

# Enabling Effective Online Pedagogy for Higher Education

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# ENABLING EFFECTIVE ONLINE PEDAGOGY FOR HIGHER EDUCATION

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The task of building courses that follow instructional design best practices is tedious and perhaps even difficult for some. Many educational institutions have entire departments devoted to documenting their best practices and encouraging and/or teaching faculty to incorporate them into their online courses. Whether the issue is with time, lack of experience, or complexity of organizational policies, the development of effective online pedagogy doesn't always get the attention it deserves.

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There is a growing awareness of the need for communication among instructors, researchers and developers of standards and systems to ensure that eLearning systems are usable in flexible and appropriate ways that meet the needs of learners and enhance the learning experience.

There is a growing demand from instructors for effective guidance on good pedagogical practice, especially in designing activities and assessments (JISC InfoNet, 2009). The pedagogy of eLearning places more emphasis on the personalization of learning with each learner traveling their own learning path.

## ONLINE PEDAGOGY

There are many instructional design concepts and learning theories to consider. Some of these will be reviewed later in this paper. Important concepts that are typically stressed, especially for online courses, tend to include:

- Understand the goals and purpose of the course: where does it fit with other courses, what learning levels are focused on, what skills and knowledge are to be transferred to the students, what are the learning objectives required to achieve the goals of the course.
- Create assessments to measure the attainment of goals for the course and develop content to assist students in reaching the proficiency level, address different learning styles and ensure the course is engaging and informative.

The barriers to making use of online (distance, hybrid, web-enhanced) pedagogy to innovate and improve teaching and learning are not difficult to understand. Just as it took time to leave the chalkboard and move to an overhead projector, it takes time to move from traditional, face-to-face teaching to online teaching. One must initially get help and invest time learning the software and creating the courses. The initial investment in time will result in greater efficiency as well as the potential for innovation and improvement. It takes commitment on the part of all stakeholders involved if barriers such as time, money and resistance to

change are to be overcome and for instructors to see that online software, if used pedagogically, can lead to innovation and quality in education (Christie and Jurado, 2008).

## LEARNING PARADIGMS AND INSTRUCTIONAL DESIGN MODELS

Learning theories tend to fall into one of several paradigms including the following (Learning.theories.com, 2010):

**BEHAVIORISM** | Learner viewed as passive, responds to environmental stimuli; teacher-centered.

**COGNITIVISM** | Learner viewed as an information processor; instructor provides the structure for constructing individual knowledge, instructor and student share responsibility for active learning.

**CONSTRUCTIVISM** | Learner viewed as an information constructor; people actively construct or create their own subjective representations of objective reality; new information is linked to prior knowledge; instructors have to take the student from where they are and move them forward in an experience they value at the time.

**SOCIAL CONSTRUCTIVISM** | Learner develops meaning and understanding from social encounters (Vygotsky, 1962).

**HUMANISM** | Learner viewed as one with affective and cognitive needs; learning is student-centered and personal, facilitated by instructors, with the goal of developing self-actualized people in a cooperative, supportive environment; the instructor provides an abundance of resources from which the student can choose; interpersonal skills are highly developed; students become invested in their own learning.

Using these learning theories as the basis, various instructional design models have emerged that are typically used, in part or in whole, in traditional face-to-face classroom settings. As more and more educational institutions are basing decisions on academic analytics data, the quality of online courses is coming into question. The lack of online pedagogy is seen as a major cause for this lack of quality in online courses. Four of the most well known instructional design models that can enhance the quality of online courses include the ADDIE model, Kirkpatrick's Evaluation Model, Bloom's Taxonomy and Adult Learning Theory.

## The ADDIE Model

The ADDIE model was developed in 1975 by the Florida State University for the U.S. Army. It is a systematic instructional design model consisting of five phases: Analysis, Design, Development, Implementation and Evaluation ([Learning-Theories.com](http://Learning-Theories.com), 2010).

Each step has an outcome that feeds into the next step in the sequence. For an online course, these steps break down into the action items shown to the right ([ngolearning.org](http://ngolearning.org), 2010).

## Kirkpatrick's Evaluation Model

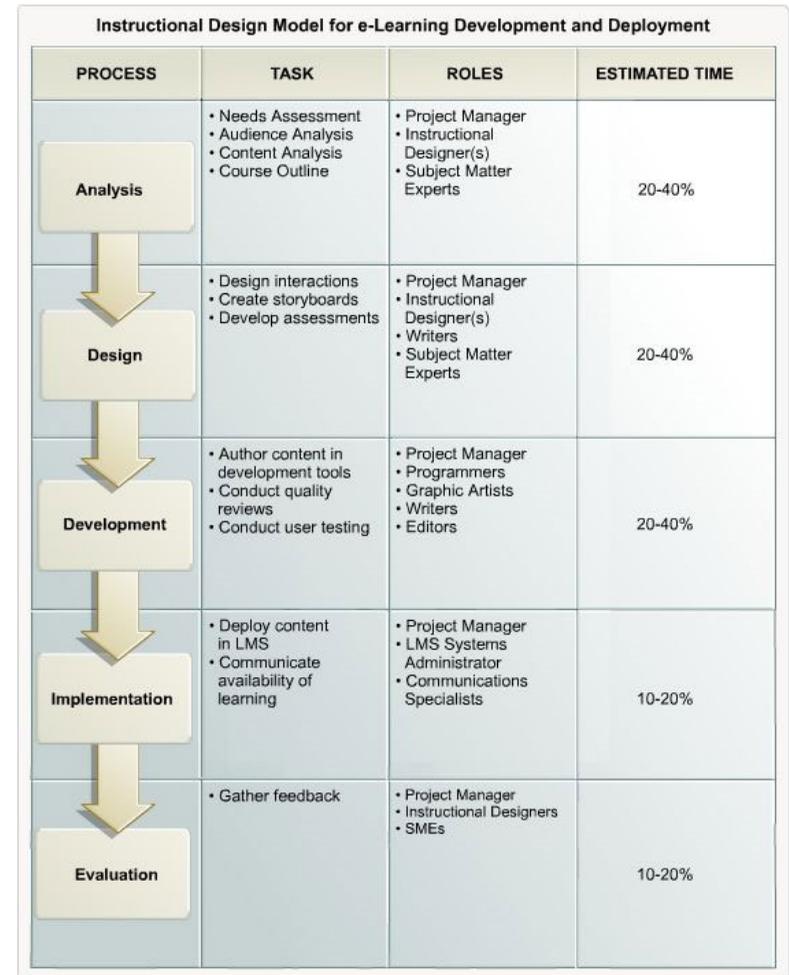
Perhaps the best known methodology for evaluation is Donald Kirkpatrick's (1959) Four Level Evaluation Model. The four levels of evaluation consist of:

**REACTION** | How the learners react to the learning process.

**LEARNING** | The extent to which the learners gain knowledge and skills.

**BEHAVIOR OR PERFORMANCE** | Capability to perform the learned skills.

**RESULTS** | Includes such items as grades, efficiency, moral, etc (Clark, 2008); how well a learner will incrementally impact positively the performance of an organization (Wikipedia, 2010).



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The Addie Model

### Bloom's Taxonomy (Cognitive Domain)

Program accreditation usually uses the concepts of Bloom's Taxonomy's Cognitive Domain (1956) and the revised taxonomy by Anderson and Krathwohl (2001) to determine whether or not students are achieving course and program expected learning outcomes. If learning objectives, course activities and assessments are properly aligned, then the outcomes (assessments) prove

that (Georgia Southern University, 2010). If Bloom's Taxonomy is understood, then an instructor is well on their way to developing a quality online course. This taxonomy provides a very clear formula for thinking about instructional design (Georgia Southern University, 2010):

Category	Definition	Related Behavior (Verbs)
<b>Creating</b>	creating something new by putting parts of different ideas together to make a whole	blend, build, change, combine, compile, compose, conceive, create, design, formulate, generate, hypothesize, integrate, modify, plan, predict, produce, reorder, revise, tell, write
<b>Evaluating</b>	judging the value of material or methods as they might be applied in a particular situation; judging with the use of definite criteria	accept, appraise, assess, arbitrate, award, choose, conclude, criticize, defend, decide, evaluate, grade, judge, measure, prioritize, rank, recommend, referee, reject, select, support
<b>Analyzing</b>	breaking something down into its parts; may focus on identification of parts or analysis of relationships between parts, or recognition of organizational principles	analyze, classify, connect, compare, contrast, diagram, differentiate, dissect, distinguish, identify, illustrate, infer, order, outline, point out, select, separate, sort, subdivide
<b>Applying</b>	using a general concept to solve problems in a particular situation; using learned material in new and concrete situations	apply, adopt, calculate, collect, complete, construct, demonstrate, discover, illustrate, interview, make use of, manipulate, relate, show, solve, use
<b>Understanding</b>	understanding something that has been communicated without necessarily relating it to anything else	alter, account for, annotate, calculate, change, convert, describe, explain, group, generalize, give examples, infer, interpret, paraphrase, predict, review, summarize, translate
<b>Remembering</b>	recalling or remembering something	define, describe, identify, label, list, match, memorize, point to, recall, select, state, tell

## ADULT LEARNING

Part of being an effective online instructor involves understanding how adults learn best (Lieb, 1991). With more and more adults retiring and returning to school to obtain the training for a second, encore career, adults returning to school for retraining for new jobs and/or skill enhancement and adults interested in life-long learning, adult learning theory is of vital importance. Malcom Knowles, who was highly influential in the field of adult learning, identified the following characteristics of adult learners (Knowles, 1990; Lieb, 1991):

- Adults are autonomous and self-directed; they need to be free to direct themselves; instructors must actively involve adult participation in the learning process and serve as facilitators for them.
- Adults have accumulated a foundation of life experiences and knowledge; they need to connect learning to this knowledge/experience base.
- Adults are goal-oriented; goals and learning objectives need to be set.
- Adults are relevancy-oriented; they must see a reason for learning something; again, instructors must identify objectives.
- Adults are practical.
- Adults need to be shown respect.
- Motivation is key (six factors serve as sources of motivation for adult learning—social relationships, external expectations, social welfare, personal advancement, escape/stimulation, and cognitive interest).

## STRATEGIES FOR INNOVATIVE COURSE DESIGN

The designing and development of effective online courses involves three main paradigms of learning including behaviorism, cognitivism and constructivism. The learning theories identified above, the pedagogical work of Chickering and Gamson's (1987) seven principles for good practice in education and Gagne's (1965) Nine Events of instructional design are also seen as important strategies for innovative course design.

Instructional design refers to the analysis of learning needs and the systemic approach of developing an online course in a manner that facilitates the transfer of knowledge and skills to the learner (Craven Community College, 2008). This is typically done through the use of a variety of instructional methods, which relate to multiple learning styles, strategies and preferences.

Robert Gagne, an educational psychologist, is known for his research into a systematic design and approach to instruction and teaching methods (Georgia Southern University, 2010). Gagne, who is considered to be the foremost researcher and contributor to the systematic approach to instructional design and training, developed The Nine Events of Instruction which has been adapted to apply to online courses. Gagne is a behaviorist and his focus is on the outcomes that result from teaching. The Nine Events, along with online instructional strategies, follow.

### 1. Gain attention.

Leading questions, present a dilemma, analogy, something controversial.

### 2. Inform the learner of the objectives.

List of objectives, rubrics, checklists, discussions.

**3. Stimulate the recall of prior knowledge.**

Review prior material, discussions, self-assessments.

**4. Present the stimulus material.**

Readings, lectures, websites, PowerPoints.

**5. Provide learning guidance.**

Guidelines, checklists, rubrics, discussions, deadlines.

**6. Elicit performance.**

Assignments, projects, collaborative group discussions.

**7. Provide feedback.**

Peer review/feedback, instructor review/feedback, practices quizzes, self-assessments.

**8. Assess performance.**

Finished product, quiz, presentation.

**9. Enhance retention transfer to new situations.**

Summarize, debrief, evaluate, reflect via ePortfolio (Gagne, 1965; Georgia Southern University, 2010).

Along with Gagne's Nine Events goes Chickering and Gamson's perspective of the seven principles for good practice in undergraduate education that are instructional guidelines applied to online eLearning contexts (Monsakul, 2008). The seven principles, along with online instructional strategies, include:

**1. Encourage contact between students and faculty.**

Announcements, discussions, homepages, profiles.

**2. Develop reciprocity and cooperation among students.**

Projects, discussions, peer evaluation.

**3. Encourage active learning.**

Participation in a course's community.

**4. Give prompt feedback.**

Gradebook, feedback from instructor and peers.

**5. Emphasize time on task.**

Tracking of students, user progress reports.

**6. Communicate high expectations.**

Course syllabus, learning objectives, competencies.

**7. Respect diverse talents and ways of learning.**

Assignments addressing variety of learning styles, surveys (Chickering and Gamson, 1987; Waterhouse, 2005).

Wouldn't it be great if the technology used to deploy online courses actually assisted an instructor in creating a good, effective and long-lasting online course and, at the same time, employed the appropriate learning paradigms and theories along with solid instructional design best practices?

Every type of online course development guide and rubric reviewed contains a good number of the Nine Events and seven principles in some fashion or another. Chao, Saj and Tessier (2006) have taken the above and created a blueprint for addressing online courses. Their framework consists of six independent but interconnected components:

#### 1. Curriculum design.

Deals with content which dictates the learning outcomes.

#### 2. Instructional design.

Deals with the connection among the learning outcomes, course activities, teaching strategies and use of media and technology.

#### 3. Web design.

Important because learners interact with content, the instructor and other learners through this interface.

#### 4. Teaching and facilitation.

The art of carrying out the curriculum and instructional design plan.

#### 5. Learning experience.

Learners are the ultimate beneficiaries of the desired learning outcomes.

#### 6. Course presentation.

Addresses functionality, consistency, grammar, and look and feel of the course.

The University of Southern Mississippi (2010) provides an online course development guide and rubric that covers similar areas such as Syllabus Recommendations, Design of Instruction, Course Structure and Organization, Learner Support and Resources, Learner Interaction and Collaboration, Effective Use of Course Technology and Assessment and Evaluation. The Illinois Online Network (2006) has an extensive Quality Online Course Initiative Rubric that is in line with Gagne's Nine Events, covering Instructional Design; Communication, Interaction and Collaboration; Student Evaluation and Assessment; Learner Support and Resources; Web Design and Course Evaluation.

Unfortunately, not all educational institutions provide such detailed guidance on how to create effective online courses and many courses are designed without fundamental instructional design techniques in mind. This often results in confusing content and a course that has lost its effectiveness, efficiency and appeal (Michigan Virtual University, 2010).

Building an online course takes a great deal of time and effort and without proper planning and design, a large portion of the course will have to be redeveloped and redesigned for the next offering. If planned and designed properly, an online course can be offered relatively intact from semester to semester and major reconstruction can be largely avoided.

## DESIRE2LEARN® LEARNING ENVIRONMENT INSTRUCTIONAL DESIGN WIZARD AND COURSE BUILDER TOOLS

Studies about Learning Management Systems (LMS) tend to focus on their ease of use, their features and how they address the standard areas of importance noted above. Few discuss the ways in which they influence and guide pedagogy.

Lane (2009) argues that even though learning management systems (LMS) have a built-in pedagogy based on both instructivist and constructivist principles, few faculty use these features or even adapt their LMS very much despite the customization options. This is because most instructors do not work or play much online and, thus, utilize web based systems at their basic level (Lane, 2009). The defaults of an LMS tend to determine the way novice faculty teach online, encouraging methods based on posting of materials and engendering usage that focuses on administrative tasks (Lane, 2009).

Desire2Learn® Learning Environment has taken learning management systems to an entirely new level by breaking the barrier to innovation in online pedagogy that will assist not only the novice instructor but the seasoned faculty and instructional designers as well. By combining Objectives, Learning Activities and Assessment in the new Instructional Design Wizard and Course Builder tools, a learning management system, for the first time ever, can actually assist an instructor in creating a pedagogically sound, effective online course.



Desire2Learn Incorporated's View of Pedagogically Sound Online Course Components

Desire2Learn Instructional Design Wizard enables organizations to save time and increase the quality of courses by simplifying and streamlining the course development process over an instructional design framework. By focusing on the constructivism model and structuring the Analysis and Design sections of the ADDIE model, a sound blueprint on which to build courses is provided. Depending on the course philosophy and objectives, pedagogically sound courses can be built focusing on the behavioral and cognitive models as well. This key Learning Environment tool ensures the alignment of assessment and instructional strategies with course objectives classified using the Cognitive Domain of Bloom's Taxonomy. By building on Competencies and other Learning Environment tools, the Instructional Design Wizard walks users through the creation of pedagogically-sound courses organized by modules containing a variety of learning experiences focused on appropriate learning levels. It leverages the range of assessment and content delivery tools in Learning Environment to power its steps and outputs. The Instructional Design Wizard is useful for new course development by individuals or teams, and also for existing courses to incorporate an analysis and design process.

After running through the Wizard, designers will have created:

- A course blueprint containing detailed module plans with the structure and placeholders for assessment and content activities clearly aligned to objectives
- Activities classified by learning strategies (direct instruction, indirect instruction, group learning, experimental learning and independent learning) (Saskatoon Public Schools, 2009)
- An objective-based assessment shell in the Competencies tool
- A grades-based assessment shell in the Grades tool
- From there, the Course Builder tool can be used to create materials, populate placeholders, and complete the course design and implementation.

### 1.0 Define Learning Goals

- 1.1 Outline and list the modules to be developed in the current Wizard session
- 1.2 Define and list the competencies / goals for those modules
- 1.3 Classify and list the learning objectives
- 1.4 Define module objectives

### 2.0 Choose Activities

- 2.1 Define and categorize assessment activities aligned to objectives
- 2.2 Define and categorize content activities aligned to objectives

### 3.0 Organize Gradebook

- 3.1 Define Gradebook settings / choose grading system
- 3.2 Create Gradebook categories for assessment activities

### 4.0 Review Course Design

- 4.1 Review Information collected
- 4.2 Review Wizard output and finish

#### Desire2Learn Instructional Design Wizard's Categories and Steps Involved

The instructional design concepts and best practices that these tools are promoting include:

- Understanding the learner personas
- Documenting desired outcomes and learning goals; mix of knowledge, comprehension, application, analysis, synthesis, and evaluation objectives (Bloom's Taxonomy)
- Providing an appropriate mix of instructional strategies (including direct instruction, collaborative learning, independent learning, and experimental learning)
- Creating a variety of learning experiences—both content-focused and application-focused—using the available tools and technology in different ways
- Including an appropriate measurement and assessment strategy; diagnostic, formative, and summative assessments

Created as part of a multi-year, multi-million dollar research and development project through a partnership between Desire2Learn Incorporated (Desire2Learn), the Université de Moncton, and the National Research Council of Canada as part of the SynergiC3 project (<http://www.synergic3.com>), the Instructional Design Wizard and Course Builder tools apply years of instructional design research and incorporate best practices employed by instructional design groups at leading institutions around the world.

Desire2Learn Learning Environment proves it is much more than a Learning Management System; it is a system in which faculty can break through the barriers of effective online pedagogy, students can manage their learning and the institution can help more than ever ensure student success!

## CONCLUSION

There are many ways to engage students in the online environment and quality educational programs begin with quality courses. In online courses, the instructor takes on the role of a facilitator while the students take on more responsibility for their own learning. Using the learning paradigms and theories identified in this paper as well as the instructional design modules and strategies, quality courses can be created. But, as stated previously, not everyone has this inherent knowledge and may need assistance in making effective, quality online courses.

Desire2Learn has taken learning management systems to an entirely new level by breaking the barrier to innovation in online pedagogy that will assist not only the novice instructor but the seasoned faculty as well. By combining Objectives, Learning Activities and Assessment in the new Instructional Design Wizard and Course Builder tools, an LMS, for the first time ever, can actually assist in the creation of pedagogically sound, effective online courses.

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## About Us

Desire2Learn includes Desire2Learn Incorporated and its subsidiaries.

Desire2Learn is a global provider of enterprise eLearning solutions enabling leading institutions and organizations to create teaching and learning environments that support them in realizing their vision.

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