

# An Overview of Teacher-Designers: How Teachers Use Instructional Design in Real Classrooms

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## INSTRUCTIONAL DESIGN IN REAL CLASSROOMS

“I’ve learned how to use the [insert new instructional technology here], so now how do I use it in the classroom?”

From filmstrips and mimeographs, to computer-based simulations and virtual reality, technology seems to dominate teachers’ lives as they master the new instructional media for use in their classrooms. Good teaching and learning practices tend to take a back seat while the focus on mastery of the technology reduces teaching into basic presentations and lectures, a format most easily controlled by the instructor. While most pre-K-12 and post-secondary instructors do develop effective courses in which students learn, many would be hard pressed to describe *how* they arrive at certain goals and teaching strategies.

The field of instructional design provides sound practices and models that, once modified for use by working teachers, can be used to design effective instruction in any content area (Rogers, 2002). The more difficult issue is helping teachers move beyond the tendency to focus on technology rather than instructional goals. Such focus occurs at lower levels of what can be described as a technology adoption hierarchy (summarized in Table 1): familiarization, utilization, integration, reorganization, and evolution (Hooper & Rieber, 1999).

*Table 1: A Summary of the Technology Adoption Hierarchy*

EVOLUTION	Highest level: is most able to cope with change and has skills to adapt newer technologies as needed or desired in teaching and learning environment.
REORGANIZATION	Re-designs teaching strategies with focus on learning and goals of instruction. Students become more involved in the learning environment.
INTEGRATION	Beginning to accept the technology. Focus soon shifts from learning the technology (and fearing its breakdown) to effective use of the technology in teaching.
UTILIZATION	Basic trial of the new technology. Focus is on finding a use for the technology that may or may not continue, particularly if the technology breaks down.
FAMILIARIZATION	Lowest level of exposure to a technology.

Somewhere at the integration stage, a “magic line” is crossed and the focus is no longer on the technology but on the teaching and learning. A supporting practical design model can help teacher-designers cross this magic line more efficiently and with a high degree of success.

### A Modified Instructional Design Model

Prescriptive behavioral models in learning would seem, at first encounter, to be inappropriate in light of the more constructivist practices of current educators. However, most constructivists would concur that one must have solid building blocks or elements before construction of new knowledge can be achieved. Dick and Carey’s (1990) original systems design model and subsequent modifications by Gagné, Briggs and Wager (1992) and others offer examples of all of the elements necessary for designing and evaluating effective instruction. What the models lacked, however, was a connection to real classroom teachers: those of us who are really teacher-designers and who must create and develop our courses without benefit of design teams and lengthy pilot tests with target audiences.

Figure 1 is a modification based on several interpretations of the most typical instructional design model(Dick & Carey, 1990). Notice that the five phases of design: analyze, design, develop, implement, and evaluate are focused not on designing teacher-proof curricula but rather on teacher-designers staying focused on their own environment and learners.

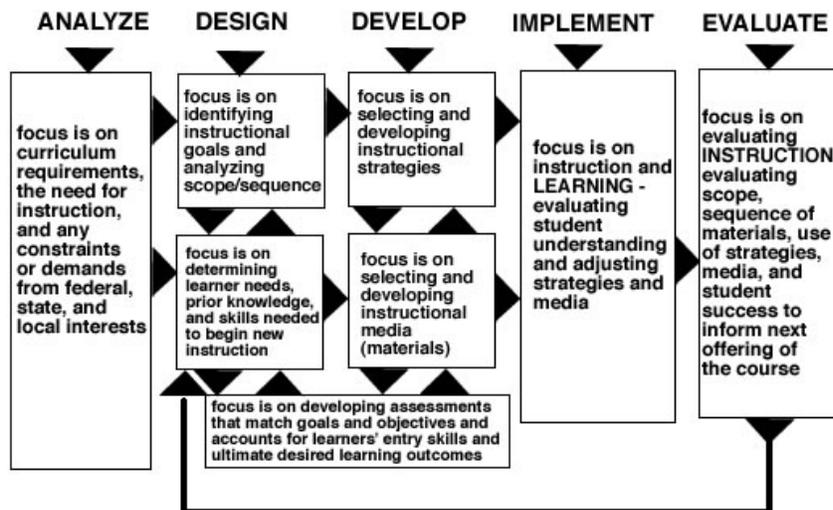


Figure 1. Modified instructional design model for teacher-designers. Modifications first introduced in *Designing Instruction for Technology-enhanced Learning*, Rogers, 2002, Idea Group Publishing. Further modifications by Patricia L. Rogers and Catherine E. McCartney, Bemidji State University, for the Online Graduate Program, 2002-2003.

The model helps teachers begin with the constraints, issues, community demands, and state and federal mandates before thinking about instructional media or “activities.” Once parameters are identified, teacher-designers move into the design phase as they document the over all goals of their course (or, in the case of primary teachers, their school year) while simultaneously considering their learners. What does it mean to be a 3<sup>rd</sup> grade person? What skills should learners

have as they move into 4<sup>th</sup> grade? What new knowledge is gained in 4<sup>th</sup> grade to allow learners to become 5<sup>th</sup> grade students? And so on.

Within this phase, assessments are also considered. Effective design, as well as effective teaching, requires teacher-designers to carefully match goals and objectives to appropriate assessments. Desired types of learning, from basic verbal information to higher order thinking skills (Gagné, Briggs, & Wager, 1992) must have matched assessments that allow learners to demonstrate their new skills and abilities. Mismatched goals and assessments are common errors in designing instruction.

Using this model essentially forces us to wait until the development phase to select teaching strategies and instructional media. For those teachers who are struggling to leave the lower levels of the technology adoption hierarchy, this placement will seem uncomfortable. However, starting with the technology and trying to build an instructional environment is, as should be apparent, in essence turning the design process inside out! Once the focus is away from the goals and objectives and the *learners*, any further course development will likely result in a design that falls far short of the intended learning:

I am elated that I had the opportunity to work on curriculum design for the first time the right way and with a group of faculty members who supported my learning. I have watch[ed] part-time faculty members and even seasoned classroom teachers jump into material they are not familiar with, plan day by day, never really having clear objectives and methods of evaluation [in mind].(A. Vidovic, personal communication, July 30, 2003)

Notice that the development of assessments also crosses this phase of the design. It is critical to select strategies and media that support the goals and objectives as well as allow students to demonstrate their understanding. Using strategies and media that are similar to the assessment situation strengthen the learning. For example, if students are learning to write poetry, a true-false test would be a very inadequate measure of their skills.

Implementation, *teaching*, is the phase of a teacher-designer's true test. It is here that this model is quite different from traditional instructional design models in that teacher-designers rarely have a chance to "try out" a course on a sample of students. Rather, they often have to simply try things and hope it all works well. However, by following the model thus far, teacher-designers have an advantage over others who do not have clear goals and objectives in mind. During this phase, student achievement and perhaps student evaluations of the course should be examined as evidence that all elements of the design thus far actually form a cohesive course that meets the goals of the instruction. Teacher-designers should take notes on a daily basis regarding which strategies are working with learners, which activities supported new learning, and which instructional medium was appropriate for certain types of learning.

The evaluation phase in this model relies heavily on the evidence from the previous phase and includes a critical look at any notes from the teaching experience, comparison to a previous experience teaching the course, and so on:

In designing and developing this online class using the first couple assignments (objectives, goals, subgoals, etc.), I really feel like [my] course's material fits

together much better than it has when I taught it in the past. Though this [instructional design] process took a fair amount of time, I know I would never tackle another class design without using this process first. It does seem to speed up the material/content piece considerably by doing this first. (N. Gregg, personal communication, July 28, 2003)

## **B A R R I E R S   T O   D E S I G N I N G E F F E C T I V E   I N S T R U C T I O N**

By following a model that is based in practical, real world experiences of teachers, teacher-designers are able to develop effective and well documented instruction. However, we should note that there are many reasons good instructional design practices are not followed, and that most are out of the teacher-designer's control. Table 2 is a summary of some of the issues and barriers faced by teacher-designers.

*Table 2: A Summary of Barriers to Designing Effective Instruction*

### **Fear of change**

Changing teaching methods (strategies) to accommodate newer technologies, different modes of delivery, and the reality of managing a larger student market carries a certain amount of risk and challenge. The human tendency to want things to remain the same introduces a fear factor in designing and delivering instruction in the 21<sup>st</sup> century (Dublin, June 2003).

### **Unfamiliarity with newer technologies**

The introduction of newer technologies in teaching usually results in teachers defaulting to presentations and lectures. Once the "magic line" is crossed, teaching and learning with technology refocuses from the technology to learning (Dublin, June 2003; Hooper & Rieber, 1999; Strauss, June 2003).

### **Correspondence, Lecture, and Interactive Learning**

Real classrooms rely on interactions among students and the instructor. Some online courses are actually stand-alone correspondence courses that are self-paced and lack high interactivity levels. Lecture courses tend to be one-way communications while other strategies emphasize interactivity. There is a critical need to be clear about levels of interactivity in learning environments (Cavalier, June 2003).

### **Ill-defined goals and objectives**

Defining goals and objectives is often a new experience for many faculty. Goals and objectives may not match teaching style or adequately address desired learner outcomes.

### **Unrealistic administrative, policy, or economic pressures**

Some teachers have encountered serious constraints when designing instruction. A partial list includes: forced use of traditional "activities" that become the central focus of the instruction, district-wide adoption of specific texts or programs designed to be "teacher-proof" with little flexibility, limited development time for teachers, and a focus on state-wide test scores directly tied to school funding (Rogers, 2000).

### **Difficulty in translating from one environment to another, such as onground to online**

Moving a course from onground delivery to the online environment sets up barriers for inexperienced teachers: some try to limit all transactions to real-time and have a felt need to recreate their onground course exactly. Others err on the other side and resort to a type of glorified correspondence approach.

## **C O N C L U S I O N**

A strong case can be made for working with teacher-designers at all levels of education on sound instructional design practices. “Winging it” when it comes to designing effective instruction is ill-advised in the rarified air of the 21<sup>st</sup> century knowledge and information age. Educational institutions, particularly colleges and universities, are faced with harsh competition for the teaching aspect of their institution from for-profit companies. Such companies outspend higher education in development, maintenance, and marketing of educational offerings, particularly in online learning (Rogers, 2001). Non-profit educational institutions can compete most effectively by providing (a) affordable pricing, (b) greater accessibility to education, and (c) high quality, personalized educational experiences for their learners. A and B are usually easily attained. High quality education (c) begins with great teachers and support staff and is built and sustained with solid instructional design practices.

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## Terms and Definitions

**ADDIE:** The five phases of most instructional design models: Analyze, Design, Develop, Implement, and Evaluate. Some models follow the phases in a linear fashion, while others may approach the phases in a holistic or phenomenologic manner.

**elearning:** A term used to describe learning that takes place usually online, but includes all forms of electronically-enhanced and mediated learning. Computer-aided instruction, just-in-time learning, and intelligent systems can be included in the term “elearning.”

**Instructional Design Models:** Traditional design models are prescriptive step-by-step processes, usually associated with behaviorist instructional strategies. Phenomenological models

incorporate constructivist philosophies and practices. In either aspect, design models guide the user in designing effective instruction that takes all aspects of design (see ADDIE) and reminds the user of critical elements and decisions in designing effective instruction.

**Instructional Design:** The field of instructional design includes a range of professions from programmers and graphic artists, to the instructional designer. Designers are able to analyze instruction, learners, environments, strategies, and media to develop effective instruction of training. Designers may or may not be subject matter experts.

**Instructional (Educational) Technology:** Instructional Technology is the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning (Seels & Richey, 1994).

**Teacher-Designer:** "...if you have any experience with instructional design you know that the field and the various models of design associated with it seem most appropriate for teams of people working on the course materials together. Once in a while, some of us are fortunate enough to have instructional designers, subject matter experts, graphic artists, programmers and so on available on our campus or in our school district to assist us with our technology-enhanced course. But most often, it the teacher alone who must rethink and redesign his or her course for technology-enhanced learning. And very often it is the teacher who must also prepare the materials for the Internet, interactive television, or some other delivery medium. They often do not have any background in instructional design theory or practices and have only just mastered the skills for using the delivery medium. These are the people I call 'teacher-designers'" (Rogers, 2002, p. 2).

**Technology Adoption Hierarchy:** "The model...has five steps or phases: familiarization, utilization, integration, reorientation, and evolution. The full potential of any educational technology can only be realized when educators progress through all five phases; otherwise, the technology will likely be misused or discarded...The *traditional* role of technology in education is necessarily limited to the first three phases, whereas contemporary views hold the promise to reach the evolution phase" (Hooper & Rieber, 1999, p. 253).