Chapter 3

Leadership Strategies for Coordinating Distance Education Instructional Development Teams

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Introduction

Boundaries between classroom-based, blended, and distance education are blurring. Contemporary classroom-based courses typically have a course website. Instructors' editions of textbooks include PowerPoint lectures that can be either presented in a classroom or licensed for distance distribution. Students' editions include e-tutorials and quizzes for independent learning. Classroom 'contact' hours are being reduced via the introduction of Web-based video lectures, online tutorials, discussions, virtual laboratories, simulations, and more recently, academic computer gaming (Naylor, 2005; Parchoma et al., 2007). Social software applications, Second Life, MySpace, and Facebook, along with blogs, wikis, podcasts, and e-portfolios, are commonly incorporated into learning designs across delivery modes (Wasson, 2006). Key administrative services, such as Web-based registration, assignment 'drop-boxes', grade reports, and transcript orders have been moved online. This "fusion of face-to-face and technology mediated learning experiences" (Garrison & Vaughan, 2008, p. 5) is making it increasingly difficult to define distance education (DE) and delineate

DE-specific practices from common practices in contemporary higher education.

However, only distance educators deal with the unique challenges of motivating, teaching, and evaluating the work of learners whom they never meet in a face-to-face setting. This lack of same-time, same-place contact expands the transactional distance between educators and learners. Transactional distance is pedagogical, rather than geographic; overcoming it requires specialized instructional structures and dialogic teaching approaches (Moore, 1991). Developing DE teaching and learning activities involves applying learning theory and design, communication theory, organizational theory, human-computer interaction theory, media expertise, and project management skills to create appropriate instructional structures and pedagogical approaches to meet the needs of DE learners (Bates, 2000). For scientists, acquiring and maintaining current, in-depth understanding of these disparate fields, in addition to specialized scientific knowledge, is not always possible. Therefore, most scientists need to work collaboratively with teams of specialists occupying emergent educational and technical roles in higher education (Bates, 2000; Hanley, 2001; Hanna, 2000). Thus, DE project leadership requires a shift from perceiving teaching as fulfilling a traditional, independent role to "one where teaching and learning are the products of an integrated group of individuals" (Hanley, 2001, p. 59).

Overview of the chapter

This chapter is intentionally practical and purpose-driven. The first section provides a brief history of DE for the purpose of providing new project leaders with a backdrop of existing perspectives and practices. The ensuing development team section describes roles of team members and outlines typical processes development team leaders need to manage. The social negotiation section addresses the 'soft skills' side of leadership through a research-based model of

stages of DE development team formation. The chapter concludes with suggestions for sources of support for leadership activities.

Dichotomy of voice

Two voices are juxtaposed in this chapter. The historical section is based on a review of distance education literature, and it is written in an expository voice. The remainder of the work is written in a narrative voice because it is based on my personal experiences as a distance education student, an instructional designer, a faculty leader for DE development teams, and finally, as an educational researcher.

Distance education: perspectives and practices

Multiple definitions of DE are scattered across disciplinary literatures. Over time—within discipline-specific literatures—commonplace DE terms have been subject to diverse interpretations. As DE development teams are made up of individuals from a variety of disciplinary backgrounds, and who have varying degrees of experience and a range of philosophical and theoretical perspectives on instructional development, effective communication can be problematic. I have included a brief history of DE in order to provide project leaders with practical insights into a range of DE perspectives and their associated terminologies, as well as approaches to constructing a shared project vision among team members.

Five generations of distance education

Over the approximately 150 years of DE history, the field has evolved to include five "generations" of practice (Taylor, 2001). Each of the generations has been distinguished from the others by the technologies used for communication and content distribution. While the term 'generations' suggests a progression from one set of technologies and practices to another, in the field of DE, each new generation

has most often added new technologies and practices, rather than replacing existing ones.

First generation, *Correspondence-based* DE consisted of print-based course content distribution and infrequent post-based communications between the instructor and the learner, as well as between the learner and institution administrators (Anderson & Elloumi, 2004). Predominant theories of learning were undergoing a process of change in this early era of DE. Behavioural psychology and educational measurement were beginning to displace a long-held view:

> That the mind, like the body, could be developed with exercise. That the study of certain disciplines would improve the mind just like callisthenics could improve certain muscles. (McNeil, 2007, ¶ 4)

About a hundred years later, *second generation*, *Multi-media* DE added audio and video tapes, along with early computer-based programmed learning, to content delivery models, and telephone service to communications options (Taylor, 2001). However, print packages of readings, delivered by mail, remained a mainstay of these two generations.

In both first and second generation models, communications tended to be limited to learner-to-institution and institution-to-learner communications to accomplish administrative tasks, and infrequent learner-to-instructor and instructor-to-learner communications for the purpose of accomplishing academic tasks. For the most part, learners were passive recipients of packaged instructional materials. As a result, a common criticism of first and second generation DE was that learners were left to learn in isolation, and as a result, attrition rates were often high (Potashnik & Capper, 1998).

Throughout the first two generations of DE, educational theory and practice focused on expanding and refining applications of research from behavioural psychology to the processes of teaching and learning. Task analysis, learning objectives, and programmed

instruction came to the fore. Programmed instruction was characterized by behavioural objectives, small chunks of instruction, independent learning and self-pacing, required learner responses to periodic questions, and immediate feedback on the quality of responses (McNeil, 2007).

Glaser (1962) introduced the idea of instruction as a system, made up of discrete components in carefully pre-defined sequences designed to complete a learning process. Over time, applications of strictly sequenced, highly structured approaches to developing instruction for independent learning proved somewhat effective in supporting rote learning of factual material, but it did not well support critical thinking or problem solving in higher education. Better communication tools were needed to support interactions among learners and with instructors in order to allow for discourse and debate in DE.

Third generation, *Telelearning DE* added broadcast media, such as television and radio to content delivery. Teleconferencing and videoconferencing introduced opportunities for synchronous instructor-to-cohort and learner-to-learner communications (Anderson & Elloumi, 2004).

In concert with advances in third generation media — for which larger production teams were required — the need to better understand instructional development teams emerged. The *British Journal of Educational Technology* was launched:

> To meet that need for an informed dialogue, to provide links between research workers and teachers, educational planners and administrators, and between public educational systems and the broadcasting, publishing and other information agencies involved in the production and dissemination of learning materials. [The journal was, from the outset designed to be] interdisciplinary in character because the improvement of learning is by its nature an inter-disciplinary and co-

> operative process; and because there is no formal discipline which encompasses the extensive repertoire of theories and practices with which educational technology is concerned. (Black, 1970)

During the 1970s and 1980s, Robert Gagne introduced a professional model for instructional designers. Gagne's model blended behaviouralist learning theories and cognitivist learning theories to designing conditions for and events of instruction. This work underpinned the development of instructional systems design and human performance technology schools of thought (Merrill, 2002).

In the closing decade of the twentieth century, Internet- and Web-based access to hypertext content, computer-mediated synchronous and asynchronous communication, along with software to support collaborative student projects as well as instructional administration tasks, marked the transition to *fourth generation*, *Flexible Learning* DE (Taylor, 2001). Developments in electronic access to library catalogues, databases, journals, and books provided the necessary resources to support graduate students in DE. Concurrent expansion of the knowledge economy rapidly increased demand from knowledge workers for DE access to both undergraduate and graduate higher education (Bates, 2000; Mohan & Daniel, 2004; Hanna, 2000). For-profit 'virtual' universities emerged to meet these demands, and for the first time, higher education had corporate competitors (Archer, Garrison & Anderson, 1999).

Traditional universities responded by expanding DE access and adopting selected DE practices into campus-based teaching. The combination of the availability of sophisticated ICT tools and the need to use these tools to provide DE access to all levels and modes of higher education made large-scale use DE tools desirable because they were perceived as necessary and practical solutions to emergent challenges (Rogers, 1995). However, uneven effectiveness in applications of DE tools in new contexts, as evidenced by the failure of many for-profit higher education ventures (DiPaolo,

2003), as well as persistent concerns about attrition rates in traditional universities' online course offerings (Carr, 2000), sparked new areas of research and practices in DE.

Communications and organizational theories currently rival psychological theories in the study of learning. Logan and Stokes (2003) synthesize ideas from each of these fields in their analysis of how the Internet is influencing contemporary life. They argue that there are five collaborative messages of the Internet: (1) two-way flow of information, (2) ease and speed of access to information, (3) continuous learning, (4) alignment and integration of common objectives, and (5) creation of community (Logan & Stokes, 2003). Interest in collaboration (Daniel, Schwier & McCalla, 2003), continuous learning (Ghosh, 2004), and the creation of networked learning communities (Hodgson & Reynolds, 2005; McConnell, 2006; Schwier, 2001) have come to the fore.

The nature of knowledge itself came under re-examination in the *fourth generation* DE era. Proponents of constructivism have rejected conceptual models of learning that claim objective knowledge that can be transmitted from instructors to learners (West & Graham, 2007). Constructivism is neither a learning theory nor a design method (Jonassen, 2006); rather it is an epistemological stance on collaborative knowledge creation on which design innovations, such as problem-based learning, microworlds (gaming), and simulations, have been based (Jonassen, 2006).

Fourth generation technologies include learning management systems (LMS), such as *WebCT*, *BlackBoard* and *Moodle*. Social negotiation tools, including blogs, wikis, podcasts, and e-portfolios have also been applied to supporting learners in collaborative knowledge construction in fourth generation e-learning environments.

Fifth generation, *Intelligent Flexible Learning* DE has expanded e-learning to include e-commerce applications for administrative functions, such as registration, fee payment, access to campus-based services, and transcripts (Taylor, 2001). However, what really distinguishes fifth generation DE from earlier generations is the addition of

automated response systems (Taylor, 2001), which are based on intelligent agent (IA) technologies capable of real-time individualization and customization of e-learning environments (Zaïane, 2002).

While the implications of fifth generation DE for research and practice are still unfolding, initial indicators include an expansion of interdisciplinary research into teaching and learning across more and more diverse settings (e.g., Daniel, Schwier & McCalla, 2003; Durham & Arrell, 2007; Giddings, Campbell & Maclaren, 2006; McCalla, 2004; Parchoma, et al., 2007). As fifth generation DE projects increasingly involve international institutional partnerships, inter-culturality and identity in e-learning spaces are also emerging as fields of interest and debate (Durham & Arrell, 2007; Hung & Chen, 2007; Rogers, Graham & Mayes, 2007).

While a great deal is changing at an almost alarming pace, much remains the same. Modified versions of each of the first four generations of DE technologies and pedagogies persist. There are substantive and pragmatic reasons for continuing to offer this range of 'low-tech' DE options. Early generation DE technologies and practices still provide access to higher education for groups of learners whose geographic, economic, demographic, political, and cultural contexts preclude access via more current modes.

Your development team

Prior to the formation of a development team, faculty leaders often work within departments or colleges, and perhaps, with external institutions, funding agencies, or publishing houses to define the scope of a DE project. This process can include extensive program, curriculum, and course planning. Typically, the plan undergoes peer review and approval processes. When a plan is finally approved, it typically identifies potential students, defines topics for instruction and required readings, outlines major learning goals and assessment strategies, predicts technologies and modes of instruction, and includes a timeline and a budget. As a leader of a DE development

team, by the time you have guided a project plan through these lengthy processes, you will rightfully feel a strong sense of ownership of the project. Paradoxically, this is often when the DE team is formed. If you are new to DE development projects, it may be a bit difficult to suddenly make the shift from the independence and personal initiative needed to get the project approved to the interdependence required to lead a team project through to completion. Understanding team members' expertise sets and potential project roles can assist you in meeting those challenges.

DE development team membership varies across institutions, as well as among individual projects. Institutional e-learning strategies, organizational structures, and unit functions, as well as funding levels for individual projects, all influence the number of specialized educational and technical staff available to support you. While development teams are made up various numbers of individuals, typically teams are comprised of members who provide three general kinds of expertise: subject matter expertise, educational expertise, and media-information technology expertise.

Team leaders are often referred to as subject matter experts. As well as specialized scientific subject matter expertise, you have valuable specialized knowledge in the teaching of science. Your comfort levels with using the educational technologies and implementing new teaching practices will be crucial measures for your leadership decisions. No matter what team members tell you can be done, no matter how sophisticated or flashy the result, you are the person who will be guiding students through the completed learning environment, and you must be comfortable with both the technologies and pedagogy of your project.

Educational specialists hold a variety of titles across institutional settings, such as instructional designer, instructional developer, course designer, or educational technologist. As this variety of titles suggests, individuals in these roles tend to have a range of academic backgrounds. Typically, they have discipline-based undergraduate or graduate degrees followed by a graduate degree in learning

theory or instructional technology. In addition, some individuals will have project management training and experience. Therefore, individual educational specialists will have varying theoretical and practical expertise sets to contribute to your project. The primary remit of an educational specialist is to advise the project leader on structures, functions, pedagogies, and assessment strategies that align well with technological options and media choices.

Media specialists and information technologists may have educational backgrounds that include applications of learning theory to developing DE learning resources and learning environments, as well as media production, computer programming, and/or human-computer interaction expertise. The primary remit of a media specialist is to provide high-quality media that support teaching and learning goals. Informational technologists typically build and refine learning environments, integrate media resources into those environments, and provide support for their use.

While the expertise sets required to construct effective electronic learning environments are disparate, it is important to note that there are frequently distinctions to be made between roles and individuals. Getting to know your team members prior to making firm decisions about individual roles and responsibilities will afford you the opportunity to have your project benefit from the full range of expertise sets available to support your efforts.

Leading a DE development team through the development process

Developing a clear view of the scope and sequence of the work your project team is undertaking will afford you a time management guide and support your efforts to coordinate team activities. There have been a number of theoretical models developed to guide this process, and I have worked with most of them. My recommendation is strongly underpinned by a personal preference for practical approaches to complex tasks.

I have not found any model as useful or as comprehensive as the "tried and true" ADDIE model (Laks, 2005, ¶ 4) for project development. There are five basic phases in the ADDIE model for project development: (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation. While these phases appear sequential, that is rarely the case (Parchoma, 2003). Expect your team to periodically go a back a step or two, revisit earlier decisions, and make modifications. Progress will be incremental and the process often cyclical.

Analysis

There are four general areas for analysis: (1) learner analysis, (2) task analysis, (3) team analysis, and (4) project analysis. In preparing a project plan, you have most likely initiated several important learner and task analyses. You may feel that the analysis stage is already complete.

Team members may not share your sense of completion. Each team member will want to read the project plan, consider where he or she can add value to the project, and prepare suggestions for revisions or refinement. You will need considerable time to negotiate individual team members' roles and responsibilities during this phase. Part of the process of negotiating roles and responsibilities is establishing working definitions for key terms. Dissimilar definitions for common terms can result in contested roles and pervasive delays. While it may not seem as though much progress is accomplished in opening meetings, if you take the time to define a shared project vocabulary, to establish clear working relationships among team members, and to form a shared project vision, you will accelerate all subsequent work.

As it is not possible to predict how applications of team members' expertise sets may influence the development of a project over time, it is good to consider your comfort level with change and with distributed decision making. No doubt, at points throughout the project, team members will ask you to consider unforeseen

possibilities, and occasionally, to defer judgments. Leave room for change.

Design

The design phase of a DE development project is the creative phase. Design activities include aligning instructional goals, course or program content, required and supplemental resources, teaching strategies, assessment of learner achievement, and course or program evaluation. Typically, the team's educational specialist(s) will review the initial project plan, and in close consultation with the leader, begin to develop a design blueprint. Initial drafts are 'living documents.' A draft begins as an extended syllabus, expands to outline one or more prototypes for review, and evolves into a detailed project blueprint. All team members use the design blueprint to guide their contributions and monitor their progress.

In DE projects where media production, CD ROM development, website programming, electronic simulation, or gaming is planned, the educational specialist(s) and media-IT producers, again in close consultation with you, use the design blueprint to develop storyboards. The term 'storyboard' is borrowed from the film industry. A storyboard is like a cartoon strip. Storyboards are frame-by-frame illustrations of each 'page' or 'place' in the learning environment, accompanied by production notes for still images, audio and video files, animation, hyperlinks, navigation pathways, interactivity options, and feedback. In fifth generation DE projects, user-tracing and intelligent agent specifications are added. Completed storyboards become development blueprints.

Unchecked, creative thinking and innovation can become out-of-control, time- and budget-consuming experiences. Curtailing brainstorming and experimentation activities in the design phase is often difficult and always necessary. Balancing the potential value of suggested innovations against the quality of the end result and the ability to ensure a project is completed on time and within budget will be one of your most daunting leadership tasks.

Development

The development phase includes the production of all learning materials, resources, assessment tools, and the learning environment in which they are hosed. Generally, production begins with a prototype, which is piloted, reviewed, and revised in order to create a model for subsequent work.

In projects where third-party learning materials are used, copyright clearance for the use of those materials needs to be secured. In projects where electronic learning resources are produced, media and IT-producers will delegate portions of the production work to members of their staff with appropriate technical skills. In addition, content editors, graphic artists, and other specialty roles may be required.

Three leadership challenges mark the development stage of a DE project: (1) coordinating and monitoring the quality of individual contributions from an expanding project team, (2) ensuring that all contributions fit the vision for the completed project, and (3) maintaining timelines within budget limitations. This is a really good time for you to consider delegating project management and quality control responsibilities to the educational specialist(s) and IT-media producers. Your most important role in this phase is to periodically review progress to ensure that the final production meets your expectations.

Implementation

Implementation begins when a DE course or program is offered to students for the first time. Many institutions support continued team involvement for the initial offering of a new DE project. The Media-IT producers who developed the learning environment are often much better equipped than are Help Desk personnel to resolve unexpected technical problems. The team's educational specialist(s) can provide support and advice in responding to student queries, managing the learning environment, and supporting you in becoming proficient in using the environment's features and tools. If

you take full advantage of the benefits of team members' support to make the transition from interdependent development to independent teaching, you will be better able to focus on teaching and leave extraneous concerns to those best equipped to manage them.

Evaluation

The first student and/or peer evaluation of a DE course or program will provide you with valuable feedback on what is working well and where improvements can be made. In an ideal world, you and key members of your development team will be able to review the feedback and full team support will be available to refine the DE project. However, universities rarely provide sufficient funding for a full evaluation and revision cycle. Leaders typically need to prioritize revisions and oversee the implementation of as many as is possible. At a minimum, it is important to distribute whatever feedback you receive to your team members to inform their future practice.

Project leadership as a process of social negotiation

Creating the conditions for a newly formed development team to gel into an effective and creative integrated group of individuals who are highly committed to you and your project, involves negotiating a shared project vision and a sense of trust — based on mutual respect for each individual's expertise set — among team members. An established sense of trust among team members provides a basis for strong commitment to quality work and timely completion.

A study of project leadership

The following section reports the results of a two-year study I undertook to examine the experiences of faculty team leaders, educational specialists, and media-IT producers involved in DE

development projects. I conducted a series of interviews and focus groups with eight project leaders and eight media-IT producers and educational specialists. A purpose for the study was to investigate relationships among team members in order to gain insight into development team dynamics.

The leadership participants in this study were situated in eight of the thirteen colleges (faculties) at a medium-sized, traditional, research-oriented university. The eight media-IT producer and educational specialist were situated in three separate organizational units. Educational and media specialists had a range of academic and experiential backgrounds. All participants reflected on their involvement in technology-enhanced DE development projects over a period of five years: 2000 to 2005.

Data collection and analysis

My research design included four stages. First, I conducted focus groups with a group of eight media-IT specialists and instructional designers. Data collected from this first stage were analyzed for themes. Participants reviewed and critiqued the findings. Revisions were made.

An outcome of Stage 1 was the identification of fifteen potential leadership participants who had been involved in information-rich projects. Information-rich projects include "critical," "typical," and "politically sensitive" cases (Patton, 1990, pp. 102–103). Critical cases included those projects with exceptionally high or exceptionally low expectations for success. Typical cases were broadly considered "run-of-the-mill" (Patton, p. 102) projects. Politically sensitive cases were those projects where exceptions were made to institutional policies in order to accommodate specialized research or teaching agendas.

Nine of the fifteen potential leadership participants agreed to take part in the subsequent stages of the study. One participant was involved in Stage 2, piloting the study questions. Eight participants

engaged in Stage 3, a series of interviews on leadership issues. Data from the first three stages were analyzed for the purpose of developing a leadership model. Study participants reviewed and critiqued the model.

Stage 4 involved soliciting model critiques from project leaders in other settings and examining evidence from other studies to refine the model. The result is a depiction of the life cycle of a successful DE project, based on a three-stage process of negotiated team building and task sharing within a social field.

A social field is an "ecological setting" in which "coexisting social entities, such as groups, subgroups, members, barriers, [and] channels of communication" undergo periods of relative constancy and change (Lewin, 1951, p. 200). The "relative positions of the entities" within the social field illustrate their roles as either driving or restraining forces (Lewin, 1951, p. 200). Driving forces initiate and sustain change; restraining forces resist change. In order to successfully facilitate change, leaders can undertake a three-step process within a social field: *unfreezing*, *moving*, and *refreezing. Unfreezing* involves destabilizing the status quo. *Moving* includes identifying and evaluating the relative strengths of social field forces, considering available options and initiating incremental change. *Refreezing* is the process of supporting a return to a sense of stability in the changed environment. The distillation of reported experiences of participants in this study of DE development teams paralleled Lewin's (1951) leadership model for affecting change.

Stage 1

At the outset, team members usually have a sense of low social capital. Social capital is here defined as "the stock of active connections among people: the trust, mutual understanding, and shared values and behaviours that bind E members E and make cooperative action possible" (Cohen & Prusak, 2001). In the early stages of team formation, members are typically unsure of their status,

roles, and personal responsibilities to project goals, and therefore, often experience strong senses of ambiguity and anxiety. As a result, members' abilities to make decisions and formulate plans tend to be *frozen*.

Building social capital among team members begins with gaining an understanding of members' motivations for involvement and perceptions of their own and others' roles, responsibilities, and status within the team. Delegated roles, responsibilities, and status tend to erode trust. Negotiated roles and responsibilities tap personal talents and expertise sets, and provide the basis for establishing social capital. Project leaders can facilitate the creation of social capital and team loyalty through facilitating role and responsibility negotiations. Rather than being linked to any particular role, status within the team tends to be earned through the value of individual contributions to the project and sustained commitment to completion. See *Figure 1* for an illustration of a naturally *frozen* beginning point for a DE development project.

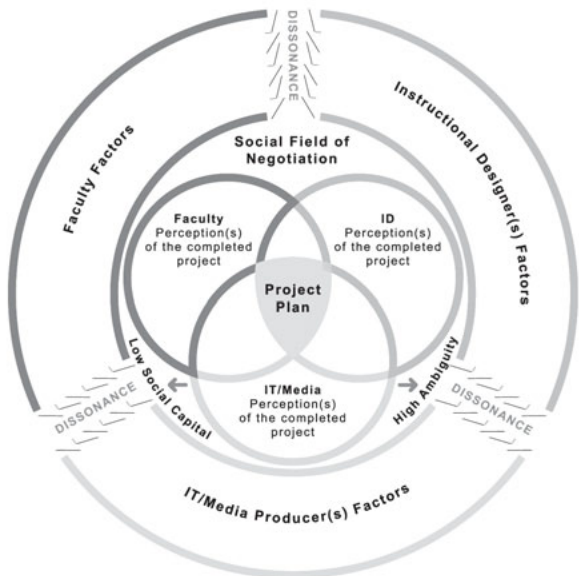

Figure 1. Illustration of a DE development project beginning point, where activity and planning processes are **frozen**.

Stage 2

When negotiations go well, team members gain insight into each other's expertise sets and professional concerns. At this point, the project leader can facilitate *unfreezing*. Initial project plans are collaboratively analyzed to determined scope and goals, learner needs and intended learning outcomes, instructional strategies, and evaluation techniques. Potential media-IT solutions are analyzed for their ability to support over-arching project goals. The range of potential media-IT options is narrowed to a manageable subset. Team members' roles and responsibilities become increasingly well defined. A shared team vision for the project begins to emerge.

Shared work leads to a deeper understanding of and appreciation for each team member's expertise and contributions. Individuals' status in decision-making processes can be established. When team members more clearly understand how their contributions support broader project goals, dissonance and ambiguity decrease and social capital increases.

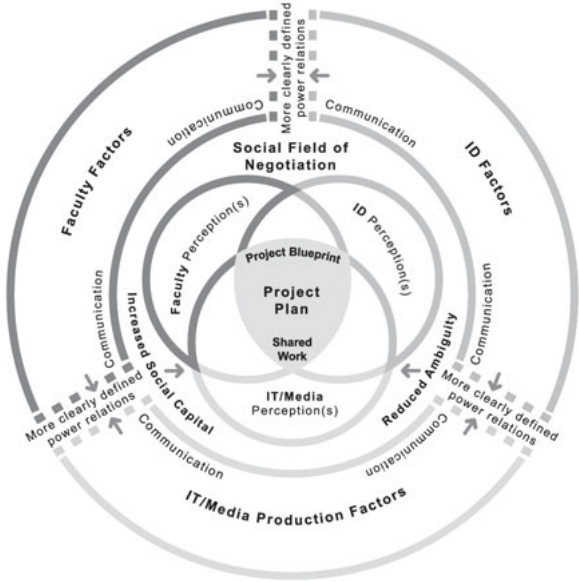

Figure 2. Illustration of a project maturing during the negotiation process, where team members are **moving** toward collaborative progress.

As team members move from sharing broadly defined goals to consensus on finer details of the completed project, a collaboratively constructed project blueprint can be completed. The project blueprint becomes an acknowledgement of the value each team member has contributed to refining the project vision. The project team can move on to defining clear specifications for the production phase. See *Figure 2* for an illustration of a project *moving* toward maturity in the negotiation process.

Stage 3

Affirmation of individual contributions deepens individuals' commitments, increases awareness of all members' needs and perspectives, and promotes willingness to defer individual preferences to maintain harmony across the team effort. With a design blueprint in place, detailed production planning can be undertaken with assurance that timelines and budgets can be mapped to project

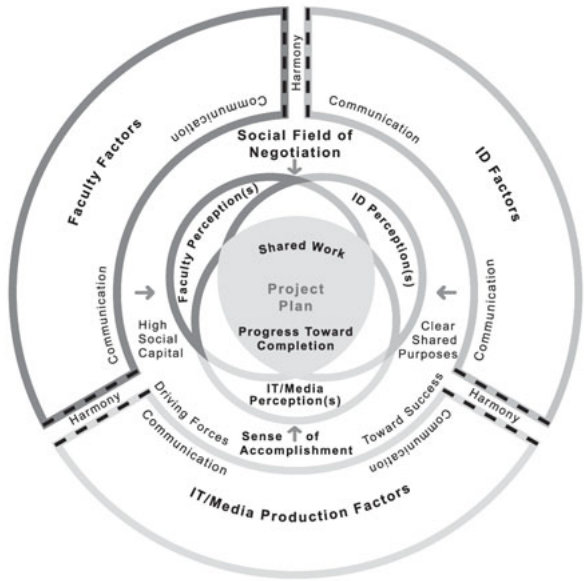

Figure 3. Illustration of a project moving toward successful completion, where team members are **refreezing** or stabilizing collaborative efforts of an integrated team.

specifications. A shared sense of accomplishment and confidence buoys continued collaboration directed toward successful project completion. See *Figure 3* for an illustration of a project *stabilizing* as it moves toward completion.

Conclusion

This model of project progression is based on successfully completed DE projects. Leaders of every successfully completed DE project in this study encountered some measure of difficulty, disruption, and delay. Scientists are, by definition, expert problem solvers. Expect to meet daunting challenges and be confident that you can lead your team through them.

Your DE development team members will be familiar with the kinds of problems that typically occur in your institutional context. Ask for their advice and trust them to provide insight into solutions. Network with other project leaders within and beyond your disciplinary field. Commiserate on current challenges. Share descriptions of complex problems — the broader your network, the more likely you are to meet a peer who has resolved even the most pervasive problem you will encounter.

Most of all, plan to enjoy the process. One of the participants in this study summarized a common experience among DE project leaders. At the outset, he was enthusiastic. His enthusiasm waned significantly under the pressures of problem solving, negotiating, and a seemingly endless time commitment. He considered abandoning the endeavour. Team members' commitments to project completion helped stay that decision. When the project ended he reflected on the challenges he faced and on the result: "It widened my horizons about how I think about teaching and the whole education process."

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