

**Merriënboer, Jeroen & Kirschner, Paul**

(2007) *Ten steps to complex learning* Erlbaum  
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*Ten steps to complex learning* is a guide to the four component instructional design (4C/ID) model propounded by Merriënboer (the first author of this book). The field of instructional design has developed from a single objective-based simple content transaction model to complex learning that involves achievement of an integrated set of objectives through authentic learning activities and environments. Research on transfer of learning also supports the emphasis on authentic tasks. The 4C/ID model is highly suitable for training design in professional subjects that require complex cognitive skills and their application in real-life situations. *Ten steps* presents the model in a systematic approach to make it simple—as the model is indeed a complex one! If training managers and human resource professionals are to use this model in the industry, definitely there is a need to simplify it. Merriënboer and Kirschner have done just that.

The book has sixteen chapters in three parts. Part I has three chapters explaining complex learning and the four components of the

model (learning tasks, supportive information, procedural information, and part-task practice), and provides an overview of the ten steps.

In Part II, the authors cover the ten steps in detail, and provide specific guidelines. This makes the book refreshing as it starts with thinking about the content to be learned rather than the abstract learning objectives.

- The first step is to design authentic learning tasks.
- The next is to organise the learning tasks into easy-to-difficult categories and sequence them.
- Step 3 is setting performance objectives. Apart from the usual guidelines on how to write performance objectives, the authors recommend splitting a skill into its components to identify skills hierarchy and their relationships in terms of event occurrence.

The next three steps elaborate on the second component—supportive information.

- In step 4, the authors provide guidance on designing supportive information by thinking about systematic approaches to problem solving (SAP), conceptual and causal models, and strategy for information presentation and feedback.
- Within the SAP, there is need to analyse the cognitive strategies and the mental models—these two forming part of steps five and six respectively.
- The next three chapters present steps 7 to 9, and depict various components of procedural information, including analysis of the cognitive rules and pre-requisite knowledge to carry out part-task practice.
- This is discussed in chapter 13 as step 10. This one is optional—if you need further practice to complete the learning outcomes, carry out this step. This is because the “power law of practice” predicts “that the log of the time to complete a response will be a linear function of the log of the number of successful executions of that particular response” (p 202). So, automaticity of any skill depends on sufficient practice.

In other words, the ten steps help us design a training blueprint.

In Part III, the authors explore the use of media and self-directed learning for develop-

ment of training materials as a continuation of that training blueprint. Realising that the choice of media and their use are complex activities, in Chapter 14 they focus only on which media better suit a particular type of learning process. However, the discussion is skewed towards use of computers and hyper-media systems as tools for developing authentic task environments.

In the next chapter, the authors propose that within the 4C/ID training blueprint, there should be enough scope for learners to exercise their preferences based on individual needs and pace of learning. They also emphasise that learner self direction is important to give control over part-task practice, supportive information, and the learning tasks. In the final chapter, Merriënboer and Kirschner identify the future directions of instructional design, including the use of educational modelling language and the use of packaged software to design instructions in a systematic approach. They also highlight the challenges of mass customisation and integration of higher order skills in learning designs.

This book would facilitate the use of the 4C/ID model in professional training environments, and encourage training managers to design sessions based on it. As the 4C/ID more suits complex learning, the design itself is also complex; it would take a long learning curve to master the design process. Because of this, I regret that this highly significant instructional design model would not be used in many places. Nevertheless, the contribution of this book is towards making instructional design a science of learning as opposed to an art.

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