to URLs on the Internet or intranet;
10. Use symbols, sometimes called emoticons, to show emotions;
11. Manage hand raising features;
12. Administer and publish polling (Meacham, 2003; Clark, 2005).

Learner Retention Rates

A student's gained knowledge in a virtual class is comparable to traditional instructor-led training. According to Clark (2005) when it comes to organization learning delivery methods, "most of the research has showed no practical learning advantages or disadvantages of electronic distance media over traditional classroom sessions... and student satisfaction rates were equivalent" (p. 1) when compared to the traditional instructor-led classroom.

One of the keys to successful virtual classroom environments is in the basics of media use and instructional design. Research has shown that virtual classroom environments are successful when the media is used properly and the instructional design

process has been followed (Clark, 2005). For example, by using quantitative evidence in combination with R. Brinkerhoff's Six Stage Evaluation Human Resource Development model, Southern African Breweries was able to prove that their properly designed distance-learning course added value in increased transfer of knowledge when compared to traditional instructor-led training (Van Der Schyff, 2003). Clark (2005) states that, when designed and used effectively, the virtual classroom will outweigh the benefits of the traditional classroom and have increased learner retention rates.

Cost-effectiveness

Virtual classrooms can save organizations time and money due to the nature of the cost-effectiveness of the delivery method (CLC, 2004; Hoffman, 2005). For example, at Cisco, a shift to virtual training, "reduced training expenditures by more than 80 percent" and increased the number of training courses by 60% when compared to instructor-led courses (E-service Training Program, 2004). With reduced corporate budgets many organizations are struggling to reduce their learning and development accounts (CLC, 2004) and virtual classrooms might be the answer. "Many organizations are turning to the virtual classroom as the centerpiece of their blended learning strategy in order to save cost and reduce inefficiencies associated with traditional classrooms" (Clark, 2005, p.1). Cost savings with virtual classrooms includes reduced organizational travel expenses, time away from the office, and *green* savings such as fewer expenses for fuel, paper, or electricity (Leiser, 2009).

Learning Styles and Multiple Intelligences

Virtual classrooms also offer the ability to reach a wide variety of learning styles and multiple intelligences. Virtual training, "allows for the sharing of ideas, problem

solving, and higher levels of comprehension while being visual, auditory, and body-kinesthetic” (Houck, 2004, p. 2). Virtual classrooms appeal to many learning styles because the delivery allows organizations to offer benefits such as flexible class times, interactive classroom-like experiences, engaging graphical content, and unique small group learning opportunities (Marie & Orgill, 2009).

Instructor and Subject Matter Experts Accessibility

Another advantage of virtual classroom delivery is the unrestrained availability of facilitators and subject matter experts (SMEs). In a virtual classroom, facilitators, guest speakers, and subject matter experts can be assigned to instruct or participate in a class “no matter where that person happens to be” and not be required to travel (Hoffman, 2005, p. 12). The virtual classroom saves the company money by not having to provide travel expenses for students, instructors, and SMEs. In addition, students may be more likely to enroll in classes featuring subject matter experts and in turn experts may be more willing to participate in virtual classroom settings that do not require travel (Hoffman, 2005).

There are many positive reasons why companies might implement virtual classroom environments. However, there are also negative issues that companies must watch for when considering implementation.

Negative Elements and Lessons Learned

Virtual classroom training is not right in every circumstance and there are numerous disadvantages to acknowledge. Best practice and research have shown a number of pitfalls with virtual classroom delivery such as instructor skills, initial and ongoing costs, accessibility issues, content area issues, and student characteristics (Clark,

2005; Houck, 2004; Sheinberg, 2000). This next section will address each of the concerns individually.

Instructor Challenges

It can be challenging for a traditional classroom instructor to change gears and instruct in a virtual classroom setting. “While comfort with the technology and the Internet is generally high, instructors fear the loss of competency and control when they are no longer at the front of the room, and they miss the visual cues they rely on to sense the levels of attention, engagement, understanding, and agreement”(Young, 2009, p. 21).

In one study, instructors with backgrounds and proficiency in using technology for teaching had higher perceptions of online teaching than those that who were not accustomed to technology or who had negative experiences teaching online (Gonzales, 2005). “Trainers who are accustomed to traditional classroom sessions often have concerns delivering training differently” (Sheinberg, 2000, p. 1). Trainers find online teaching time consuming (Gonzales, 2005) and not ideal for active interaction among participants (Young, 2009).

When polling organizational learning leaders, Clark (2005) discovered that all respondents reported challenges with getting instructors to effectively use the technology features of the virtual classroom. Some of the key instructor pitfalls that Sheinberg (2000) recognized were instructors treating the virtual classroom like a traditional face-to-face course by jumping right into content while lacking a support structure, not planning for technology problems, failing to consider cultural and regional differences, and not planning adequately for discussion time. Too many times, instructors simply revert back

to lecture and presentation mode when facilitating a virtual training course (Miner & Adams, 2009).

Technology Start-up Costs and Development

Other areas of caution in regards to organizational virtual classrooms are technology and personnel costs associated with start up, design, and maintaining the virtual classroom. For example, at Hewlett Packard their award winning five-day blended, live virtual classroom cost \$40,000 for development and \$12,000 each time the course was delivered (Hewlett Packard, 2003). The resources and salaries committed to the project included one course developer, one virtual classroom consultant, one content expert, one virtual classroom facilitator, two instructors, and one learning program manager.

Although initially expensive, the start-up technology and development costs can be justified if return on investment is evident (a performance measure used to evaluate the efficiency of an investment). For example, in a case study at Clarke American Checks, the cost of the virtual e-learning software technology was covered within six months after implementation (Corporate Executive Board & Learning Development Roundtable, 2001). This return on investment was a measure of operational efficiencies that combined the travel savings of students, instructors and experts, reduction in performance errors, and compressed training schedules

Technology Limitations and Infrastructure

Technology limitations and infrastructure are another big concern for organizations considering implementing virtual classrooms. At Met Life Financial Services, technology infrastructure challenges were recognized when locations with

limited bandwidth struggled to deliver video conferencing classroom instruction (Rossi, 2001). As a lesson learned, Met Life recognized a need for extensive piloting of virtual learning in order to better understand how their network would respond to the software and if students were staying connected.

“When participants have drastically different bandwidths available to them (for example, some employees working from home with dial-up, international employees with low-bandwidth, or in an office with high speed networks) their experiences can be very different” (Hoffman, 2005, p. 14). Hoffman (2005) suggests that it is best to proactively know the bandwidth issues of participants and “design for the lowest common bandwidth” (p.14).

Other design issues to consider include how to incorporate accessibility issues and other learner needs into virtual classroom design and delivery (Houck, 2004). For example, instructional designers need to create content that meets “physical and virtual accessibility standards” in addition to content that appeals to a “variety of learning styles and intelligences” (Houck, 2004, p.2).

Instructional Content and Student Learning Styles

Another limitation to a virtual classroom delivery medium is the instructional content area and the individual student’s learning style. The online virtual setting is not the ideal learning environment for all students and all content areas. Students needing structured learning environments may not thrive in a virtual video delivery classroom setting (Leiser, 2009). Virtual classrooms work best for learners who are self-motivated, have some computer skills, can schedule their time well, and take responsibility for their learning experience (Leiser, 2009).

Not all training content is suitable for virtual delivery. Virtual classrooms work best when organizations need to visualize content, promote interactivity, and facilitate collaboration (Clark, 2005). Leiser (2009) states that when students need to demonstrate the hands-on application of learning, such as forklift driving, weapon qualification, etc., a strictly virtual learning experience is not sufficient. At MetLife, they “found that the virtual classroom was most successful when used to reinforce subject matter in which participants had received some basic training” and also “to prepare participants for intensive classroom experience” (Rossi, 2001). As experienced at MetLife (Rossi, 2001), and examined in Leiser (2009), for some content areas, a more suitable delivery medium might be “a blended program model (face-to-face and virtual)” that would “bring together the best of both environments for optimum learning” (Leiser, 2009, p. 2).

Strategies for Effective Delivery

Success in the virtual classroom environment begins with the right design. Designing for a virtual classroom should involve instructional design practices and the application of effective strategies that enhance the learner’s motivation and engagement (Marie & Orgill, 2009). A sample of strategies for virtual classroom design can include the ARCS motivational theory and DVEP Model and other methods to assure employee engagement.

Group Engagement and Collaborative Learning

As virtual training increases in the workplace, whether precipitated by globalization, budget cuts or new technology, it is important to understand the strategies that improve group engagement and collaborative learning (Young, 2009). John Keller’s ARCS (Attention, Relevance, Confidence, and Satisfaction) model can be used in the

design / development stage and in the delivery considerations for a virtual classroom to increase engagement (Marie & Orgill, 2009). The systematic ARCS model is an instructional design model for increased motivation. The ARCS Model identifies four steps for motivating instruction: (a) attention strategies for arousing and sustaining interest; (b) relevance strategies that link to learners' needs, interests, and motives; (c) confidence strategies that help students anticipate successful achievement; and (d) satisfaction strategies that provide extrinsic and intrinsic reinforcement. Applying the ARCS Model in a virtual classroom would be the use of technology tools to gain the learner's attention by using a webcam so learners can see the facilitator or identifying a learner by name to conduct a breakout room activity (Marie & Orgill, 2009).

.An additional strategy to enhance learner motivation in design and delivery is Clark's DVEP Model (Clark, 2005). The DVEP research-based model consists of four steps: a) *define* the outcomes, methods and media; b) *visualize* and design compelling content that meets the learning goals; c) *engage* learner interaction with the content through the frequent use and variety of technology, and lastly; d) *package* the program experience with any needed pre-and-post working aids and participant materials. An additional virtual classroom design method Clark describes is the four routes to engagement (2005). The routes to engagement include maintaining a lively pace, visualizing the content, incorporating frequent participant response, and using small group breakout rooms.

Blended Learning Options

Offering blended learning in addition to the virtual delivery is another strategy an organization might employ. Blended learning, in the context of business organizational

virtual training, is a combination of instructional approaches. It is a learner attending video classroom training, and also having the social learning support of coaching, mentoring, readings, reference materials, and participation in online communities using Web 2.0 tools (Rossett, Douglas, & Frazee, 2003). Web 2.0 technologies can create a blended learning platform that enables students to build and share training knowledge through interactive discussion groups, forums, and blogs beyond and in addition to the virtual classroom session (Corporate Executive Board, 2009).

Virtual classroom training and blended learning might be advantageous when one needs to “extend the reach and impact of face-to-face learning events in a blended solution” (Young, 2009, p. 23). For a virtual synchronous delivery approach, blended learning in business organizations might consist of various social learning media tools such as online intranet student communities, or collaboration bulletin boards/portals. Research has shown increased student learning when learning consists of several blend options for learners, in addition to classroom training (Dean, P., Stahl, M., Sylwester, D., & Pear, J. 2001).

Learning Styles and Multiple Intelligences

As previously noted, virtual classrooms offer the ability to reach a wide variety of learning styles and multiple intelligences when designed appropriately. In fact, combining the knowledge of multiple intelligences with the features of virtual classrooms can help enrich a student’s learning experience (Meacham, 2003).

Meacham (2003) notes that by incorporating the various common features of virtual software, a designer can proactively design engagement to fit different intelligences in a virtual course. “The best way to ensure that you are engaging as many

learners as possible to the greatest degree possible is to use as many different ways to appeal to those multiple intelligences as technology will allow” (Meacham, 2003, p. 1). Meacham provides numerous examples of how this can be accomplished through using a wide variety of technology features such as whiteboards, surveys, breakout rooms, desktop sharing, and URL internet linkage, that a designer can use to create learning programs that are more exciting, engaging, and more effective to various intelligences. A sample of these ideas includes (Meacham, 2003):

Visual/spatial intelligence.... These learners respond particularly well to learning activities that let them:

1. Watch a video of a process or story that pertains to the course
2. Interpret and apply charts that summarize statistics
3. Share mind-mapping software or graphic organizers to understand a problem or collaborate....

Verbal/linguistic intelligence... These learners will respond particularly well to activities such as:

1. Listening to or telling stories
2. Reading and interpreting text
3. Analyzing case studies...

Logical/mathematical intelligence... These learners may benefit from learning activities such as:

1. Interviewing a subject matter expert ...
2. Developing theories or conclusions based on facts in evidence

3. Working on an online spreadsheet or calculating percentages or metrics with other learners...

Bodily/kinesthetic intelligence... These learners respond well to learning activities involving:

1. Hand-on manipulation of the keyboard or mouse
2. Online game-like activities that require hand-to-eye coordination or rapid reflexes
3. Blended solutions that let them create something with their hands and share it with the rest of the class through digital image...

Musical/rhythmical intelligence... Engage these learners by:

1. Use of sound effects to accentuate the key points in a presentation
2. Playing subtle background music to enhance the desired mood...

Interpersonal intelligence... Activities for interpersonal intelligence include:

1. Creating sub-conference groups to allow small group discussion
2. Role playing the same case from several different points of view....

Intrapersonal intelligence... Intrapersonal learning activities might include:

1. Online surveys that focus on how learners feel about a particular subject or fact
2. Online role plays showing their own response or emotions in a particular setting or scenario...

Naturalist intelligence... These learners respond well to activities that let them:

1. Visit other websites or resource documents and investigate a topic
2. Organize and conduct a virtual field trip....

Length of Sessions and Pre-Work

Other design strategies to consider include length of sessions, timing of activities, support materials, and types of technology. Virtual learning calls for designing in modules or chunks (Hoffman, 2005). Effective virtual training sessions are typically shorter than traditional classroom sessions, about an average of 90 minutes (Young, 2009). Hoffman (2005) suggests that content heavy material not exceed 45 minutes maximum and that interaction occurs every three to five minutes.

At South African Breweries Limited, the 2003 ASTD winner of the prestigious Excellence in Practice Award, a virtual training classroom was effectively developed that consisted of 10 virtual classroom training modules taken 2 per semester (Van Der Schyff, 2003). Designing shorter learning sessions is effective for student virtual learning. At Westinghouse Electric the transition to multiple virtual sessions demonstrated increased learning and retention when measured at six months after training (Devlin, 2009). As cited in Devlin (2009), when compared to traditional classroom training, virtual training spread out over time is much more conducive to reflection and assimilation back on the job.

To make the most of virtual classroom time, pre-work is often used as an essential tool to limit the virtual meeting time and “ensure that precious real time with the group is focused and productive” (Young, 2009, p. 21). Young (2009) suggests offering online pre-work and survey assessments to pro-actively introduce the training agenda and content prior to the student attending the synchronous virtual session.

Student Interaction and Use of Technology

Student activities are essential in virtual classrooms. Hoffman (2005) expresses that those adults in virtual learning settings, “need to be involved and contributing in order to learn most effectively” (p. 18). An instructional designer should “shift course delivery away from one-way slide presentations to more collaborative learning environments” (Young, 2009, p. 22). Young (2009) adds, “Virtual learning begs for highly participatory exercises in which everyone can be actively involved, rather than passively listening” (p. 22).

In a best practice CLC study, “all profiled companies used audio, graphics, polling, feedback, and scenarios to facilitate learners’ engagement with the course content” (CLC, 2004, p. 9). Trend data shows that student interaction should be *scripted interactions* where as the activities include polls, chats, virtual web tours, white boarding, and breakout rooms every 5 minutes (Mosher, 2009). Scripted interactions include the instructional design work of writing out how often the activities will occur and what type of activities will occur in the training session. Mosher suggests the use of a variety of tools to meet the students’ learning needs. As an example, the use of breakout rooms for small group discussions can be used to “maximize engagement of all learners and offer the proven learning benefits of collaborative work” (Clark, 2005, p. 6). Using the ARCS Model, the instructor could gain attention by using arrows to highlight content area and gain learner confidence by using graphic and sound effects to award learners who do well (Marie & Orgill, 2009).

There are many off-the-shelf technologies available that support the interactive features outlined in the previous paragraph. The technology software selected should be

simple in order that students focus on the “Training content and collaborative process, and not on the technology” (Young, 2009, p. 23).

Support Materials and Resources

In examining virtual training and increased student engagement, it is essential that learners be provided support materials to accompany the synchronous session (Miner & Adams, 2009; Van Der Schyff, 2003). A well-designed participant guide needs to be used as a reference before, during, and after class in order to, “Allow learners to transfer their knowledge and skills from the learning phase back to the work environment” (p. 30-31). “A virtual classroom forces 90 percent of our communication to be entirely auditory” (Miner, 2009, p. 33), which can be a drawback for some learners. Students may not prefer simply auditory instructions. Therefore, during class a guide should be used to assist participants with written instructions for activities. Miner (2009) states that participant guides should not be a duplicate of the content students are viewing in the session, but instead a resource guide to support the learning process. A participant guide should be similar to a guide that a learner would receive in an instructor-led training program. General features of the participant guide include a summary of the course, training/course objectives, agenda, timing, and content areas. Additionally, the essential elements of a virtual class participant guide include: prerequisite work, contact information, technical support information, interactive activities, instructions, visuals, and a syllabus (p. 30-31).

Learning New Skill Sets

Beyond the instructional design and tools of the virtual classroom, instructors need to recognize and learn new skills as well when they assume the role of a distance educator. “Virtual classrooms live by slightly different rules; however the foundation is

facilitating to ensure alert and engaged learners” (Miner, 2009, p. 31). Some of the new skills that Schlosster and Anderson (1994) identified that instructors must learn include:

...understanding the nature and philosophy of distance education; identifying learner characteristics at distant sites, designing and developing interactive courseware to suit the technology, adapting teaching strategies to deliver instruction at a distance, ...and training and practice in the use of the technology.
(1994, p. 31-42)

Moving content from instructor-led to virtual classrooms requires both instructional designers and instructors to increase skills sets and learn virtual technology tools and features.

In 2004, Cisco Corporation, a multinational corporation in consumer electronics, networking/communications technology and services, embarked on an initiative to create and improve training for its 65,000 employees by replacing instructor-led courses with a combination of blended e-learning offerings. In the process of transitioning their instructor-led courses they recognized a different skill set was needed to design for virtual and blended learning (E-service Training Program, 2004). At Cisco, the virtual e-learning training program required trainers and instructional developers to learn how to create content on different formats such as “PowerPoint, HTML editors, image editors, multimedia applications, and animation programs”. Team learning among designers and “familiarity with a range of Web meeting, Web conferencing, and social networking options will help designers recognize the tools” that will support the successful creation of virtually synchronous activities (Young, 2009, p. 21). Other wide range skill sets

needed include use of androgogy principles, a firm grasp of instructional design, and an understanding of learners (Van Der Schyff, 2003).

Producer Role

Even beyond instructor and designer training, some organizations offer the support of an additional resource to assist with the technology (Clark, 2005). It is suggested that if a virtual course has more than 30 participants, it is beneficial to add an additional person as a producer role to assist the instructor during the training session (Hoffman, 2005).

The producer is typically the technology expert, someone to help the instructor run the sessions, manage the polling, break rooms, and student chat and instant messages to the instructor (Clark, 2005). In some cases, the producer is also the course instructor. When experts are included in the session, the instructor takes on a producer role which in turn allows an expert to facilitate without the worrying about the mechanics of the technology or software (Piskurich, 2009). Hoffman (2005) suggests that training sessions, “should always utilize an instructor *and* producer so the instructor can solely concentrate on the content of the class and the participant experience” (p. 36).

Learner Perception of Virtual Classroom Delivery

An instructor contributes a significant part to creating an effective learning environment for student engagement by his or her use of communication and technology in the course (Clark, 2005). When instructors do not use technology or encourage student interaction, many times learners can feel inhibited by the lack of direct communication between other students (Harper, Beard, & Riley, 2002). “Some students do not perceive online classes as equal to face-to-face classes” (Gonzales, 2005, p. 6), therefore it is

important to create an effective and engaging virtual classroom program that involves meaningful interactions between learners using a wide range of interactive features. Engaging students in a virtual classroom includes effective delivery and facilitation skills that encompass direct use of people's names, direct dialogue/language, and as previously mentioned, participant guides with written instructions/activities (Miner & Adams, 2009).

A variety of research exists on students' perceptions of distance education in a higher education setting, but literature lacks the same degree of research from an organizational perspective. Research on student perceptions in a higher education setting is promising and could be a prediction to a student's perception in an organizational setting. From a higher education standpoint, a variety of factors have shown that many students were satisfied overall with their distance learning experience but would still *identify areas needing improvements*. As seen in the MacGregor study (2001), although students might rate their online class as more rigorous and time consuming, their overall satisfaction rate was not significantly different than those students in a traditional classroom setting. Other research identified more wide-ranging overall satisfaction results. A study conducted by Bower and Kamata (2000) gauged characteristics and factors influencing student satisfaction in online courses. The study's outcome showed that a majority of students were satisfied with all aspects of online learning and appreciated the flexibility of distance classes. Similar satisfaction results, when comparing student perceptions in traditional and online classes, were located in studies by MacGregor (2001) and Goldsmith (2001).

Evident or Non-evident Factors

Assessing performance and student satisfaction is as important in an online course as it is in a traditional course (Hoffman, 2005). According to Wickersham and McGee (2008), factors influencing student attitudes can be categorized as evident or non-evident. Both evident and non-evident factors contribute to satisfaction and perception of learning. Wickersham and McGee show that non-evident factors, such as self-enrolling in an online class versus a traditional class, plays into the students' attitude and perceptions of satisfaction. Singh and Pan (2004) presented evidence that students who self-enroll and engage in an online course differ significantly in three ways from non-adopters. Their studies showed considerable differences in the following three areas: student status, age, and attitudes towards online education (Singh & Pan, 2004). Younger, part-time students were more likely to take online courses and had more positive attitudes towards online learning. "Taking an online course is correlated at statistically significant levels with student status (increases with part-time status); age (decreases as one gets older); and attitudes to online education (increases with positive attitudes)" (p. 9).

Student Needs Analysis and Training Evaluation

To enhance the course evaluation and accurately capture evident and non-evident factors, a good deal of importance should be placed on the course evaluation by carefully considering the individual needs of students (Sankaran, Sankaran, & Bui, 2000). A thoroughly designed student needs analysis at the beginning of the course will lead to an improved post-training evaluation that adequately measures evident and non-evident factors and measures satisfaction on what was important to the learner, "By being aware of students' perceptions instructors can modify the way they teach online to make the

course interesting, motivating, and as rigorous as face-to-face classes” (Gonzales, 2005, p. 7). Wickersham and McGee (2008) summarized it fittingly when they stated, “the key to measuring satisfaction is determining what is important to the learner” (p. 75).

Prior to the training session taking place, instructional designers and instructors should first figure out what the students’ perceived needs are and how they define satisfaction in an online course. According to Dupin-Bryant and DuCharme-Hansen (2005), “Assessing student needs provides instructors with information necessary to select appropriate technology and instructional strategies to develop an online learning environment that is appropriate, responsive, and beneficial for both the learners and the instructor.” The five key areas Dupin-Bryant and DuCharme-Hansen (2005) recommend accessing are level of computer skills, preferred learning styles, available resources, the learner’s desired outcome, and prior learning experiences.

CONCLUSIONS AND RECOMMENDATIONS

The professional and scholarly literature reviewed in this paper documents that a virtual classroom, if designed well, can be an effective delivery medium for organizational learning. The emerging themes, both positive and negative, in synchronous, online, training provide significant information to the learning profession when designing online courses. There is a wide range of software tools available and instructors can be trained to effectively utilize the technology. Instructional designers need to intentionally design for virtual classroom settings, learner motivation, and engagement. Best practice and research show that the most critical factors in successful virtual classroom training are engaging learners, using the software technology effectively, applying instructional design practices similar as one would in a traditional instructor-led classroom, and accurately evaluating learner perception. Designers and instructors also need to proactively review and address the pitfalls of virtual training.

As organizations continue to invest and expand their distance education opportunities, more research is needed into trend data, studying the adult learner's acceptance of virtual classroom delivery and bottom-line return on investment in implementing online courses.

Areas of Needed Research

There will be continued growth in virtual classrooms in the coming years in many organizations (Rossi, 2001) and more professional research is needed in these environments. "Just ten years ago only 9 percent of training courses were delivered via

technology-based tools... today more than three times as much organizational instruction relies on technology” (Rossett, 2010, p. 65).

Recommended areas needing further research include the broader scope of non-evident factors influencing a learner’s acceptance of virtual classroom delivery (Wickersham and McGee, 2008). Further research on studying personal attributes, such as employee gender, age, and changing workforce demographics and the influence they play into the learners’ attitude about online learning is essential. Research results of Wickersham and McGee’s study (2008) in higher education settings show that evident factors such as demographics play a part in how a student might rate overall satisfaction in a course. However, similar type research in organizational settings is still needed.

Higher education research shows that many factors play into the students’ attitudes and perceptions towards online education and possibly to their decision on whether to enroll in future online courses. Further and similar type research needs to occur in business organizational settings on the employees’ attitudes and perceptions to virtual classrooms.

If virtual classroom delivery is expected to continue to grow, as it has the past few years in many organizations, then additional research into students’ learning experiences is necessary for the future success and return of investment. By understanding the influences of learner satisfaction on course feedback, an instructional designer will be better able to enhance and design quality programs which in turn will enhance the teaching/learning process (Bower & Kamata, 2000).

Return on Investment

In order for organizations to determine if future investment in technology innovation and virtual learning delivery is feasible, continued research is needed to demonstrate bottom-line return on investment. In the evaluation phase, focused metrics on the delivery channel is needed to better understand what difference the virtual delivery made and how it could be enhanced for an organization's bottom-line (Rossett, 2010). In general more documented methods and best practices on return on investment (ROI) in virtual training versus instructor-led training are still needed.

There are several methods to measure ROI of virtual training, but only limited best practice data is available. Measurements of ROI and effectiveness of virtual learning include metrics on customer satisfaction, knowledge retention, time efficiency and utilization of training (Corporate Executive Board, 2009).

In a previously discussed case study, Southern African Breweries Limited used a HRD model to show quantitative evidence that their knowledge and skills transfer on distance learning modules over a six-month period was quantitatively better than the transfer of knowledge and skills in a one week classroom session (Van Der Schyff, 2003). In another example, a virtual lab case study at Hewlett Packard in 2005 showed customer utilization rates of "over 45 million customer minutes per month of internal use of the virtual classroom, and 200,000 students each year" (Harris, 2005). Similar best practice examples of quantitative and qualitative data that demonstrate transfer of knowledge and improved performance are areas needing more documented research and trending data.

This literature review examined a selection of research conducted over the last ten years on organizational trends and best practices in virtual classroom environments and the critical success factors and lessons learned. Although the strategies discussed are no guarantee that a virtual learning course would be perfect, it should help ease organizational learning professionals' entrance into the arena of virtual classroom delivery (Sheinberg, 2000). Organizations can begin addressing these larger issues by further researching trend data through independent research in learning trade journals, conferences, and virtual classroom technology platforms. By focusing design approach on the positive features of virtual delivery and avoiding the pitfalls and using proven best practices in design and delivery, the virtual classroom can be an effective, motivating and engaging learning experience for the organizational learner.

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