

Managing Complex Distance Education Projects in a Telework Environment

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Abstract

The advances of communication technologies have allowed professionals to work on distance education projects in a telework environment. Managers of these projects must have the skills to manage the projects from a distance. They must be able to select the appropriate team members to work on the project, orient team members, and monitor team members performance. Guidelines for managing successful projects in a telework environment include involving the users, minimize changes to the project scope, follow standards, allocate enough resources to complete the project, use proper communication strategies during the project, and get commitment from senior managers. Also, it is important to complete projects in phases to build successes during the project. Projects in a telework environment must have proper scope, time, and quality management to be successful. Completing projects in a telework environment could be challenging because of the lack of face-to-face contact; however, with the appropriate technology and good project management, these projects can be successful.

Résumé

Les avancées des technologies de communication ont permis aux professionnels de travailler à des projets d'éducation à distance dans un environnement de télétravail. Les gestionnaires de ces projets doivent posséder les compétences pour gérer les projets à distance. Ils doivent réussir à choisir les membres de l'équipe appropriés pour travailler au projet, orienter les membres de l'équipe et faire le suivi de la performance des membres de l'équipe. Les orientations pour gérer avec succès des projets dans un environnement de télétravail incluent : impliquer les utilisateurs, minimiser les modifications à l'étendue du projet, suivre les normes, allouer assez de ressources pour compléter le projet, utiliser des stratégies de communication appropriées pendant le projet et obtenir l'engagement des gestionnaires seniors. Aussi, il est important de réaliser le projet en phases afin de créer des succès en cours de projet. Les projets dans un environnement de télétravail doivent comporter une gestion adéquate de l'étendue du projet, de l'échéancier et de la qualité afin d'être un succès. Réaliser des projets dans un environnement de télétravail pourrait poser des défis en raison du manque de contact en face-à-face; toutefois, avec une technologie appropriée et une bonne gestion de projet, ces projets peuvent être des réussites.

Introduction

The increasing proliferation of new information and communication technologies aids the development of increasingly complex distance education projects. A project is defined as a “temporary endeavour to create a unique product, service or result” (Schwalbe, 2006: 4). Distance education projects are considered complex since they involve a team of experts with different expertise, must cater for different learner needs, and strategies must be included to engage students. Hence, it is becoming ever-more important that we develop management techniques to ensure the most efficient implementation of such complex projects. And, while a growing body of literature is beginning to identify ways in which we may more effectively manage projects with team members in dispersed geographic locations (e.g. Limburg and Jackson, 2007; Cleveland-Innes and Ally, 2005; Hwang, 2008; Taskin and Edwards, 2007), there is still much to learn about how one can effectively manage a team in a telework environment. Indeed, the relationships in a telework environment are becoming increasingly complex—a conceptual whole made up of complicated and related parts—in this case the various institutions and actors involved in the development and implementation of distance education projects. It is in this context, then, that we offer the notion of a *complex* distance education project: a distance education project involving interconnected actors and institutions divided across spatial and temporal boundaries, working towards a unique product, service or result.

The authors of this paper have been managing projects in dispersed networks for more than ten years and, through both personal experience and extensive engagement with distance education and project management literature, have identified a number of factors that lead to successful project completion. Proper management techniques are essential to developing quality learning materials—especially in a complex and dispersed organization. However, there has been very little scholarly literature on the subject. This paper delineates a process for the effective development, implementation, and management of complex distance education projects in a telework environment.

The Telework Environment

Telework, as a concept and a business practice, has existed since the early 1970s, when the development of information systems allowed for the simple exchange of information and ideas between remote locations (Limburg and Jackson, 2007; Haddon and Brynin, 2005). Since then, technological developments have increasingly allowed for dispersed occupational and educational networks and, especially in recent years,

with the proliferation of Internet communication technology, telework has become widespread in Western society, although not as widespread as previously expected (Martinez-Sanchez et al, 2007; Valsecchi, 2006). But what exactly is telework?

A number of attempts have been made at defining telework (e.g. Toffler, 1980; Sullivan, 2003; Pyoria, 2003; Gareis, 2002; Felstead and Jewson, 2000; Tietze, 2002; Felstead et al, 2003) derived from different interest groups and lines of research, that all focus on one concept: that telework is work conducted from a remote location using communication technology, or “bringing work to the workers” (Taskin and Edwards, 2007: 195). Yet, with the ongoing introduction of new technology and management paradigms into the classroom and workplace, defining exactly which technological variables contribute to telework-from telephones to various types of smart phones and computing devices-has been difficult. Furthermore, defining the workplace and defining 'nomadic workers' has also been an issue as telework can be carried out from the home, on the road, or even between offices (Hislop and Axtel, 2007).

Haddon and Brynin's (2005) conclusion that telework is not a hard and fast concept, but rather encompasses a range of workplaces and modes of communication, rings true. With multitudes of technological options and various locations from which to perform telework, “telework is not a homogenous entity but can comprise different elements of technology and location, whose different combinations produce a range of types of work” (Haddon and Brynin, 2005: 44). Telework can be carried out from a variety of locations through a variety of devices, utilizing a variety of technologies whether done in combination with traditional office-based work or not. Thus, telework, simply put, is work carried out from a remote location using information and communication technology-which, with the growing possibilities of communication technology, can utilize any number of increasingly complex channels of communication.

Telework can also be defined in terms of the *role* of teleworker, a role that must be considered when managing a project staffed by teleworkers. First of all, the term role refers to a collection of behavioral requirements associated with a certain social position in a group, organization or society (Kendall, Murray & Linden, 2006). Teleworkers engage in the usual activities associated with work, but in an alternative work environment supported by new methods of communication to bridge the separation between worker and colleagues. In this sense, the role of a teleworker is constantly in flux: new technologies and methods of communication alter the interaction between teleworkers and co-workers, and their role in the organization changes as a result. New methods of communicating involve a new set of behaviors and competencies that

adjust according to their position in relation to the workplace (Taylor & Kavanaugh, 2005). In addition, discipline becomes a matter of self-discipline and productivity is product oriented (I can demonstrate what I have done) rather than process oriented (others can see me carrying out work related activities).

While a teleworker's goals may not differ from his/her office-based counterparts, their role and relation to the office does. Thus, distributed project management in a telework environment requires unique management techniques, which we will discuss below; it does not have the same dynamic as traditional, office-based work and education activities; "it is a new form of organizing work, still embedded in a managerial relationship" (Taskin and Edwards, 2007: 196), but involving increasingly complex relationships between participants.

Although the term "telework" may conjure up images of verbal communication via telephones, the recent proliferation of advancements in communication technologies has introduced an array of diverse modes and methods of communication that may be used by teleworkers in complex projects. From internet forums, email and chat applications to sophisticated multimedia software, the capacity for critical communication via the internet, utilizing ever-more powerful and portable devices, is increasing at a phenomenal rate and allows both managers, workers, students and teachers creative new ways to communicate (Altinoz, 2008; Wang et al, 2005). This, in turn, creates a more complex relationship between distant collaborators, and could lead to a stronger need for internal management of communication and information exchange. So, as information technology accelerates at a rapid rate, so, too, must managers adapt to an increasingly complex telework environment.

Factors to Consider in Telework

When designing a telework project, a number of factors must be considered, many of which mirror more traditional project design, but require specific treatment based on the distributed nature of the people working on the project. The project manager has to select, orient, and monitor team members in the telework environment.

1. Selecting Team Members

Teleworking can increase productivity by decreasing time spent travelling to different locations and on social engagement. However, a sense of isolation will occur without adequate engagement with the general organizational climate. Teleworkers who are part of a project need to interact regularly, formally and informally, with managers and

colleagues to create interpersonal organizational networks and meaningful and satisfying relationships (Gatliff and Wendel, 1998).

While the flexibility provided by teleworking is advantageous—it is easier to select individuals who are best suited to their role in the team based on individual abilities and knowledge without the constraints of geographic proximity—it is also important that individuals be committed to the project and have the desire to communicate and contribute to their roles in a timely manner (Taylor & Kavanaugh, 2005). According to Hwang, “affective commitment and intrinsic motivation to share knowledge are critical in developing successful TML (technology mediated learning) and knowledge management systems” (2008: 419). That is, social and emotional bonds are important to ensure commitment to the project and regular participation, more so than in a physically shared setting (Limburg and Jackson, 2007). Thus, beyond finding the person most suited to the job, “commitment from all key stakeholders needs to be high and enduring” (Cleveland-Innes and Ally, 2005: 5). This can be achieved by selecting individuals with whom organizations share an affective relationship and a level of trust (Kramer, 2009). When selecting remote workers, both expertise and level of trust (to ensure commitment to the project) are necessary.

2. Orienting Team Members

An important part of any telework project is to ensure that everyone is clear about his/her roles and responsibilities, as well as desired outcomes. Without day-to-day supervision in an office environment, planning and structure are essential. When orienting team members, a clearly delineated time frame ensures that everyone understands what is expected, and when. As well, clearly outlined communication plans should be understood by all team members to eliminate ambiguity. “Chunking”, or breaking the project down into smaller blocks with short deadlines, and using sub-goals for larger goals, can help keep team members stay on track. Additionally, written project agreements, that clearly state project goals, can be used—commitment on paper to ensure commitment in practice. Lastly, exercises that build affective connections, even face-to-face interaction, at project commencement, can help build the rapport and trust between group members that encourage open communication and trust moving forward (Limburg and Jackson, 2007).

3. Monitoring Team Members

Perhaps the biggest challenge for managers in a telework environment is in monitoring team members. One can no longer maintain direct oversight and must rely on alternative forms of monitoring to ensure that

team members are performing their roles effectively. Taskin and Edwards (2007), for one, suggest regular interviews between manager and team members to assess performance and address any issues that may arise. Furthermore, close monitoring and readily available communication channels to address needs, concerns, and receive feedback are paramount. Clearly established communication guidelines—as outlined when orienting members to the project—should allow managers to regularly monitor and counsel team members during the implementation of a telework project.

Challenges Managing Projects in a Telework Environment: Maintaining Commitment

Spatial differences between traditional office-based projects and telework projects create unique challenges for project managers. Particularly, issues surrounding the commitment of team members arise in a distributed workplace (Hwang, 2008; Cleveland-Innes and Ally, 2005; Limburg and Jackson, 2007). Without daily, face-to-face interaction, it is essential that other measures are used so that team members maintain commitment to the project. This can be aided, through the selection stage, by choosing team members within a social network of trust. In the orientation stage, socialization processes that create a sense of commitment to the project are necessary. In the implementation stage of the project, sustaining commitment is critical; asking members to sign an agreement of commitment, as suggested above, is one strategy. Furthermore, individualized attention can help to counter issues of declining commitment. Eisenberger, et al. (1986) note that when employees see that managers are accounting for their individual needs, they are more likely to be more dedicated to their work, more motivated, and more satisfied (Hwang, 2008).

Interestingly, it has also been noted that 'peer control', that is “where the presence of a work community influences an individual's actions” (Limburg and Jackson, 2007: 149), can also create a sense of commitment. When individuals have fostered an obligation to a group through social processes, they feel committed to the group—they are more inclined to fulfill their role. For instance, citing social-exchange theory, Martinez-Sanchez, et al hold that “teleworkers are apt to reciprocate with increased organizational commitment in return for the flexibility to better meet individual and family needs” (2007: 210).

Indeed, mutual trust and support are crucial when managing telework, but, through particular attention to effective managerial practices that encourage the development of community, mutual trust, and support, challenges created by the space between worker and colleagues can be met.

Distance Education Projects in a Telework Environment

Development of distance education materials for innovative delivery methods such as e-learning and mobile learning is complex, expensive, and can take a long time to complete. Hence, sound project management techniques must be used, especially in a telework environment. Since distance education projects often involve many departments within an organization or collaboration between organizations (Haughey, in press), one department or organization should take the lead and appoint a project manager for all phases of the project. The lead department or organization should be selected based on project management expertise of staff within the organization. The project manager must be comfortable working in the telework environment and must have certain skills such as, use of communication technology, conflict resolution at a distance, verbal and written communication skills, and sensitivity to different cultures, among others. If none of the collaborating departments or organizations has the required project management expertise, an external manager with the appropriate expertise must be hired to successfully plan and manage the project.

The duration and complexity of distance education projects vary considerably. These types of projects are difficult to manage because of the location of the team members, the time difference between locations, the number of team members involved and the multidisciplinary background of the team members. Institutional differences such as access to information technology, time pressure, and resources can create difficulties within a management team (Wang et al., 2005). Projects normally involve several team members performing interrelated tasks, coordinated by a project manager to ensure there is effective use of resources. A typical learning materials development team could include a project manager, instructional designer, content experts, editor, technical experts and a steering committee. In some projects, members of the development team could be in different locations and time zones, presenting a significant scheduling challenge to the project manager. In order to successfully manage distance education projects across spatial and temporal boundaries, a number of guidelines must be considered.

Guidelines for Making Distance Education Projects Successful

According to the Bull Survey (1998), the major causes of project failures are poor communication, lack of planning, and inadequate quality control. Hence, it is important that project managers use good project management techniques, listed below, to ensure telework distance education projects are successful (Wysocki, 2007).

Limit changes to the project scope. One of the reasons why distance education projects fail is because of changes to the project scope. It is

acceptable for the users and the sponsors of the project to make minor changes to the scope of the projects; however, if there are too many changes or the changes are major the project may become too large and may fail. When this happens, the project manager must ask for an official revision of the project scope and must request the additional resources that are required to successfully complete the project.

Involve the users (instructors and tutors). It is critical to involve individuals who will be using the final product (Cooper, Colwell and Jelf, 2007). The users could be part of the development team or they could be reviewers of the developed products.

The quality of the learning material must be up to standard. Good process management must be used throughout the project to make sure the standards identified in the analysis stage of the project and those set by the project sponsors are maintained throughout the project. Also, an accepted instructional development model, such as the Dick and Carey model (1996), helps to ensure all phases of the development are completed.

Quality assurance and quality control techniques must be in place. According to Schwalbe (2006), quality assurance includes all activities related to satisfying the relevant quality standards. Established quality control techniques must be used to detect errors in the learning materials before they are implemented. Quality control techniques include expert reviews and pilot testing with the target audience. These also include hiring staff with the right skills to work on the project, dividing the course content into manageable pieces, and using the right software to develop the materials.

Allocate enough resources to complete the project. Before a distance education project is started, there must be a detailed work plan, which specifies the resources required to complete the tasks for the project. Each partner is expected to contribute resources to complete the project. The project manager must get commitment from the project sponsor for the resources before the project is started, or risk running out of resources before the project is complete.

Ensure that the budget is adequate. If the funding available is lower than the cost for completing the project, the project manager should request additional funding; otherwise, the project should be delayed until additional funding is acquired or the project should be cancelled.

Good communication between project team members. Interaction between team members is critical, especially for collaborative telework projects (Devlin et al., 2006). The project manager must involve all team members and recognize possible differences between organizational cultures in the communication process (Davidson, Schofield and Stocks, 2001). Standardized communication technology must be in place to allow team

members to interact with each other, such as social software in the Web 2.0 environment.

Commitment from upper management. Especially for collaborative distance education projects, upper management from all participating organizations must commit to the successful completion of the project—indeed, a supportive organizational culture is key in developing successful projects (He, Means & Lin, 2006). To maintain commitment, the project manager must inform upper management of the benefits of the project and keep them informed on progress. In this way, if there are any changes in the project, upper management will be aware of the changes.

Properly trained team members. If team members do not have the right skills, the quality of the learning materials could be affected. Upon hiring, team members' knowledge and skills should be assessed to determine if they have the required expertise to fulfill their role. If there is a gap, then appropriate training should be provided to fill the gap.

Phases for Developing Distance Education Learning Materials

Since the development of distance education materials is a complex process and requires good project management, implementing ordered phases can help ensure successful development. The phased approach to development can be achieved by using an accepted instructional design model such as the Dick and Carey model (1996) or the Kemp et al. model (Kemp et al., 1996), which include project planning, analysis, design, development, implementation, and support.

1. Project Planning

The first phase is project planning to decide which project should be funded within an organization or between organizations. Usually projects that are aligned with the organization's strategic direction are given priority for funding. Once there is approval to complete a project, it is assessed in terms of the boundaries, major project outcomes, key stakeholders, completion date, and an overall budget figure. The information from the overall plan is summarized in the form of a charter and each of the stakeholders must sign the charter to show their commitment to successfully complete the project, or risk withdrawal of key funding and resources during implementation.

2. Analysis

During the analysis phase, detailed learner and content analyses are conducted. Learners' characteristics and their present level of knowledge and skills must be analyzed before the learning materials are developed. Learners' education level must be determined so that the developer can

decide at what level to write the materials and to identify pre-requisites for the learning. In addition, the technical capability of learners to access the materials must also be assessed. This has impact on which technology to use for the delivery. For example, if learners do not have video capabilities on their computers, designers should avoid using two-way video since learners will not be able to access the materials.

Proper analyses must be conducted to identify learning goals and to allow designers to chunk the materials into manageable units for development and for learners. Developing instruction in small units could result in maximum re-usability of the materials and flexibility in development and delivery. For example, rather than develop materials for a forty-eight hour course, the course should be broken down into six to eight modules of instruction, and each module could be used in different contexts. Instruction is then designed around the modules, which makes it easier for testing and implementation. Modular development allows each module to be piloted with learners and implemented separately. If the learning materials are being developed for delivery on mobile technologies, the materials should be developed in the form of learning objects which are then linked to form lessons.

If training materials are being developed for an occupation, then proper analysis of the occupation must be completed. The occupational analysis will list the tasks and sub-tasks to be completed. Each sub-task will identify the knowledge and skills required to complete the sub-tasks. The modules of instruction are based on the knowledge and skills for the occupation.

3. Design

The major activity in the design phase is to identify the specifications for the distance education materials based on learners' characteristics and the requirements identified in the analysis phase. The design phase identifies strategies to achieve the learning outcomes. The instructional designer works closely with the content experts to identify the instructional and learning strategies. When designing for e-learning and mobile learning, the development team must make use of the power of the technology to create interactive learning activities such as simulations, games, and virtual environments. The type of learning activities selected will depend on the learning outcomes for the course. The design phase should also specify the digital interface to ascertain how learners make selections, how much text or graphic material to use, how learners will progress through the lesson, and so on, to maximize usability.

4. Development

During the development phase, team members use the specifications from the design phase to develop the learning materials. The development phase includes many specialists including computer experts, graphic artists, network administrators, instructional designers, editors, and content reviewers. As the learning materials are developed, they are formatively evaluated by expert review and pilot testing with a small group of learners from the target audience and in-house staff. The main purpose is to help improve the quality of the learning materials and to make sure the learning materials meet the learners' needs.

5. Implementation

The first step in implementation—assuming the project is designed to replace pre-existing material—is to decide on the conversion method to use, each with its own strengths and weaknesses (Laudon et al., 2009). Conversion is the process of replacing the old system or products with the newly developed system or products.

In parallel conversion, both the existing and newly developed materials are running at the same time. This is a safe conversion method because if the newly developed materials have major problems, the organization can fall back on the existing materials and delivery system. Parallel conversion also allows the organization to do comparative studies on the existing and new delivery methods. However, parallel conversion could be expensive since resources have to be in place to run both systems at the same time.

Direct cutover conversion involves removing the existing materials and delivery systems and replacing them with the newly developed system. This is a risky strategy because if there are problems with the new materials and delivery systems, it may be difficult to go back to the old system. If the direct cutover system is selected, thorough testing must be done before the implementation.

In pilot conversion, the learning materials are implemented in one location and then implemented in other locations. For example, the delivery system is implemented in one department or organization to make sure that the system works properly before implementation in other departments or organizations. This will allow one to detect and fix any problems before the full implementation.

Phased conversion involves implementing parts of the learning materials as they are being developed. For example, as each module or course is completed, it is delivered to the target audience. This is advantageous since if problems are detected in one module or course,

changes can be made to the other modules or courses before they are completed.

During the first implementation, the delivery is closely monitored to make sure it goes as planned. Also, summative evaluation is conducted to determine the effectiveness of the learning materials and the delivery. Summative evaluation provides information on whether the learning materials resulted in learning according to the pre-defined standard. For example, it asks what level learners achieved and whether all learners completed the course or module on time.

6. Support

During the first and subsequent implementations, proper support must be available for instructors and learners to successfully complete the module or course. Support activities include fixing any technical problems, helping learners with content questions, and motivating students. Support is critical to the success of any project. Problems may arise if not enough resources are allocated for the support phase. Indeed, further development is often required after the project has been implemented (Wade, Riordan & Power, 1997).

Managing Complex Distance Education Projects

A project is essentially a temporary initiative to accomplish a major outcome. In distance education, the purpose of a project is to develop, and in some cases, implement distance education materials. Once the project is over, the ongoing implementation is taken over by the organization that funded the project. According to the Project Management Institute (PMI), project management is defined as the “application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project” (PMBOK, 2000). Three areas of project management that are critical for successful collaborative distance education projects are scope management, time management, and quality management. While risk management, financial management, and integration management are important in project management, they are not as critical as scope management, time management, and quality management for distance education projects. Hence, risk management, financial management, and integration management will not be addressed in this paper.

Scope Management for Complex Distance Education Projects

Scope management involves defining and managing all work required to complete a project. According to Schwalbe (2006), project scope management includes “the processes involved in defining and controlling

what work is and is not included in a project” (p. 169). Hence, it is important for team members and all stakeholders to agree on the scope of the project before the project is started. One of the major problems with distance education development projects is the scope tends to change without obtaining approval from the decision makers and sponsors for the change. Increasing the scope of a project may require additional resources to complete the project. For example, a project may be approved to develop online instruction with audio support; however, midway through the project, users may request two-way video support. Obtaining the software and hardware for two way video support will increase the cost of the project. Approval for the increased cost must be obtained from the project sponsor before the additional features are included.

The project scope should be specified by the project sponsor, users, and manager. The scope should specify the major outcome and the key deliverables. The scope should be included in a project charter, which is a one-page document. Once the scope is defined, all stakeholders must approve the scope statement. There should be a signature section for stakeholders to sign saying they agree with the scope statement and any changes to the scope should come back to the committee for approval before the project is continued.

Time Management for Complex Distance Education Projects

Project time management involves estimating the time to complete the project, developing a schedule, and controlling the schedule (Schwalbe, 2006). Many distance education projects make the mistake of underestimating the amount of time required to complete tasks, which could delay the entire project. The time to complete a project in a telework environment must be determined carefully since many things could go wrong during teleworking. For example, a team member's technology may malfunction, which could prove disastrous with a lack of face-to-face contact. Thus, planning is essential; defining and sequencing tasks and developing a realistic schedule become paramount to ensure the project will move forward, even if there is a lapse in communication.

1. Define Tasks

Each phase of the project should be broken down into easily defined tasks. For each task, the project manager must specify the resources for the task, when the task will be completed, and to what standard the task will be completed. The resources for a distance education development project could include people, materials, equipment, facilities, and services. The task duration can be estimated based on previous experience or by making a best estimate.

2. Sequence Tasks

Once the tasks are identified they must be sequenced to show clearly the flow of work through the project. The task sequence could include the following task dependencies, depending on the specific nature of the task.

- a. *Finish-to-Start (FTS)*. The completion of one task triggers the start of another task. For example, once the target audience analysis data is analyzed, the design task can be started.
- b. *Start-to-Finish (STF)*. The start of one task indicates the finish of another task. For example, the start of pilot testing for a module indicates that the module has been developed.
- c. *Start-to-Start (STS)*. The start of one task triggers the start of another task. For example, the start for designing a survey for the target audience triggers the task to define the target audience.
- d. *Finish-to-Finish (FTF)*. Two tasks must finish at the same time. For example, the content analysis and the audience analysis must finish at the same time before the design phase is started.

3. Develop Schedules

Once the tasks are identified, they must be scheduled. There are two methods for scheduling a project. First, reverse scheduling is where a project end time is established and the project is scheduled from the end date. Forward scheduling, on the other hand, is where a project start date is established and the tasks are scheduled from the start date. Once the task dependencies are known, project management software is used to develop the schedule and show the task dependencies. The method selected for scheduling tasks will depend on the preference and experience level of the project manager, although managers with many years of experience usually find reverse scheduling easier. When developing schedules, a Gantt chart (a type of bar chart that shows the start and finish of tasks) is used to show the project timeline while a Program Evaluation Review and Technique (PERT) chart shows dependencies between tasks and the critical path of a project.

4. Control the Project

Once the schedule is developed and approved, the manager must use the schedule to control the project. To make adjustments to the project, the manager must use critical path analysis. The critical path is the longest path and determines the earliest completion of the project. Tasks on the critical path are critical tasks—any delay of tasks on the critical path could delay the completion of the project. Therefore, the ultimate role of the

project manager becomes ensuring that no task on the critical path is delayed.

Quality Management in Complex Distance Education Projects

According to Laudon et al. (2009: 342) “quality is an indicator of how well the end result of a project satisfies the objectives of the project”. The purpose of project quality management is to “ensure that the project will satisfy the needs for which it was undertaken” (Schwalbe, 2006: 293). The overall goal of distance education projects is to develop distance education learning materials to meet the needs of learners and to deliver the materials to the learners. As a result, it is important to use proper methodologies and quality assurance and quality control procedures. The distance education materials development project must use a proven instructional design model to develop the learning materials, like Dick and Carey's model (1996), which consists of ten phases for learning materials development.

Quality assurance is conducted as the learning materials are developed, while quality control focuses on the products of the development process. Quality assurance makes sure that all phases of the development process are followed and the materials are being developed to a high standard, and often involves experts from several fields: subject-matter, instructional, and technical. During the development process, experts are requested to review the learning materials as they are being developed. If the materials are not up to standard, they have to be revised until the standards are met. After the first draft of the materials is developed, the materials should be pilot tested with a small group of students to make sure that the materials and the delivery method meet the students' needs. The learning materials are then revised based on feedback from the small group of students.

At the completion of the materials development, the distance education system is implemented with the target students. During the implementation, both qualitative and quantitative data are collected to determine the effectiveness of the materials and the delivery system. The data are then analyzed and are used to revise the materials and improve the delivery system for the next implementation.

Principles of Good Project Management

Most problems that lead to failed distance education projects are a result of poor project management. Based on the above discussion, there are several principles that are essential to successful project management. Whitten et al. (2001) provide a list of principles that project managers

must follow when managing projects to develop distance education materials:

1. *Involve the project sponsors and users.* The sponsors are the ones who fund the project and could cancel it at any time; hence, it is critical to inform the sponsor about the progress of the project and any changes. If there are changes, especially to the scope, the sponsor must be informed and the appropriate approval obtained. The users of the product or system—the instructors or tutors and students—should be involved in the development of the materials or in the review of the materials. Especially in the case of students, this will allow the final product to cater to the needs of the end user and to identify any issues in the development stage (e.g., Hannigan & Browne, 2000).

2. *Divide the project into phases and specify activities for each phase.* Projects with phases are easy to manage and the output from one phase feeds into the next phase. Standard phases for developing distance education course materials are planning, analysis, design, development, implementation, and support.

3. *Prepare standards for the learning materials.* The standards should be set and communicated to the team members so that they can complete their tasks according to the standards. This will ensure quality learning materials are produced.

4. *Divide the end product into small segments and complete one segment at a time.* If the outcome of the project is to develop a course, the project team should divide the course into modules and develop one module at a time. The process for the first module can then be refined for subsequent modules.

5. *Design for the future so that the materials can be used for a long time.* When developing materials for distance education, the project team should think about future application and target audience so that the materials can be used for a long time without many changes.

6. *Conduct feasibility analyses to make sure that the project is still worthwhile.* Feasibility is a measure of how beneficial the project will be to the learners and to the organization. If the project is not feasible, then a decision must be made as to whether it should be continued. The following are the different types of feasibility analyses that should be conducted (Laudon et al., 2009).

- a. **OPERATIONAL FEASIBILITY.** Does the material suit the learners and will they use the materials to improve their knowledge and skills? Will the developed materials help learners achieve the learning outcomes for the course or lesson? If the learning materials will not meet learner needs, then it is not feasible to continue the project.

- b. TECHNICAL FEASIBILITY. Do learners have the technical expertise to use the technology while learning the materials, and do they have the necessary hardware and software to access and interact with the materials and the instructor? Also, if the organization does not have the technical infrastructure to deliver the materials, the learning materials will not be delivered properly since access will be hindered.
- c. SCHEDULE FEASIBILITY. Will the project be completed in a reasonable time? If the project will not be completed on time to meet the organization needs, it may not be worthwhile starting the project. Conducting schedule feasibility is important for learning materials that change rapidly. For example, in some disciplines such as computing science, the learning materials could become outdated before the development process is completed.
- d. ECONOMIC FEASIBILITY. What benefits will be realized from the project? Is it worth the investment? After the analysis and design phases, cost benefit analysis should be conducted to determine whether it is worthwhile to invest in the development of the learning materials. If the cost of developing the learning materials is too high, students may not be able to pay the fees to take the course, which could reduce the number of registrations.

Outsourcing

A final consideration for any organization thinking about taking on a distance education project is outsourcing. Because of the challenges and complexities of developing learning materials, outsourcing is increasingly prevalent in the development of learning materials. Some of the benefits of outsourcing include: (1) Service providers have current expertise in developing learning materials; (2) Consultants from the service providers can deal with the people problem associated with development of learning materials; (3) Service providers have current knowledge of the delivery technology. One major drawback of outsourcing the development of learning materials is the instructors or tutors may not use the developed materials. To prevent this problem, the outsourcing company must involve instructors or tutors from the collaborating organizations during the development of the materials. Regardless, outsourcing should be considered in any cost benefit analysis at project startup and may be the most efficient use of resources in some situations.

Conclusion

The role of teleworker is rapidly emerging with technological advancement in today's society. As distance educators adopt telework as

a viable role, developing project management techniques specifically for teleworkers becomes increasingly important. A unique set of circumstances created by spatial and temporal divides between workers and their organization—or that of a complex distance education project—requires unique management techniques. Clear guidelines, simple and concise planning, and clearly defined roles and communication become paramount, more than in a consolidated environment in which team members can access each other face to face at any time. To facilitate sharing of learning materials in a telework environment, the distance education materials should be developed in a modular format to allow for simplicity, clarity, and flexibility in development as well as delivery. Furthermore, the modular format will allow the segments of instruction to be tagged and placed in a learning object repository for easy retrieval by instructors and tutors who work in a telework environment. With the move to open access of learning materials, learning materials creation in a telework environment may be as simple as assembling existing develop materials and customizing the materials for specific courses and modules, greatly improving the ease and cost of developing new courses.

By following the principles outlined above—with room for flexibility given the unique circumstances and work arrangements provided by the capacity for telework-project management in a complex telework environment becomes more efficient, clear, and, ultimately, has a greater propensity for successful completion.

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