A Symbiosis Between Instructional Systems Design and Project Management

Une symbiose de la conception de matériel pédagogique et de la gestion de projets

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Abstract

This study is intended to explore a complementary relationship between instructional systems design (ISD) and project management in an attempt to build a plausible case for integrating project management as a distinct course in the core of the graduate instructional systems design programs. It is argued that ISD and project management should form a symbiosis from a curriculum perspective, in a hope for the prepared instructional designers to create values for customers. An integrated view of ISD and project management is proposed, using three concepts of project management as a reasonable bridge for the integration. Challenges for the proposed view in this position paper are also stated.

Keywords: Instructional systems design, project management, instructional technology

Résumé

Cette étude explore la complémentarité de la conception de matériel pédagogique et de la gestion de projets en vue de justifier l'intégration de la gestion de projets à titre de cours distinct au cœur des programmes des cycles supérieurs en conception de matériel pédagogique. L'étude fait valoir l'intérêt d'une symbiose de la conception de matériel pédagogique et de la gestion de projets du point de vue du programme d'études, afin de préparer les concepteurs pédagogiques formés à créer une plus-value pour les clients. Elle propose une vision intégrée de la conception de matériel pédagogique et de la gestion de projets fondée sur trois concepts de la gestion de projets favorisant une telle intégration. Les défis de la vision proposée dans cet exposé de position sont également énoncés.

Introduction

The Association for Educational Communications and Technology (AECT) is one of the premium organizations in the field of instructional technology; therefore, the standards AECT (2000) published are often followed by graduate programs of instructional technology in institutions of higher education, which are preparing professionals for developing instructional (and in some cases non-instructional) solutions to human performance problems. AECT's view of instructional technology focuses on learning and encompasses five domains of knowledge, which are called the knowledge base of instructional technology: design, development, utilization, management, and evaluation. Instructional systems design (ISD) is a sub-domain of design. A related term, instructional technology, is defined as the systemic and systematic manipulation and application of tools and principles within an educational or instructional setting intended to be needs-driven and outcome-based in support of learning, teaching, and human performance.

Instructional systems design (ISD)[1] is one of the core courses in almost all instructional technology master's programs in the United States. It draws upon systems theory and various schools of psychology of learning. Because ISD graduate courses are usually offered through colleges or schools of education, they are considered as an application of educational psychology, among other fields and sciences (Schiffman, 1986). ISD focuses on the systematic design of instruction (Dick, Dick, & Carey, 2005). Its purpose is to develop a viable, effective instructional solution to an identified human performance problem. Professionals who undertake the design and development of instruction are called instructional designers or instructional developers. The process of ISD requires more than just developing instructional content. Effectiveness of the instruction is not the only thing that matters in the design and development of instruction; other matters such as efficiency and managerial skills are also called into play. If the development of instruction is viewed as a project, which is associated with a project end date (Project Management Institute (PMI), 2008), ISD and project management must marry for a synergetic effect of values that instructional designers are to create for customers. This is the primary argument of this paper.

The purpose of this position paper is to build a case for a symbiosis between ISD and project management from a curriculum perspective. The paper will first define ISD and project management and describe their backgrounds. Second, it argues there is a disconnect between theory and practice. Third, it makes an argument for an integrated view of ISD, informed by the literature. The integrated view is then applied to real life examples. Finally, challenges of the joint view will be discussed in the conclusion. The target audience of this paper is faculty in instructional technology degree programs as well as supervisors and administrators of such graduate program, whose understanding of core values of instructional technology as a distinct academic discipline varies.

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[1] It is worth noting that instructional design, instructional development, instructional design and development, and instructional systems development are synonyms for ISD. Discussions of terminology in the field are beyond of the scope of this paper, as is the discussion of whether the field of instructional technology is called educational technology, instructional systems, or instructional design and technology. Those interested in these two discussions can refer to the work of Anglin (1995), Gustafson and Branch (2002), Luppicini (2005), Reiser and Dempsey (2007), and Roblyer (2006).

Background

Instructional Systems Design (ISD)

Instructional systems design (ISD) is rooted in systems theory, where the design of instruction is considered systemic and systematic. In the view of Carr (1996), a systemic design emphasizes the interrelatedness and interrelationship between (or among) all the components (including their sub-components) of an instructional system, while a systematic design of the instruction concentrates on the phenomenon that the end or finish of a step of the design of instruction signals the beginning or start of a later step. For example, ADDIE (analysis, design, development, implementation, and evaluation) is a simple ISD model or a framework that underlies major aspects of ISD (Bichelmeyer, 2005) (see Figure 1). Some recognize and understand ISD through the ADDIE model (e.g., Cox, 2009) as a generic representation of what instructional designers do in the field.
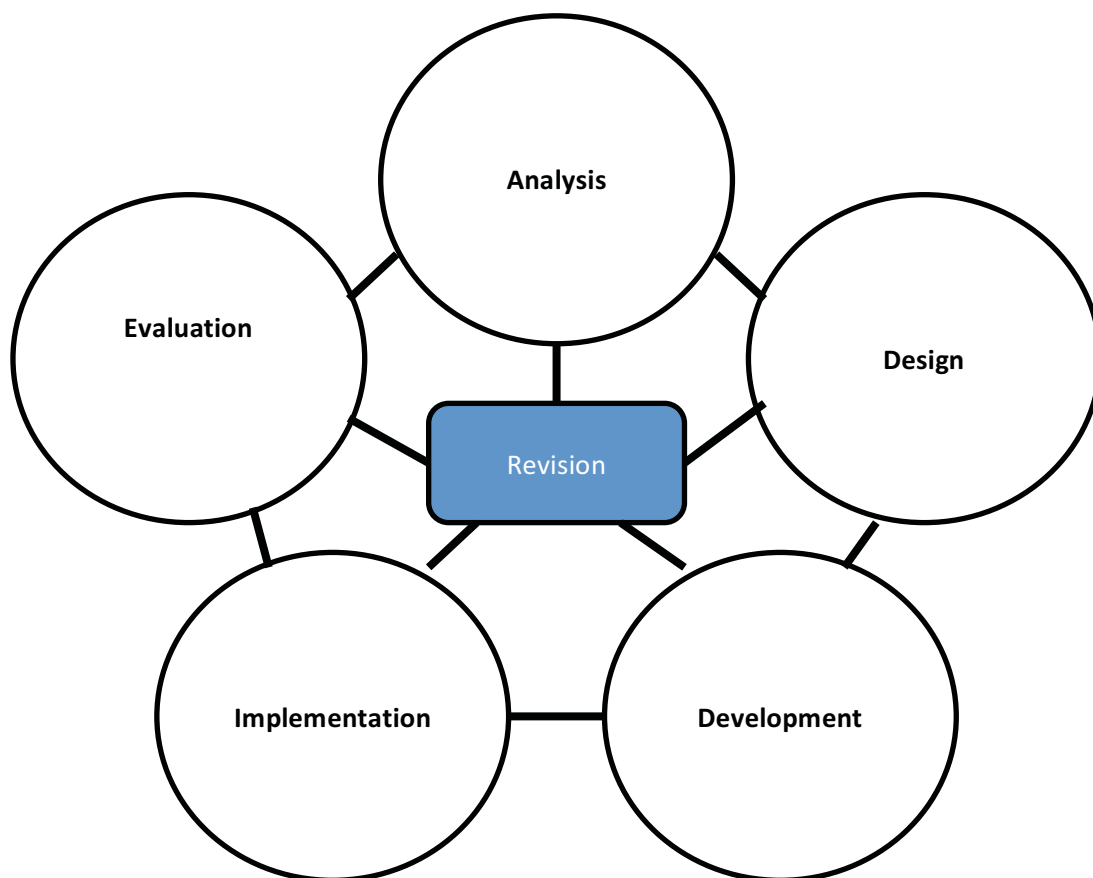

Figure 1. **A systems perspective of the ADDIE Model**

From a systematic perspective, ADDIE model is as a guide for instructional designers as they work through the five components. In general, the process entails a needs assessment, task analysis, objectives formulation, assessment development, content development, implementation of a developed product, and revision of the product. The systemic aspect of the model is realized through the interrelatedness between the five components through the revision part, which is commonly overlooked by novice instructional designers when referencing the model. For

instance, if one of the components is removed from the instructional design process, it is not just the components before and after that are affected, but also the entire output of the process-based model. That said, not all the practitioners would agree with this interpretation. Brandon (2004) warns that ADDIE merely summarizes the instructional design process. He also suggests that ADDIE is probably too outdated to explain what instructional designers actually do and that ADDIE may be too broad to assist instructional designers in documenting the instructional design life cycle. Nevertheless, different views of ADDIE may result from the way the model was interpreted and understood in the first place (Molenda, 2003). ADDIE is illustrated in this context due to its pervasiveness and popularity with the general public (Bichelmeyer, 2005). It is by no means the author's intention to draw on or debate the issue of whether ADDIE is an ISD model or a framework.

ISD has its strengths and weaknesses. Its strengths include systems thinking, effectiveness, and a grounded approach. First, systems thinking reflects two characteristics mentioned earlier: systemic and systematic. This thinking is also adopted by other fields, such as business. When developing an organization's strategic plan, such thinking allows managers to focus on the output (or the value) of the business process prior to mapping out an organization's strategic plan and operational plan. Second, ISD upholds effectiveness of instruction by working with testers through evaluation phases to assess whether the instructional solution assists the target audience in mastering performance objectives. Third, ISD is grounded in research and theories rooted in the fields of educational psychology, diffusion, consulting, project management, and systems theory (Schiffman, 1986).

Critics of ISD argued that the ISD process is tedious, rigid, and vulnerable to short turnaround. First, ISD has a set of basic steps to follow; the ADDIE model encompasses five steps plus the hidden step of revision and other sub-steps. Following these steps and sub-steps can be tedious, particularly in the front-end analysis and design phases, where instructional designers need to determine whether the subsequent training or learning program is justified, to analyze the performance and learning contexts, to identify the subject content, and to describe the learners' characteristics. The nature of the design (what is behind the scenes) can be less interesting than the latter part of the instructional design where training is being developed and taking shape (what is on stage). Second, the rigidity of ISD can discourage creativity and lend itself to a cookie-cutter type product. Third, this rigidity can be exacerbated when turnaround time is short. Time pressures interfere with faithfully completing the steps of the ISD process. Interested readers can read Gordon and Zemke's (2000) and Zemke and Rossett's (2002) work on weaknesses of ISD.

Project Management

Meredith and Schafer (2010) define project management as managing a special form of process in an organization, the output of which is some type of value of desire and interest. Such value creation is one of the most essential organizational activities, and it helps justify the existence of the organization. In project management, each project is characterized by an ultimate goal, tasks that are interrelated and coordinated, a limited timeframe, and its own uniqueness (Layng, 1997). Project teams are often adopted, as Anantatmula (2008) explains, "to integrate multiple disciplines and diverse skills to meet project objectives successfully" (p. 35). In this context, every project leads to an anticipated outcome as a result of a group process. This outcome is usually identified in the charter in the initiating phase of the project. A project is usually broken

down into multiple tasks or activities that proceed in parallel or sequentially. If the activities are parallel, these activities can be undertaken concurrently. If the activities are sequential, these activities can only proceed in one set order. The parallel relationship can be more efficient than the sequential relationship. Projects are made up of time-limited activities that differ from the daily operations in the organization. Projects are unique because they are not regular operations, suggesting for each project some type of taskforce be created through a charter or sponsorship, led by a project manager, and given all the needed resources within the organization. Once the project is completed, the taskforce may be assigned to another project, return to their original team or department, or let go. Because of this uniqueness, projects are not repeated. Even similar projects cannot be undertaken in an identical manner. However, a "lessons learned" document is commonly prepared in the final phase of the project's life cycle (Little, 2010) or later when learning surfaces (Atkinson, Crawford, & Ward, 2006). Such documentation can shed light on learning experiences that may be transferred to future projects.

Little's (2010) definition of project management has a focus on project phases and project process groups. Little divides the project life cycle into three project phases (initial, immediate, and final phases); however, the PMI (2008) argues there are four phases in a project life cycle (starting the project, organizing and preparing, carrying out the work, and closing the project). They claim that each phase includes five project process groups: initiating, planning, executing, monitoring and controlling, and closing, which proceed in sequence with the exception of the monitoring and controlling group (PMI, 2008). Project managers, or experts who manage projects and project teams from the start to the finish, continually monitor and control the project in order to detect the process errors that require corrective actions early on and make certain the project stays on track as chartered (Little, 2010). If the managers fail to identify and address errors, they can magnify through a snowball effect. Should this occur, the consequence is catastrophic and can require a start-over (rework) of the project or monetary compensation.

There are clear advantages to using a project management approach. First, a project manager's objective is to manage and complete assigned projects with a project team using the given resources. Second, project management is consistent because the five project process groups are repeated in each project phase throughout the project life cycle (PMI, 2008). Third, project management is efficient because project managers make compromises. Project managers communicate and coordinate with team members and other stakeholders of the project. They attempt to make the best of a situation and resources to complete the project and meet the customer's expectations (Carter, 1988).

Project management also has its vulnerable spots. First, project management can be time consuming for less experienced project managers who must manage reporting and communicating with/to team members and other stakeholders. Second, project managers can spend a great deal of time on documentation and paperwork in order to give thorough reports to the stakeholders. Third, project managers' supervisors may only delegate the management work, but not authority, which should have come with the project charter. Finally, there are times when good project management does not lead to project success due to certain flaw beyond the control of the project manager from the initiating phase of a project, "…successful project management could enhance its success" (Munns & Bjeirmi, 1996, p. 86).

Project Manager's Expertise

Knowing that their objective is to manage and complete assigned projects, project managers must understand their project in terms of project life cycle, project phases, and project process groups, and they must have sufficient resources to complete the project. Project managers' expertise is of importance, too. They must have an understanding of elements of scope, time, money, communications, human resources, contracts, supplies, and risk management (Layng, 1997), as well as the integration of all these elements (Ward, West, Peat, & Atkinson, 2010). Scope, time, and money are called the triple constraints of a project (William van Rooij, 2010) and represent the challenges faced by project managers in determining how to complete the project to its agreed specifications, given a set budget and a pre-determined timeline (Little, 2010). A similar view is found in professional project management standards. For example, the Computing Technology Industry Association (2008) outlines five major categories of expertise of project managers:

> 1.0 Pre Project Setup/Initiating
>
> 2.0 Project Planning
>
> 3.0 Project Execution and Delivery
>
> 4.0 Change, Control and Communication
>
> 5.0 Project Closure (p. 1)

These five categories above are similar to the five project process groups described by the PMI (2008). Taking a comprehensive perspective, Brill, Bishop, and Walker (2006) describe an effective project manager as a professional who possesses skills in leadership, problem solving, and communications; context knowledge; and people expertise. With a similar stress on people management, Fisher (2011) identified the skills and associated behaviors practicing project managers consider the most important for their profession, which include understanding behavioral characteristics, leading others, influencing others, authentizotic behavior, conflict management, and cultural awareness. Similarly, Kayworth and Leidner (2000) characterized successful project managers on four dimensions: goal setting and team leading, team building, flexibility and empathy, and culture awareness.

Project Management in Organizations

There seems to be a positive correlation between the size of an organization and the maturity level of the implementation of project management in the organization. William van Rooij (2011) conducted a survey to investigate the commitment to project management in organizations that develop training or learning programs. She found that organizations with 500 employees or more tend to report a higher level of the project management implementation maturity than those with fewer than 500 employees, suggesting that medium to large-size organizations are more committed to project management. In the same study, institutions of higher education were found to implement the project management practices at a medium or high maturity level. William van Rooij further reported that for the top management team, despite the maturity level of project management, organizations expect a graduate degree in instructional design or related areas (e.g., cognitive science), rather than in project management, as a credential of a project team lead. According to decision makers, project management can be

acquired from the practices of managing instructional design projects. Interestingly, other results indicated that regardless of the varying degrees of the commitment to project management in the participating organizations, project team leaders have both formal and informal training in project management. The finding suggests that one needs to acquire formal training in project management in order to enter the leadership, especially in the non-small-size organizations that produce training and learning products. Higher education is one option for acquiring this training; therefore, adding project management to the graduate instructional technology curriculum core may increase the chances of having instructional technology graduates entering management positions.

Disconnect between theory and practice

Rise of the Disconnect

Theory, in the context of this paper, refers to how academia prepares graduates by looking specifically at the graduate curriculum of instructional technology programs. Practice refers to how instructional design industry and corporations conduct their business operations. There seems to be a disconnect between the two: project management is not part of the core curriculum in instructional technology programs yet it is required in practical work settings. Fisher (2011) explains that "real people behave differently in the real and socially-constructed world (practice) as compared to a world that only exists within people's imagination (theory)" (p. 3).

From a theory perspective, ISD is considered a subset of instructional technology.[2] Instructional technology is an academic discipline offered in graduate schools of education with a knowledge base that encompasses multiple subjects, topic areas, or sub-domains mentioned earlier, such as ISD, project management, and diffusion (AECT, 2000). In graduate schools, instructional technology degree programs usually require approximately 12 courses in order to prepare graduates for the job markets as instructional designers at various levels. Based on the traditional view of ISD, graduates' work will include the following tasks: conducting various analyses, such as goal analysis, needs assessment, learner/context analysis, task analysis; writing performance objectives: developing assessment tools; designing instructional strategies; developing an actual instructional package/solution; and evaluating and revising the package/solution (Dick, Carey, & Carey, 2006).

From a practice perspective, the ISD process does not necessarily reflect this theory. In higher education, for example, instructional designers do not spend all of their resources developing courses or following the traditional instructional design process. Designers undertake tasks including working with other professionals involved in a course design project (Pan, Deets, Phillips, & Cornell, 2003; Pan & Thompson, 2009). Christensen (2004; 2008) presents a view of ISD process from a practitioner's standpoint explaining that instructional design is actually comprised of decision-making and problem-solving tasks. According to Christensen (2004), instructional designers regularly undertake tasks that are not part of the traditional ISD process. For instance, "I brainstorm with other people involved with the project" was reported as the most

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[2] Instructional technology is also used interchangeably with terms such as educational technology, instructional systems, and instructional systems and technology as the field of instructional technology continues to evolve (Persichitte, 2007).

frequently used strategy. Christensen (2008) calls for a balance of the tasks of decision making and problem solving with available resources in any given situation. The concept of balancing design and resources is endorsed by Wedman and Tessmer (1990) who argue that when more resources are available, more layers of instructional design process are adopted. These authors stress the impact of environmental factors on the design and recommend a benefit cost analysis (BCA) prior to the adoption of a multiple-layered model. BCA is one of the techniques used to build a business case while a project is being considered by stakeholders, or in its initiating phase (PMI, 2008). In their literature review, Kenny, Zhang, Schwier, and Campbell (2005) found that instructional designers require many non-traditional skills such as communication, editing and proof reading, marketing, media development and graphic design, project management, supervision of personnel, teaching students/faculty development, team building/collaboration, and technology knowledge/programming. Most of these non-traditional instructional design skills and tasks are also identified by the PMI (2008).

Project management is an essential part of the skill sets of instructional designers in non-educational settings according to Morrison, Ross, and Kemp (2000), and Smith and Ragan (2005), who dedicated an entire chapter in their textbooks to project management. Although this attention appeared somewhat disproportionate and positions project management as a subset of ISD, it recognizes the significance of project management in relation to ISD. Earlier literature also supported this view of the relationship between program management and ISD. Schiffman (1986) contended that a fully evolved model of ISD includes project management as one of the five core skill sets a well-rounded instructional designer should cultivate in order to cope with managerial duties (e.g., communicating and staffing) involved in the project. Gustafson and Branch (1997) also identify program evaluations and review technique (PERT) as one of the operational tools accompanying certain ISD models. All these endorsements echo the AECT (2000) standards where project management is listed as a sub-domain of management. Likewise, Layng (1997) argued that instructional designers and project managers complement each other in completing instructional design project effectively and efficiently.

If project management is essential to the competencies of instructional designers, it makes senses to include project management as part of the core curriculum of graduate programs in instructional technology. A quick survey of the major instructional technology programs in the country shows a discrepancy between theory and practice. Of all the 12 programs surveyed, there are two that offer project management as a required course (University of Georgia and Wayne State University) and one as an elective course (San Diego State University).

Possible Explanations

Apparently, there is a disconnect between theory and practice. According to the literature, instructional designers undertake tasks other than curriculum development; project management is one of the essential tasks required of instructional designers in the field on the regular basis. Project management, however, is seldom included in the graduate curriculum of instructional technology. Williams van Rooij (2010) attributes this disconnect to the divergent subcultures within higher education. According to Williams van Rooij, project management originated from disciplines such as engineering and business, so it is less popular in other fields, such as education and humanities.

The notion of usefulness is used to postulate that theory informs practice and practice applies theory. According to this utilitarian view universities would be providing a disservice to their graduates if they did not prepare these candidates (William van Rooij, 2010). Educators may find it challenging to expand the core values of instructional technology programs, which need to be expanded to address efficiency as well as effectiveness. Including project management as part of the graduate instructional technology program core requires educators to acknowledge that project management is an essential skill for ISD professionals (William van Rooij, 2011).

Another possible reason for this disconnect may be the different perspectives of professionals in instructional technology. As the field of instructional technology becomes more diversified, perspectives merge from other disciplines. Opponents of this broad or inclusive view argued that instructional technology has come closer and closer to a point where the line between instructional technology and other disciplines will become so blurry that instructional technology can possibly lose its identity and that it will no longer be considered as a distinct field of study (Merrill & Wilson, 2007). The debate between Dave Merrill and Brent Wilson (2007) signals that advocates of instructional technology seem to have a split over whether the field should take an exclusive or an inclusive attitude toward future research and development of instructional technology. Consequently, proponents of the exclusive approach may feel less inclined to accept different values and perspectives coming outside the instructional technology field.

Integrated View as A Solution

Instructional Systems Design (ISD) and project management are two separate subject matters, but they are interrelated according to William van Rooij (2010):

> Project management complements the instructional design process by offering a set of repeatable processes with which to describe, organize and complete the work required for each phase of the project life cycle, with deliverable complexity also determining how much process is used at each phase. (p. 855)

This perspective illustrates how the design and development of an instructional design project requires processes and procedures that are repeated similar to the five project process groups in the project life cycle. Similarly, Layng (1997) calls the relationship between project management and ISD unique but parallel. She aligns four stages of project management (conceptual, planning, execution, and termination) with the nine stages of the Dick and Carey model. Likewise, Cox (2009) develops an instructional design project management model called the Four-Step Combo, where she collapses the five project process groups of project management and the five phases of ADDIE, each into a set of four steps, which she then matches. In Cox's view, the initiating process group matches the analysis phase, the planning group matches the design phase, the combined executing and monitoring and controlling groups matches the combined development and implementation phases, and the closing group matches the evaluation phase. Despite the difference among these three models, they all integrate project management and ISD. Applying an integrated view may require a supportive organizational strategic plan that is in favor of the value created through this complementary relationship between project management and ISD (Ward, West, Peat, & Atkinson, 2010).

Application of the Integrated View

Instructional designers work in various settings, where the nature of the work can benefit from knowledge and skills of project management either by integrating project management in ISD or by applying project management to the management of an instructional design project. The latter is a broad view where project management is parallel to ISD. This broad view applies to medium to large-scale instructional design projects where the instructional designer, who may or may not be the project manager, is delegated with more responsibility than instructional design or course development. For example, the instructional designer may be responsible for staffing, contracts, and budgeting. The former is a narrow view where project management is incorporated into ISD. This narrow view applies to small-scale instructional design projects where the instructional designer only takes on the duty of instructional design, not others. In the narrow view, project management is integrated into ISD and becomes part of ISD, which suggests that some of the unique ideas or concepts of project management be introduced to ISD as supporting tools and techniques.

If project management and ISD are married, there are at least three areas where project management can assist instructional designers in doing a better job with regard to efficiency: the project charter, Gantt charts and the critical path method.

First, the project charter or project plan that centers on the triple constraints: scope, time, and cost (Meredith & Shafer, 2010). Going back to previous example of higher education, conducting a front-end analysis, instructional designers in higher education are capable of dealing with these constraints although cost is often calculated by the hours allotted to individual projects, instead of by real dollars (Ward, West, Peat, & Atkinson, 2010). This practice seems common in education and public sectors at this level. What a project charter can offer here, for example, is the idea of a risk management plan, which is set up to anticipate the unexpected. The idea is similar to scenarios analysis in marketing, which assists organizations in simulating possible scenarios based on uncertain factors influenced by known driving forces on the market and examining the impact of each scenario on the organizations in terms of creating, communicating, and delivering values to the customers (Kotler, Keller, Koshy, & Jha, 2009). Instructional designers do not usually think this way when it comes to risk management. They take on the assigned course development project and are told to work with faculty (i.e., subject matter experts) to complete the project. They do not necessarily think of the project in terms of any potential risk, except the risk of not being able to complete the course development, given all the resources and effort put into it. They seldom consider whether there is another instructional designer competing for a better quality of work against them. This way of thinking may be true; however, competition can be an imminent danger, where the competitors develop the course in some proprietary course management system that is more sophisticated and creates better customer's value. Introducing the idea of project charter to ISD can prepare instructional designers for the situation where the risk becomes certain.

Second, Gantt charts are a common practice of project management professionals. Generally speaking, the charting technique is adopted to specify who is responsible for what task that is to be completed in how much of the time. More importantly, the planning technique further describes the relationship between tasks identified in the work breakdown structure on two simplified dimensions. Is the task parallel or sequential? Is the sequential task preceding or following another? As implied earlier in the paper, not all the tasks are sequential, which frees up

time for other tasks. For example, formulating performance objectives precedes designing instructional activities, which is a sequential task relationship. Without the performance objectives formulated first, designers will likely have a difficult time designing class activities with which learners are able to practice, in an attempt to master the objectives at the end. On the other hand, a parallel relationship can be illustrated in this example: designers are researching best practices in using screen capturing programs while waiting on a return telephone call from a faculty client to discuss details on course syllabus.

Third, the critical path method is used to map out tasks of the project. Instructional designers can adopt this scheduling tool to determine the critical path of the project progress. Because the critical path is the longest one in time duration, this suggests that all the other paths are completed earlier than the critical path and that the critical path affords a slack time. This slack time gives instructional designers flexibility in progressing with the project (Meredith & Schafer, 2010), which can allow the designers to tackle on tasks, particularly those unexpected. Here is a real life example: There was an open-source learning management system by a service provider on the market four months ago. The service provider had been reliable and provided great customer services even though the use of the learning management system was entirely free of charge. But, account holders had to agree to share the developed content with general membership prior to subscribing to the service. With the learning management system as part of the project charter due to the nature of the subject matter (i.e., current issues of open-source learning management systems), the goal of this course development project was for the instructional designer to work with a faculty expert/client and develop a graduate-level course on the defined subject matter. In the middle of the project life cycle, the designer learned that the service provider had decided to re-market itself as a paid service provider. Thanks to the slack time freed up by other tasks and the working style of the designer who liked to start the task at the earliest time in case of unexpected or potential risks, the designer was able to respond to the change and install the open-source learning management system on one of the spare servers administered by the university for the course development purposes. The solution was temporary, but it allowed the project to continue its content development and usability testing for the time being without the project schedule being disrupted. And, the designer had a chance to request more resources to secure another reliable service provider who would provide technical support and customer services. The university was not able to support the open-source learning management system campus-wide due to limited resources and talents in the technical area, so the university had decided to outsource it at the minimal cost initially.

Conclusions

Project management and instructional systems design (ISD) need to be coordinated in a concerted effort to complete an instructional design project effectively and efficiently (Smith & Ragan, 2005). Project management methodologies with a strong point in efficiency (e.g., by planning and scheduling) can complement ISD's effectiveness in the design of instruction (Morrison, Ross, & Kemp, 2001). Because each approach has its strengths and weaknesses, the coordination of the two can create a synergy and improve the output of the instructional design project. This argument is not a new proposition. Based on the literature reviewed and reported earlier in this position paper from both researchers' and practitioners' perspectives, project management and ISD should be regarded as two of the core skills of instructional technology. This argument is endorsed by AECT (2000) in its published standards. However, the proposition

does not seem reflected in the core curriculum of the majority of the graduate instructional technology programs in the United States. There is, it appears, a disconnect between theory and practice, which could be due to reluctance of educational faculties to accept an outside approach like project management (William van Rooij, 2010, 2011) or it could reflect the argument between inclusive and exclusive views of professionals in the field of instructional design (Merrill & Wilson, 2007). With the information in this paper, it is anticipated that faculty of instructional technology and their supervisors and administrators are able to acknowledge the disconnect and consider the proposed solution.

The proposed integrated view of project management and ISD is two-fold. The broad view looks at project management as a subset of instructional technology; the narrow view regards project management as a sub-skill of ISD. The latter is marrying project development to ISD. It is probably easier for instructional technology faculty and their supervisors or administrators to accept due to the immediate benefits of project management on projects and operations of instructional designers, whom the education faculty members prepare. Three concepts of project management (i.e., project charter, Gantt chart, and critical path method) are used to illustrate as three examples of the said benefits. These concepts can be incorporated into any ISD project to increase the efficiency of ISD.

Having said all that, there is a symbiosis between the two subject matters. When the two are married, instructional design project managers are likely to show both performance and productivity. As with all the reviewed literature above and the author's observations considered, three foreseeable challenges may possibly affect the efficacy of this symbiosis:

- To what degree do faculty of education accept a new concept such as project management?
- To what degree do faculty of education regard instruction as a project?
- To what degree does project management complement instructional design?

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