Mutimedia Training Course for Clinical Research Associates

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Introduction

PG-Company, a Contract Research Organization (CRO), is interested in developing effective training for its corps of home-based, traveling Clinical Research Associates (CRAs) who monitor research performance and data at sites throughout the US and Canada. CRAs have at least a Bachelor's degree, and have typically accumulated some practical experience on the job without a training program. PGCompnay has robust IT infrastructures that make working with many home-based employees possible. Peyvand Ghofrani, a former senior CRA with expertise in Distance Education and elearning, submits a training course proposal to the Director of PG-Company.

Conceptual and Instructional Design Model

Bernath, Brahm, Euler, and Seufert (2008) provide a comprehensive overview for successful transformation to a learning institution:

- Aim to make the transition from traditional face-to-face, teacher-centered expository teaching to learner-centered and constructivist approaches that are flexible and support learner and teacher independence

- Require well-established institutional policies that support and guide implementation of technology-enhanced learning course or program

- Select highly committed and enthusiastic staff for program development whose attitudes reflect an institutional learning culture that values and appreciates constant improvements

- Align applied approaches to developing the learning culture in the organization including incentives and appreciations

- Reflect new technologies that resonate with today's learners and represent potential to develop competencies and capabilities required in today's competitive and global workforce

- Increase levels of interaction between learners and with content and coach

- Use innovative forms of assessment that align with overall goals of course design, teaching capabilities, and learning objectives

- Incorporate novel student assessments including student portfolios, learning logs and personal development plans

- Constant incorporation of evaluation and learner feedback into design, as student complaints and feedback are integral to quality improvement

Advantages and Disadvantages of Multimedia Learning

Traditional method of presenting instructional messages using printed words does not seem to work so well (Mayer, 2001). Spatially and temporally integrated visual and aural descriptions of the same process enhance learning by increasing the amount of time information can be held and processed in working memory (Clark & Feldon, 2005). Both visual and aural processing pathways are concurrently utilized resulting in additional processing and cognitive power (2001). These aspects are unique to multimedia. Multimedia that is integrated well and that is concise, channeled, and properly structured enhances learning. This is particularly true for the low-knowledge learners (2001) such as those that comprise this training cohort of entry-level CRAs. Naidu (2003) points out relevance and utility of hyperlinked textual materials that incorporate pictures, graphics, and animation; videotaped subject matter, including interviews and panel discussions.

At the same time, asynchronous discussion using the written word would allow learners to think and reflect deeply, to make connections between ideas, and construct coherent knowledge (Taylor, 2001). Multimedia can't replace asynchronous discussion for deep reflection between learners and with coaches. Learners routinely encounter incidents in the workplace that present them with learning opportunities. It is useful for learners to recognize these incidents and discuss them in the course setting, and reflect upon them in their own learning journals (Naidu, 2003). Clearly, both multimedia and text-based discussion are necessary for online learning.

Key characteristics of the Target Group

The proposed training is aimed at junior CRAs that have college degrees but have little practical experience. They are computer-savvy and feel comfortable with multimedia as they have grown up with it and routinely use it. PG-Company's CRAs are home-based with varied business travel schedules. CRAs work with a variety of persons and personalities under tight timelines as they travel to multiple sites across the US and Canada. PG-Company has developed sophisticated IT resources to enable its decentralized company structure to function, and these resources can be utilized for elearning. New hires typically have a few months until they become fully utilized due to time it takes to assign projects. This time is ideal to conduct much of the proposed training program, with the remainder conducted during down time when CRAs are not at sites or completing reports.

Rationale for the Multimedia Learning Environment

Hyper-media based instruction that is contextualized, authentic, personalized, bottom up, and inductive may better foster knowledge creation. Learning is anchored to

real-world problems, and video is the best way to present learning situations due to its

realistic imagery (Jonassen, Davidson, Campbell, & Haag, 1995). Video may be used to

present the challenges CRAs may face during their work. New CRAs encounter varying

challenges during their multi-faceted work and need authentic training to prepare them.

Goal-based scenarios present learners with contrived but authentic scenarios that offer

them opportunities to learn by making mistakes in a safe environment and increase

motivation to learn, particularly when accompanied by timely and useful feedback to

learners (Naidu, 2003; Oppermann, 2002). Students from different locations can create,

share, and master knowledge about authentic real-world problems in a multimedia

learning environment (Naidu, 2003).

Presentation Modes

The proposed Learning Management System (LMS) for this course is Moodle.

Graf and List (2005) recommend Moodle after comparing several LMSs. Although

Blackboard was not included in their assessment, Momani (2010) came to a similar

conclusion when comparing Moodle and Blackboard. Moodle is an open-source platform,

but has partnered with Remote Learner Inc. to develop an enterprise-level solution for

those that need it, and which also includes integrated multimedia functionalities across

video, integration with Adobe Connect, e-portfolio, and content management.

(http://remote-learner.net).

Media Selection Criteria

Training may be conducted via asynchronous computer-mediated pedagogically

sound multimedia learning in order to provide flexibility and access, while being scalable

with reasonable cost (Clark & Feldon, 2005). This type of training makes sense for this

geographically-separated workforce (Garrison, 1985; Daniel, 1998). Students from

different locations can create, share, and master knowledge about authentic real-world

problems (Naidu, 2003). Irrelevant bells and whistles are distractions that needlessly

increase cognitive load and result in reduced learning. Extraneous words, sounds,

pictures, and video are to be avoided and presentations concise (Clark & Feldon, 2005;

Mayer, 2001).

The following elements may be used during the iterative design process and

assessed via qualitative weight and sum methodology (Baumgartner & Payr, 1997):

subject material accurate and up to date; software and content relevant to learners; subject

material covered sufficiently; the platform is interactive to the proper extent; material

well structured and organized to support the learning process; software is usable

technically, designed well, will enhance learning; navigation of the platform is sufficient;

tutorials allow learners to get the most from software platform; interface is optimized.

Additional Pedagogic and User Interface Considerations

Pedagogical philosophy, goal orientation, instructional sequencing, experiential

value, role of instructor, value of errors, motivation, structure, learner control, and

cooperative learning may all be considered (Reeves & Harmon, 1994). User interface

variables include: ease of use, navigation, cognitive load, screen design, information

presentation, media integration, aesthetics, and overall functionality (1994). The

following parameters of user-centered design may be programmed and assessed during

the design process: learnability, performance effectiveness, flexibility, error tolerance and

system integrity, user satisfaction and motivational elements (Lee, 1999). Opperman

(2002) stresses that learners have to be supported by the user interface to "gain an

overview and structure of the learning space, the learning methods, and the learning procedures" (p. 246). Designers may work to make the course attractive, accessible, and interactive with consideration of how content will be presented, what learners would do and how learning will be supported, formative and summative assessment, and providing feedback (Naidu, 2003).

External validity and acceptance for course design is essential: it is possible to make a course that meets all internal specifications, but may not be accepted by the learners that will ultimately use it (Moonen, 2002). While retention of learning material is important, transfer to real life matters even more (Mayer, 2001). Thusly, effectiveness of this course may be assessed in at least two ways. One is to assess learning during and at completion of the course by way of learning activities and summative assessments. The other is to assess transfer by way of self-reports from the learners approximately 6 and 12 months after completion of the course, and assessments of learner success by managers and by way of surveys from site staff who interact with CRAs.

Content/Schedule of the Course

Proposed content for the course (each module is one week in duration):

- Organizational and time-management skills

- Balancing home and work-life of a CRA

- Best practices for frequent travel

- Building rapport with site staff

- Conflict resolution and diplomatic exchange

- Successfully performing site selection visits, including assessment of site staff qualifications and site capabilities

- Success performance of site initiation visits, including properly training site staff on the study protocol they will be responsible for implementing

- Successful performance of interim site visits, including review of site documents and study data

- Successful performance of close-out site visits, including oversight for finalization of the study protocol

Roles and Responsibilities of the Project Team Members

A multidisciplinary team approach to course development may be utilized (Moonen, 2002; Schreiber, 1998). Project manager, audio and video engineer, graphic artist, instructional designer, scriptwriter, web designer, multimedia producer, and subject matter experts by way of senior CRAs may all be utilized from among existing staff at PG-Company. Senior CRAs that exist at central locations at PG-Company may be used to produce authentic learning videos.

Daniel (1998) prescribes "very high quality multi-media materials produced by multi-skilled academic teams" (p.26) and that "study materials must be excellent and varied to make the campus in the home or workplace a congenial experience" (p. 26). The design and development team at PG-Company must remember that the materials they produce may need to stand largely on their own. Daniel further recommends dedicated personal academic support (1998). Each CRA is assigned a manager and this person may also function as personal academic support for learners during the course.

Roll-Out Plan (Schedule, Quality Assurance, etc.)

Support of upper management is crucial, as is recognition of those that take time to participate in various aspects of the training program (Zawacki-Richter, 2005;

Schreiber, 1998). To be successful in transforming PG-Company into a learning institution, upper management may be asked to incorporate successful development and deployment of this new training initiative into employee performance appraisals, and make awards and certificates available for those that design and complete the learning program. Cooperation of the faculty (Senior CRAs) may be garnered, and support provided to them, via inclusion of educational consultants in the preparation, design, and delivery process. These consultants may gradually and respectfully help faculty and bring them into the fold of the new training initiative (Zawacki-Richter, 2005).

A project management strategy that takes into account global issues and procedures, and leaves various techniques and tools to the specifics of the situation and persons involved will provide optimal flexibility to the process (Moonen, 2002). Quality assurance is necessary across the overall institution, technology, academic support, learner, instructional design, and pedagogical areas. Purposeful communication to fight entropy within the course design and development process may be codified by having feedback loops between strategies and objectives that inform processes, procedures, and standards, which in turn affect records and assessments for the project. Those control records can in turn be assessed to refine strategy, objectives and policies in training design and deployment ecosystem to positively influence, assure, and control quality (Fresen & Boyd, 2005).

A committee of designers and specialists, senior CRAs, and other previously mentioned members may begin work on an initial prototype, including scripting and production of videos and implementation of LMS. The prototype may then be refined with a beta testing process before roll out to the first cohort of new CRAs in training.

Assessments may be ongoing, with minor revisions on ad hoc basis and major revisions performed bi-annually. Costs may be minimized by utilizing the many resources that currently exist at PG-Company (IT, audio and video equipment and production resources, etc.) Hiring of new staff may be carefully assessed and performed as needed, with majority of the work performed by existing technical, senior CRA, project management, graphic design, and other staff. This approaches leverages the matrix structure at PG-Company. Educational consultant services, and an instructional designer may be outsourced as needed. LMS may be a new cost to PG-Company. Cost-recovery is an option, by licensing the course to smaller CROs; doing so may also boost the reputation and profile of PG-Company within the industry.

Conclusion

Home-based traveling CRAs are a natural group for multimedia-based online training, and PG-Company has the required resources and expertise to design and implement this training program. With proper dedication, informed and inclusive planning and execution, and sufficient ongoing assessment of progress and quality, this training program may have much to offer for the success of new CRAs.

[Peyvand Ghofrani] [DETC620] [Section 9040] [4/15/2012]
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