Affective Component Display Theory:

Marrying Merrill and Keller

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There is certainly no shortage of Instructional Design models in the field. Every design has a specific function, and while many are prescriptive, others are phenomenological, and still others are hybrids, picking and choosing from the Instructional Design smorgasbord to find what combination works best. So, once again, two distinct and well-known models, this time by M.D. Merrill and J. Keller, have been married to create the Affective Component Display Theory (ACDT) demonstrated here.

Merrill and Keller both have well-established models, but in different realms of instructional design. As explained by the Encyclopedia of Psychology website ("Component Display," n.d.), Merrill's CDT model "specifies how to design instruction for any cognitive domain." Keller's ARCS Model of Motivation, according to Instructional Technology Global Resource Network ("Keller's ARCS," n.d.) online, is to "understand and model the influence of effort and the contributors to effort" otherwise referred to as the Affective Domain.

Commonly done, mergers between models of differing domains reflect the needs that training humans require: a way to establish goals, performance objectives, and how to get learners *actively, willingly, and lastingly* involved in the learning process. This is the same goal of the Affective Component Display Theory model proposed. Taking the rather open methods of delivering instruction using CDT and combining it with the ARCS model should reap benefits similar to other cognitive-affective models: to actively engage and excite the learner while meeting the performance criteria or learning objectives proposed.

Implementation of the ACDT is fairly simple (also see Appendix A). Generally, the steps for use of the ACDT model are as follows:

1. Generally determine what you want the learner to know.
2. Analyze what type of knowledge it is. (Fact, Concept, Procedure, Principle)
3. Analyze what performance you want to elicit from the learner. (Find/Discover, Use/Demonstrate, Remember/Characterize)

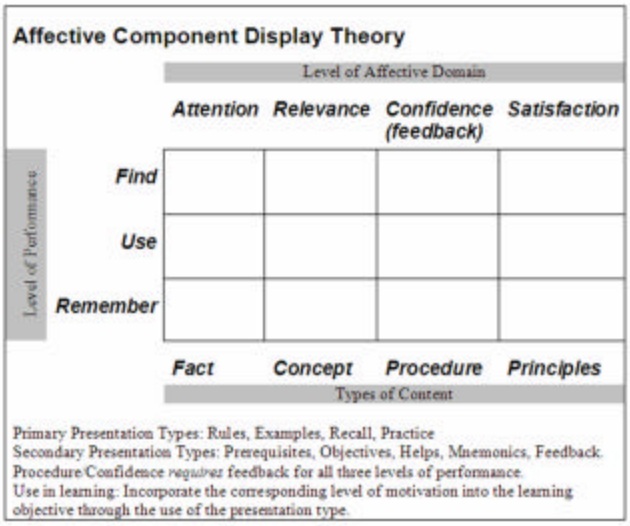

Figure 1. A marriage of Merrill's CDT and Keller's ARCS model to produce learning that is actively, willingly, and lastingly involved through learner-centered objectives.

4. Determine which primary and secondary presentation types might work best—combinations are possible and encouraged. (Rules/Definitions, Examples, Recall, Practice, Prerequisite learning, Objectives, Helps, Mnemonics, Feedback)
5. Incorporate the corresponding Affective Domain as part of the learning objective (Kruse, 2004):
    a. Attention—would this task be interesting? Why?
    b. Relevance—how does this task apply to the learner? Give examples.
    c. Confidence—does the learner exhibit desirable outcomes for this task every time? How so?
    d. Satisfaction—does the learner not only demonstrate compliance, but also reinforcement of the task or task ideals? Give examples.

Further breaking down the ACDT and following the processes set forth by Merrill (Jacobs, 1999) "the first step is to identify the performance level and content classification." This means looking at what it is the learner is to know. Is it a fact, a concept, a procedure, or a principle? Now, ask, "What is the learner to find, use, or remember?" For each bit of knowledge or task the learner is to know, the learning objective can begin to be built. If the general task is to **learn about** American Independence, a specification can be made as to whether it's a fact or concept learners ought to know. If the learner is to know **when** America gained its independence, then it can be assumed that it's a fact that the learners are to find. Therefore, a learning objective to have students find the specific date of America's Independence would next beg the question as to how the task is to be done. (What Presentation Types are needed?) Will it be by definition (Rules), Examples, through recollection (Recall), or because of Practice that the learners will obtain the answer?

This makes a difference, which is why Jacobs (1999) writes Merrill's "second step is to examine the primary presentation forms." As seen in the Affective Component Display Theory (Figure 1), there are primary and secondary forms of presentation. This begins to shape the instructional strategy of delivering the information.

Consider that if the learner is to be tested from memory on the same fact used earlier, learners would need a learning objective corresponding to the performance of remembering that fact. Aligning the tasks and knowledge to the learning in this manner provides a clear and straightforward manner in which to develop learning objectives with expected outcomes. None of this is terribly new. Found in various prescriptive models,

the process to establish the best learning method is somewhat redundant. The difference here in developing the learning objective lies within the inclusion of the affective domain.

Incorporating Keller's ARCS Model of Motivation, the levels of motivation involvement, ARCS, have been directly tied into corresponding Types of Content, and evenly distributed across all CDT Levels of Performance (see Figure 1). ITGRN's page ("Keller's ARCS," n.d.), describes using Attention to "increase perceptual arousal with the use of novel, surprising, incongruous and uncertain events." Attention, while important in all learning, is also the more superficial and short-lived of the motivators. Considering that facts and concepts are less vested types of learning, it makes sense to group Attention with Fact: Finding, Using, and Remembering. An example presentation type, of mnemonics, would fit quite well into this ideal, too.

Relevance is associated with Concept: Finding, Using, and Remembering. Incorporating and demonstrating material from the different levels of performance will take place as inquisitory generality (internal contemplation) if the material can be related to the learner in some way (Jacobs, 1999). Typically this results in what's coined here as "associated-knowledge retention." The Graduate Student Instructor Teaching Resource Center at Berkeley ("Social Constructivism," n.d.) further supports this constructivist notion of associated-knowledge, where connecting new material to a learner's existing repository of knowledge forges stronger bonds and better retention overall.

The third affective domain item, Confidence, is directly linked to the development of Finding, Using, and Remembering Procedures. This is particularly important in that procedures require a given amount of accuracy and thus requires not only the knowledge,

but the feedback and confidence in knowing that oneself is able to perform the learning objective correctly and to what extent it needs to be done.

Lastly, Principles are the highest form of internal evaluation, or inquisitory instance (Jacobs, 1999). Since there is a high level of internal thought and association that goes on with connecting ideas and points found in Principles, it makes sense to correlate Satisfaction as part of the learning experience. If the principle is learned through a variety of Finding tasks or through Using the Principle (usually with Practice), then remembering it is not far from true characterization, an idea found in Krathwol et al.'s taxonomy (1956) of the Affective Domain and better explained in W. Huitt's adaptation (2001). Upon this acceptance, or self-identifying characterization, the aspect of satisfaction would have been incorporated and in turn will have the most lasting and poignant effect. This means if a Principle is remembered with Satisfaction, then you have the epitome of learning: deep, lasting, influential, and self-incorporated.

As described through their integration in ACDT, Merrill and Keller have well-established, effective models. Although different, in the ACDT merger, they fit well together to produce learning objectives that appeal to and center on the learner. ACDT successfully "specifies how to design instruction for any cognitive domain," while also taking into account how to "understand and model the influence of effort and the contributors to effort." The Affective Component Display Theory model proposes benefits similar to other cognitive-affective models: to actively engage and excite the learner while meeting the performance criteria or learning objectives. Indeed, ACDT is a method to establish goals, a method to develop performance objectives, and a method in which to get learners *actively, willingly, and lastingly* involved in the learning process.

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