

A Comparison of Three Instructional Design Models

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Since the beginning of time, instructional design can trace its origins back to the famous philosophers Aristotle, Plato and Socrates. Sir Thomas Aquinas, in the thirteenth century, further extended the early thinking philosophy of the cognitive basis of learning and theory. His work focused primarily on teachings in terms of free will thinking. Beyond that, instructional design has since evolved; inheriting its broadness from not only the early thinkers, but John Dewey, Thorndike and Pressey all had a role in helping to develop an ever changing process, as well. As these scientists, educators and doctors would employ their slant onto what instructional design is or was, it was not until the early 1960s that Robert Glaser would synthesize all of these schools of thought and give instructional design its official term, thereby linking learner analysis to the design and implementation of instruction (Leigh). What exactly then, is instructional design? With a history that spans beyond a century, several definitions have come forth and are as debatable as they are relevant to the instructional design models of today. According to Richard Culotta on the website coined the name instructional design, the definition is clear. It is considered to be “the process by which instruction is improved through the analysis of learning needs and systematic development of learning materials. Instructional designers often use technology and multimedia as tools to enhance instruction.” This definition is in collaboration with that of Kent Gustafson and Rob Branch, and should also be considered a systematic process that is employed to develop education and training programs. In my own estimation and experience, instructional design can be considered all of these things and more. After looking at several of the design models that are to be compared, an instructional design model can also be considered to be a process based upon a philosophy and/or theory that provides a basis for delivering instruction, understanding what is necessary to make instruction happen, and having a prescriptive model/process for carrying out the methods and procedures in an instructional

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capacity. It can also be looked upon as being the mechanism or vehicle that serves as the methodical approach as to how we should or could teach. Three instructional design models seem to provide some clarity and support to these definitions of instructional design and instructional design models. By reviewing the models of ADDIE, the Understanding by Design (Backwards Design) approach, and Concept Mapping, one can truly gain a better understanding of what is meant by terms that are both separate and interchangeable.

It is not known as to whom was the originator of the ADDIE model, but it has received some of its refinement by notable instructional designers Dick and Carey and others. It is a five-step systematic design model consisting of five phases that support the acronym of the model's name and is probably the most common design model at this point. To date, there are at least one-hundred variations of the model. To look closer at this model, its five steps consist of Analysis, Design, Development, Implementation and Evaluation. Each component feeds into the subsequent steps of the process.

With the analysis phase, the instructor looks at background knowledge and takes into consideration any possible learning constraints that may exist or arise during the lesson. Any possible instructional problems are also clarified. With the design phase, the objectives, assessments, and content/subject matter are analyzed. According to Dr. Malachowski, the design phase is also concerned with looking at the three objective domains and determining what resources are available to carry out the lesson (2002). With respect to the development phase of the ADDIE model, several questions must be addressed within this phase in order that it is an effective process. Answers should address whether the learner's needs have been sufficiently analyzed and if the instructional goals and objectives were appropriate for the learner (2002). The implementation phase is where the learner practices what they have learned after being

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shown a series of demonstrations. Evaluation can be in the formative or summative and considers whether the instruction was effective in facilitating learning and helps to gauge whether or not modifications need to be made to the instructional package.

With the Understanding by Design model, Grant Wiggins and Jay McTighe emphasize the importance of the instructional design be focused on the learner obtaining understanding as a result of the backwards design approach. In fact, in the second edition of *Understanding by Design*, the dual purpose of the model is to “clarify the goal called “student understanding” while exploring the real world of teaching (2005, p. 4). The Understanding by Design model uses a question format rather than measurable objectives. There are three basic stages to this model. Stage one involves identifying the desired results. With this stage, goal and objectives are defined that are long term (enduring understandings) to support learning that will endure over time, beyond the classroom. In stage two, the focus is on determining acceptable evidence. By considering the ultimate outcomes wanted for students, not merely content to be covered. This approach “encourages teachers and curriculum planners to first “think like an assessor” before designing specific unit and lessons, and thus to consider up front how they will determine if students have attained the desired understandings” (18). The last stage looks at planning and instruction from the perspective of deciding how to best prepare the students for learning mastery.

Concept Mapping is the model that distinguishes between rote and meaningful learning. It is a technique for representing knowledge in graphs. The knowledge in the graphs is made up of concepts of networks. The graphical tools used are for organizing and representing knowledge. They include concepts, enclosed in circles, boxes of some type, and relationships between concepts indicated by a connecting line linking two concepts. The model was developed

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by Cornell University's Professor Joseph Novak in the 1960s. The model was initially based upon the theories of David Ausubel who stressed the importance of prior knowledge in being able to learn about new concepts. Novak felt that "meaningful learning involves the assimilation of new concepts and propositions into existing cognitive structures" (Canas and Novak, 2010). With this model, it should also be noted that meaningful learning requires three conditions. The first condition is that the material must be conceptually clear and presented in a language with examples relatable to learners. The second condition is that the learner must possess relevant prior knowledge and third, the learner must choose to learn meaningfully (Lansing, 2010).

There is value in all three models as the learner and society continue to evolve. There are basic similarities and differences with all three models that merit their significance in education. In looking at them individually, the ADDIE model is very basic and simple. It was one of the first design models and as a consequence, has been the subject of many versions and weaknesses such as not providing accommodations for good ideas, and having creativity nuances. The steps, however, are cyclic and easy to follow as if it was a recurring process. With Understanding by Design, the process is more involved in terms of the procedure. The learning unit is looked at as a whole. The big picture is the focus with everything else being planned around it. Because you begin with the end in mind, the activities are at the center of the planning itself, but the smaller, specific pieces of the unit come together towards the end. Concept mapping involves looking at the learner's existing knowledge and how it uses that knowledge to organize information into a format that is meaningful and useful to the learner. The knowledge is built upon over time.

As a teacher, instructional design and instructional design models are critical as education and expectations within the field continue to evolve. The models are destined to change and adjust along with education itself. As a teacher and future media specialist, I see my role in the

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same light-one that will evolve with the changes. It is very critical that I look at the learner first in light of the work setting that would include the school system and school itself. Many instructional models can have a place within various settings; however, I think that it becomes vital that a plan be customized to meet the needs of the environment in which I am committed to work. As with the three models identified, there are positives that exist, as well as challenges. An understanding of the models and how they would best serve the stakeholders is what should drive the choice to select one over the other. The main point to consider would be to discuss and determine based upon the local need, through which model would our students and staff thrive best based upon the mandates of the school system and local community? Once that is determined, the model can be considered and utilized to best serve the learner. Through this process, new strategies and design models are sure to spring forth from the existing models as modifications and new considerations are provided.

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