

Running Head: DIGITAL COMMUNICATION DEPARTMENT

Digital Communication Department Instructional Design Model – Future Implications

by

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Abstract

This paper offers an overview of the current workplace structure and instructional design practice at the Digital Communication Department (DCD), located in Houston, Texas. DCD is an industry workforce department which offers cutting edge technology courses in Digital Print, Multimedia, Web and Technical Writing. An analysis, description and synthesis of the instructional design model, practice along with a framework of learning theories considered most pertinent to DCD and discrepancies will first be discussed. An additional section on how the impact of rapid technology development affects future instructional design model and practices will be discussed. The paper ends with a concluding summary of the overall analysis of DCD's model and the next steps for ID theory for educational and corporate organizations.

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Introduction

The Digital Communication Department (DCD) located in Houston, Texas offers degrees and certifications in Print, Multimedia, Technical Writing and Web Development. DCD is under the umbrella of Houston Community College system, a government, and non-profit educational organization. Being an accredited state institution, DCD's course and programming offerings are governed by The Texas Higher Education Coordinating Board (THECB) who approves college and university parallel offerings and programs in technical education (2005).

Courses offered in the various programs range from scripting and computer programming, understanding design concepts, writing skills, and teaching industry level software applications. Classes are mostly available onsite where 6 of the courses focusing on web development and multimedia are also offered online. The department is currently going through a major development process of offering more courses online which eventually lead to specialized certification and degree programs for the students.

Students range from an increasing admission of dual credit high school students (early college students) to adult learners which range from high school graduates who wish to pursue a degree in a new field to advance students who already have computer program knowledge or graphic design skills. Others are returning industry professionals who would like to enhance skills or learn new software developments because of job requirements. Because of the diversity of the student structure in age, career backgrounds, demographic and cultural groups, DCD instructors are faced with the challenge of having to meet diverse learning styles and needs.

In addition, DCD have great concerns about rapid changes in technology which require careful examination of instructional design model and practices. Should there be changes in instructional delivery methods? Would there be a change in the current model? New implications

on how new development in technology impacts instructional design will be analyzed and discussed in the latter part of the paper.

Workplace Structure

The following discussion offers an overview of DCD's current workplace structure which includes the following, (1) institution's management organization, (2) curriculum and lesson delivery overview, and (3) classroom and online structure.

Institution's Management Organization

The hierarchy of the management structure is made up of the director of academic affairs, deans and departmental or program focused chairmen and instructors. The director of academic affairs, also known as the college chancellor, oversees the whole campus activities, while the deans supervise and work with the department chairs targeting the various program, faculty and student needs. Instructors are responsible for student management (meeting learner's needs via assessment and evaluation), recording progress, role and activities.

Curriculum and Lesson Delivery Overview

Curriculum design is planned, standardized and structured by committee members. While maintaining the curriculum structure, instructors have the liberty to adjust lesson plans and materials for the students though it is recommended from leadership that instructors utilize lesson material.

Lessons are delivered in a variety of formats, such as PowerPoint presentations, handouts, and instructor led lectures. While theory through lecture is implemented, additional hands on application, problem solving scenarios with the use of real world applications, assessment and evaluation strategies through "gaming style" teaching methodologies are

examples of various activities that are utilized by instructors to ensure knowledge and skill transfer occurs among learners.

Classroom and Online Structure

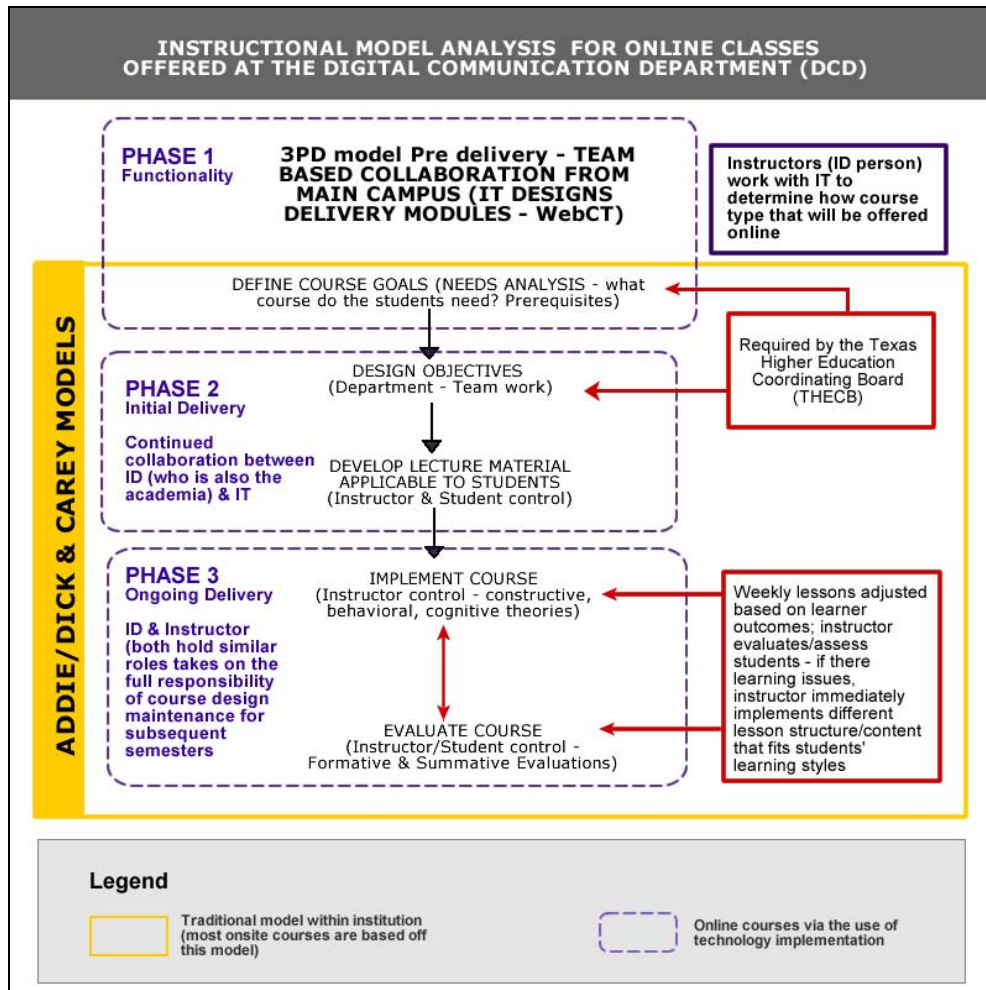
The classroom environment is closely knitted and small allowing a capacity of 5-20 students. Lecture rooms and hands on computer labs are available for instructors to deliver knowledge and guide their learners through hands on practice applications. These labs are also utilized by online students who do not have latest software programs or computer hardware required for the course. Several of the classroom based courses are also being offered as hybrid and online based. Online classes also have a limited capacity of 20 students.

Analysis of Instructional Design (ID) Model – The Current Process

Figure 1 shows an analysis how the structure the traditional instructional design model at DCD is embedded within a larger model structure, a mixed model structure for the current online setting. Since most classes offered online were traditionally offered onsite, the department had to undergo the process of the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model & Dick & Carey model (goal statements/justification of learning outcomes needed before creating new courses along with defining pre-requisites and objectives) indicated by the yellow box region.

Figure 1. Current Instructional Design Model Analysis at DCD.

Source: Adapted from Sims & Jones (2003). Enhancing quality in online learning: Scaffolding design and planning through proactive evaluation & McGriff (2001) ISD Knowledge Base / Instructional Design & Development/Instructional Systems Design Models.



With new IT development and tech support available from the distance education (DE) department, DCD instructors started utilizing resources available from DE. Traditional based courses, already designed for onsite classes can be offered as online courses. The Three-Phase Design (3PD) model works well with DCD. The 3PD model is, “an enhancement to the traditional instructional design process focuses on the creation of functional course delivery components, with evaluation and improvement activities integrated with scaffolding (support)

for the teacher and learners to provide a dynamic teaching and learning environment in which resources or strategies can be developed or modified during the actual delivery stage” (Sims & Jones, 2003, p. 8). The process requires ongoing communication with the IT department team for best implementation (Phase 1). The process is fast since DCD instructors are familiar with web technology. Instructors who also function as instructional designers discuss with IT team from the DE department to find out best instructional methods that can enhance learning experience among DCD students.

During the second phase, while working on objectives and lesson material, instructors test the environment. Instructors evaluate the formative feedbacks and personal observations of class progress. Technical issues would be brought to the attention of IT where applicable. This is a learning curve (“scaffolding” experience) for instructors (Sims & Jones, 2003).

By the third phase, instructors take the prominent role here. The course having been offered over several semesters now is under the instructor’s care. Instructors by now are comfortable about the online environment and technology that evolves around it focuses on the learning strategies process. Though IT support is available, this is not utilized as much as it was in the early semesters of prep work.

Since DCD is an educational institution, with some of the elements of traditional models (Dick & Carrie & ADDIE), are seen embedded in the higher structure of a newer model (see blue outlines), the 3PD model.

Impact on Instructional Design Practices

As discussed in the analysis, DCD has a technical and workforce focus which incorporates the traditional ADDIE, and Dick and Carey design models. The general stages of instructional design (ID) practices in ADDIE include, (1) student and needs analysis, (2) design

curriculum by leadership and committee members or instructors, (3) development of curriculum and lesson objectives and plans by instructors, (4) implement lessons via lectures and hands on application, and (5) program evaluation. Further refined steps include goal analysis, prerequisites and learner characteristics, lesson and content delivery, assessment and evaluation, are based on Dick & Carey ID model.

Theoretical Framework

In terms of theoretical concepts within instructional design practices, knowledge transfer is behavioral and cognitive based during lecture sessions but is more apparent with constructive principles, example during hands on practice application during lab sessions (See Figure 2). Applications of problem based and reflective learning approaches are required because instructors have the task of preparing students to meet challenges in the workforce industry.

As stated earlier in the introduction, DCD instructors have additional challenges in meeting a wide range of learning styles and needs. Instructors have to design multiple approaches that are applicable to the productive learning environment.

Learning in the Digital Communication Department (DCD) is controlled primarily by instructors. At the beginning of each course, the instructor sets course goals, lesson objectives and competency based testing or evaluations. Instructors are assumed to have both the knowledge and skills for subject delivery in both onsite and online classrooms. They have the responsibility of preparing course content and also ensure learning takes place in the classroom through their guidance and leadership. Students regard their instructors as the “expertise” expects knowledge be delivered to them. Most of the courses often begin with instructor-led teaching during lectures.

Constructivist based learning is apparent and needed due to the nature of the type of technology courses offered, which is learning how to utilize a particular software for design creation and development. Students are expected to work hands on approach with assigned problem-based projects or case based scenarios related to real world examples. Knowledge is constructed from hands on practice discoveries and in class discussions during question and answer sessions. The role of the learning shifts to learner-centered approach during discussion and interaction activities. Assignments and project presentations require that students share with the instructor and class ideas discovered during hands on, industry or work place experiences and research projects. In team based assignments, social constructs through the dynamics of learning how to work with each other is given emphasis. Team members are also required to discuss with one another, reflect and critically think about solutions selected during project challenges. The teams will then share with other teams about their discoveries. Again, knowledge sharing takes place in a learner-controlled environment but in a larger context. Instructors learn new ideas from learners as well.

Discrepancies

At DCD, while there is emphasis for the application for learning theories (See Figure 2), the type of courses, learning or workplace environment, learner needs and learning styles are variables that require mixed theoretical applications which thus results in a discrepancy of conventional learning theories (behaviorist, cognitive and constructive). A discrepancy analysis and summary indicating how DCD's teaching theories differ from the basic conventional learning theories are illustrated in Table 1.

Figure 2. Theoretical Framework Illustration.

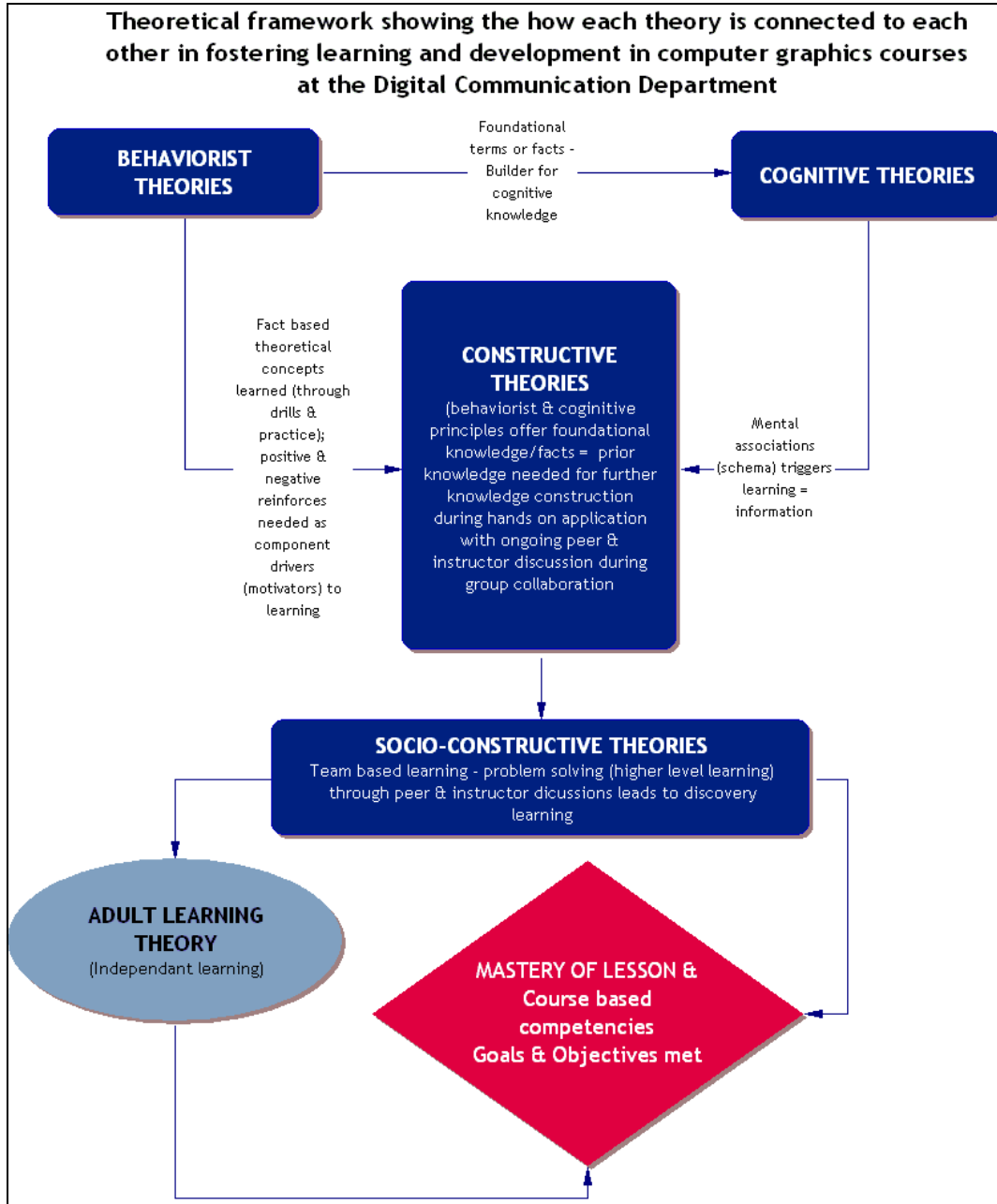


Table 1: Discrepancy analysis and summary indicating how DCD’s teaching theories differ from the basic conventional learning theories (behaviorist, cognitive and constructive).

Discrepancy Analysis		
Behaviorist theories		
DCD’s concepts	Theory	Discrepancy
Behaviorist principles use in DCD comprised of quizzes & exams incorporated into lesson plans to help build theoretical foundations and fact based knowledge. The used for such methods are used as drivers for knowledge foundation, & reviewing concepts.	Practice drills and exam quizzes are often used as measurement indicators of student’s progress not mastery of knowledge. Instructors do not have control over the questions and results of the tests or exams. Learning is fixed. There is no freedom for creative learning to take place.	Drills & practice can be technology driven (non-instructor led). Feedbacks from drills & practices do not just measure students’ abilities but can be programmed to offer supported reasons to why selected answers are incorrect. Thus mastery of knowledge can be enhanced.
Before incorporation of any exam, lectures offered though may be instructor led or instructor controlled, discussions are open to learners as well.	Behaviorism states that information is normally transferred from teacher to learner. Student absorbs knowledge through the use of reinforces (praise rewards or “punishment” – students have do work on additional homework or fail the course).	Learners (adult learners) in DCD come from a diverse community of professional careers. Most of them are knowledgeable on design concepts and already have some foundational or factual knowledge. The purpose of returning to classes is to upgrade graphic skills in new technology applications.

		Learners sometimes bring knowledge to the classrooms, thus defying behaviorist principles of a one way communication.
Often times, computer applications are used to help generate learning. Drill & practices (quizzes) are sometimes used as one of the knowledge building tools.	Learning behaviors are measured from assessment test results given from instructor lecture material. No mental activity is involved (McGriff, 2001).	Learning takes place from student’s work experiences, not necessarily instructor’s lectures. There is application of mental activity that takes place as learners draw knowledge from prior learning.
Cognitive theories		
DCD learners are visual learners and learn best when learning is related to past experiences.	Cognitive theory states that learners build the knowledge or information via mental associations.	No discrepancies within the theory itself, but is strongly associated to constructivist principles during programming type classes. Learning styles particularly in programming courses require teaching methods to utilize relational examples (most of the time visuals) to help build knowledge.
Constructivist theories		
Knowledge construction	Constructive theory states	The use of a “pure”

<p>normally occurs during shared and focused discussion among DCD learners and instructors. Knowledge emerges from the active dialogue in discussions.</p> <p>Before construction can take place, theoretical concepts and facts on basic graphic design concepts must first be implemented via instructor led lectures, quizzes & exams.</p> <p>Sometimes, the use of behavioral and cognitive theoretical principles used in collaboration with constructive methods to help drive learning. Also, critical thinking questions and discovery learning (design experimentation) are often used as additional tools during Mayer’s 2nd & 3rd phase of constructive learning.</p>	<p>that learners interpret their own knowledge based on experiences, personal interpretation of the world, shared dialogues and interactive activities during group collaboration. Results are not easily measured during open-ended learning experiences (Camargo, Hyde and Whigham. (n.d.). Mayer stated that the process for constructive learning involves the following processes (1) the selection (pictures and words), (2) organizing (cause-and-effect) of information and (3) integration of information built upon existing knowledge (1999).</p>	<p>constructive approach or as a stand-alone is not used. Often times, behaviorist (drills & practice exams) and cognitive methods are intermingled and applied to drive learning during the constructive process.</p> <p>Motivational techniques used as an add-on to constructive approaches from the behaviorist concept such as a reward praise (positive reinforces) can help drive learning to higher levels differs from the constructive approach.</p> <p>Critical thinking application or problem based approach along with discovery learning phenomenon breaks or extends the constructivist approach.</p>
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Literature Review

Technology and the Internet is changing rapidly everyday. This impacts current and future learners, instructors, instructional designers, technical support teams and institutions like DCD. The term “accelerated learning”, “rapid design” or “rapid e-learning” are common terms

used during the strategies of development and design process which focuses on delivery efficiency (Brandon, 2005). “Educators must think in a more creative and innovative manner and be receptive to new approaches to the educational process” (Hardaway & Will, 1997). Technology change calls for a reform in education (1997).

Learner centered designs in user interfaces along with collaborative pedagogical techniques such as learner-centered tasks and activities (Caroll, 1995), lifelong learning implications and knowledge construction in domain-oriented design environments (Fischer, 1995), change in educational design system for learning (Schank, 1995) are needed to meet changing needs for learners (cited in Guzdial & Kafai, 1995). A recent research report on educational technology trends by Susan Patrick, Director of Educational Technology from the U.S. Department of Education calls for new models of teaching, redesigning of curriculum and organizational structures. She states, “Students today are online, multitasking, highly productive. Students learn quickly, manage and are responsible for their own learning. They are online and ultra communicators. They learn new communication skills, learn just-in-time, and are digital. They are flexible, critical and creative” (Slide #6, 2005).

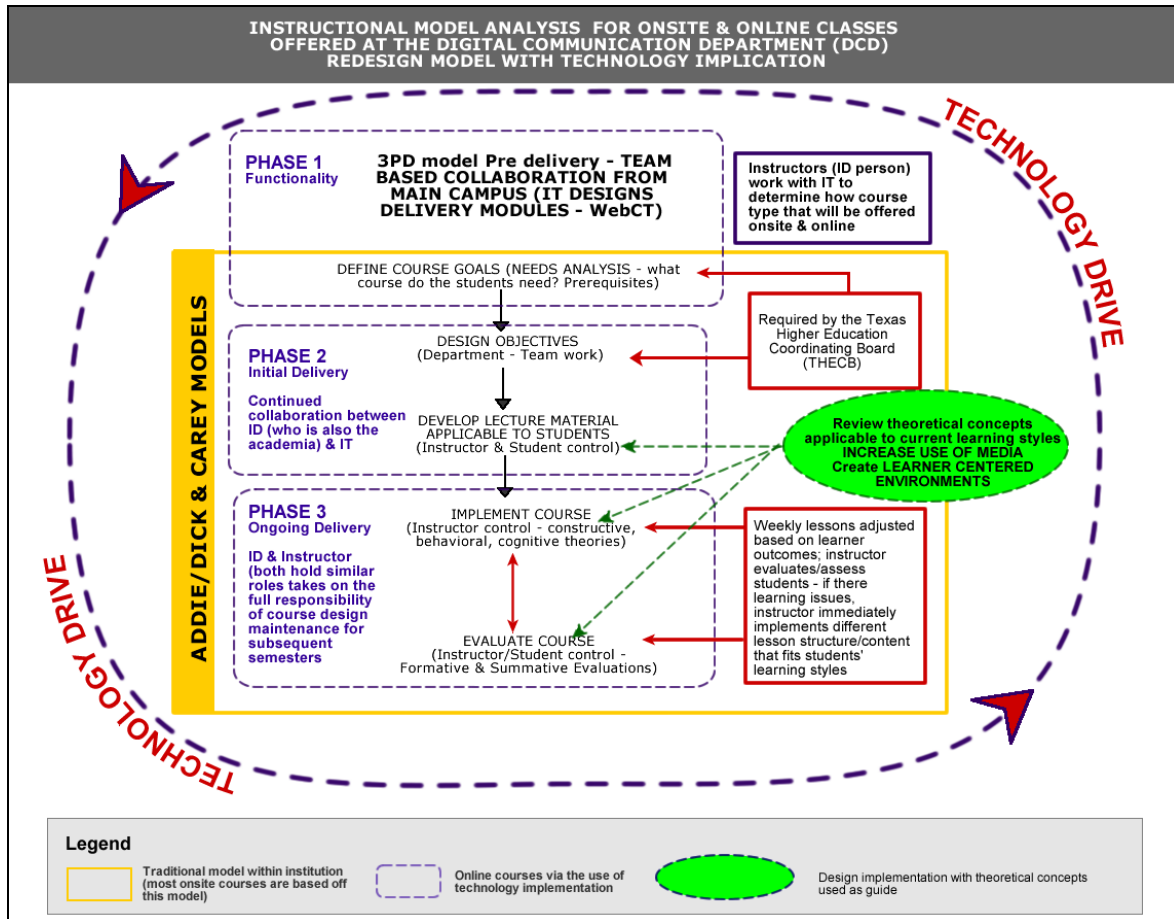
Technology Implications on DCD’s Future Instructional Design Model

It has been observed that the learning styles of recent dual credit students’ enrolled in DCD’s computer and design programs exhibit such characteristics and qualities. Due to technology implications, instructors at DCD must research and utilize applicable instructional methods in their course offerings including content type, evaluation and assessment methods.

A redraft of the instructional design model based on technology concerns for the future is carefully examined, and the following was noted. The overall model structure (design and evaluation strategies) remains the same, but the theoretical framework of learning will change to

a more learner centered community with increase use of technology resources (See Figure 3 below).

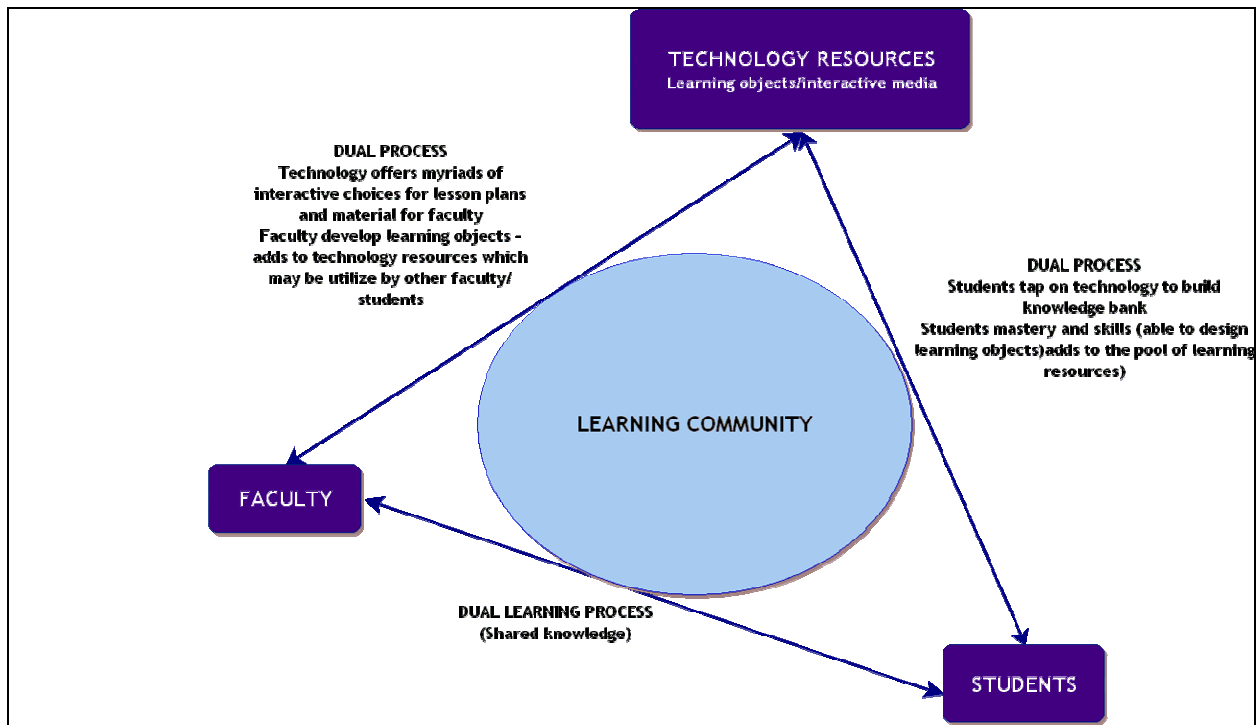
Figure 3. Instructional Design Implication for the Future with the Impact of Technology
 Source: Adapted from Sims & Jones (2003). Enhancing quality in online learning: Scaffolding design and planning through proactive evaluation & McGriff (2001) ISD Knowledge Base / Instructional Design & Development/Instructional Systems Design Models.



While ongoing needs analysis and reflective evaluations still in place, onsite courses will require faculty to utilize the web to place syllabi, curriculum and digital lessons as one of the technology practices. The increase use for e-textbooks and media references will also be implemented. The learning framework in DCD will change with a transition to a greater emphasis of learner centered communities through the collaboration of technology, faculty and

students (see Figure 4). Faculty will tap into technology resources for lesson delivery through the use of media prepared by other learning organizations. Currently, there are many organizations which provide free quality and learning object resources (modules with tutorials, interactive lessons, quizzes etc) such as Multimedia Education Resource for Learning and Online Teaching (MERLOT) and University of Wisconsin, Milwaukee, available for educational instruction. While resources are available, DCD faculty with the technology expertise will also be able to contribute to these organizations. One of the ongoing faculty projects which is currently taking place includes creating interactive media lecture and training material for the department. Students, particularly professional adult learners upon mastery of knowledge and skills learned from Internet resources and the DCD community can also become a contributor to the resource pool of learning objects.

Figure 4. Learning Process and Model of a Learning Community at DCD



A dual learning process shown in Figure 4) between faculty and student will take place as both participants exchange knowledge discovery. Faculty will continue playing the role of facilitator, monitoring learner's needs, reflecting, evaluating and implementing a nurturing environment for the students. In return, students who are enriched and motivated from instructor's facilitation as well as technology resources will be able to share new discoveries with faculty.

Conclusion

The analysis of current and future implications of instructional design with the implication of conventional learning theories at DCD and perhaps other institutions like DCD, indicates that design and learning models can evolve over time due to the impact of technology and the development of new learning styles. The strict order of ID design concepts such as ADDIE, Dick and Carey models or the Langevine Design Model by ASTD may be used, but a model must be customized with activities to meet learner's needs (see Appendix A). The building of learner centered environments calls for one where learning is not only confined within the course room but “design activities are also focused on what the learner will be doing to develop their knowledge, skills or attitudes” (Sims, 2005). While the framework of learning theories can offer guidance, according to Reigeluth (1999) as to what design methods and systems to use in a particular situations, this requires new approaches for design models, one which requires constant iteration of evaluation during the design process (example the 3PD model by Sims & Jones).

The next step in instructional design theory for the future generation calls for the need of more contemporary and innovative models due to the rapid evolving of technology and the Internet interventions which impacts global learning communities. Educational institutions and

training corporations, particularly those with traditional settings need to be ready to evaluate and revise course curriculum along with building effective frameworks and components for learning and training. Ongoing research on observations and studies must also be explored and conducted to find out what factors drive learning. This will ensure the building of effective learning systems and communities.

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Appendix A

Figure 5 showing Dick and Carey Model adapted from Lee & Lee (n.d.)

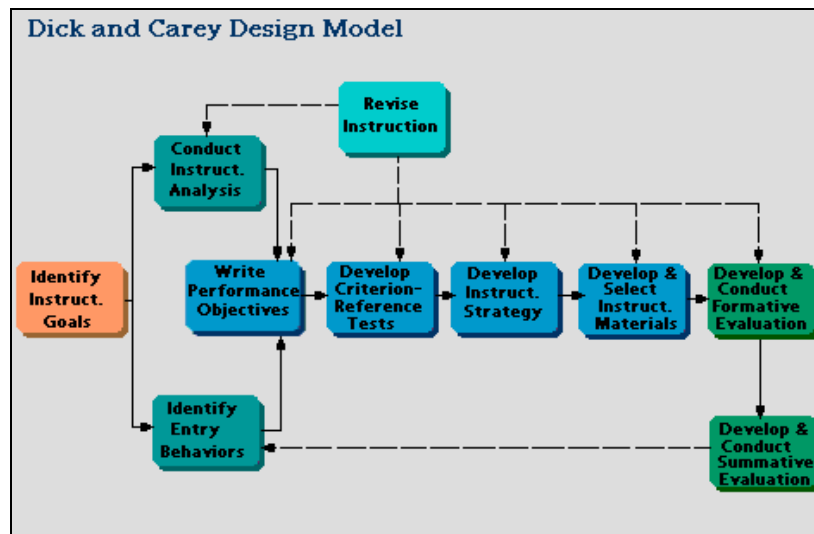


Figure 6 showing Langevin instructional design steps for traditional and distance learning (Blank, Hueftle, Stamatopoulos, Sumner & Tan, 2002)

