IMPLICATIONS OF TWO WELL-KNOWN MODELS FOR INSTRUCTIONAL DESIGNERS IN DISTANCE EDUCATION: DICK-CAREY VERSUS MORRISON-ROSS-KEMP

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ABSTRACT

This paper first summarizes, and then compares and contrasts two well-known instructional design models: Dick and Carey Model (DC) and Morrison, Ross and Kemp model (MRK). The target audiences of both models are basically instructional designers. Both models have applications for different instructional design settings. They both see the instructional design as a means to problem-solving. However, there are also differences between the two models. Applications of each model for instructional design and technology are discussed, and a reference to instructional designers in distance education was made.

Keywords: **Instructional Design Models; Dick and Carey Model; Morrison, Ross and Kemp Model, Distance Education**

BACKGROUND

Instructional design (ID) is a system of procedures for developing education and training programs in a consistent and reliable fashion (Gustafson & Branch, 2002, p. 17). Instructional design is a complex process whose origins could be followed back to the writings of Silvern (1965), which applies a systems approach to solve problems efficiently. System refers to an integrated set of elements that interact with each other (Banathy, 1987). Systems are;

- **interdependent (i.e. no elements can be separated from the system)**
- **synergistic (i.e. all the elements can achieve more than the individual elements alone)**
- **dynamic (i.e. systems can adjust to changing conditions in environments), and**
- **cybernetic (i.e. elements communicate among them efficiently) (Gustafson & Branch, 2002).**

It can be claimed that instructional systems design techniques became common after the 1970s first in military, and then in other industrial and commercial training applications. Silvern's (1965) writings followed the principles of behaviorism while further studies, particularly that of Gagné, Briggs, and Wager (1992) followed a more cognitive approach focusing on information processing (Gustafson & Branch, 2002).

All these studies have made contributions to the theory of instructional design. A more comprehensive history of the instructional design is beyond the scope of the current study; however, Reiser (1987 & 2002) could be recommended for further information on a history of instructional design and technology.

Following an instructional design procedure in a systematic way is believed to make instruction more effective and relevant (Gustafson & Branch, 2002).

Several systematic instructional design processes have been suggested. All these processes follow the core elements of instructional development, that is, they are used to *analyze* learners' training needs through needs assessment, *design* instruction through writing measurable learning objectives, *develop* training materials for teachers and learners, *implement* training in settings for which the instruction was developed, and *evaluate* the effectiveness of instruction through formative and summative evaluations as well as revisions (ADDIE).

As Gustafson and Branch (2002) suggest, ADDIE illustrates the conceptual framework of the instructional design; however, there remains a need to determine how to practice the instructional design, which is met by instructional design models. A model is a mental picture that helps us to understand something we cannot see or experience directly (Dorin, Demmin & Gabel, 1990). In this respect, instructional design models help designers to understand the theoretical framework better, and apply it correspondently. In other words, they outline the ways to apply instructional theory to create an effective lesson or unit (Morrison, Ross, & Kemp; 2004). Gustafson and Branch (1997) define the function of instructional development models as providing 'conceptual and communication tools that can be used to visualize, direct, and manage processes for generating episodes of guided learning' (p. 73). In the same study, they suggest that models are almost as numerous as the practitioners of instructional design and technology. A comprehensive list of these models can be found in Ryder (2006) where models are classified as modern prescriptive models versus postmodern phenomenological models. Comparative summaries of models are provided as well in Ryder (2006). The current study first summarizes the DC and MRK models, and compares and contrasts the two models from a different perspective.

DICK AND CAREY MODEL (DC)

Dick and Carey Model (i.e., DC) follows the basic instructional design pattern of the analysis, design, development, implementation and evaluation of instruction (ADDIE). It consists of following ten components:

- **assessing needs to identify goals,**
- **conducting instructional analysis**
- **analyzing the learners and contexts,**
- **writing performance objectives,**
- **developing assessment instruments,**
- **developing instructional strategy,**
- **developing and selecting instructional materials,**
- **designing and conducting the formative evaluation of instruction,**
- **revising instruction, and**
- **conducting summative evaluation.**

The process is rigid and cumbersome for the real-life instructional design situations. The DC model follows a more behaviorist approach. More specifically, it assumes a reliable link between stimulus and response, in other words, between instructional materials and the learning of the material. It prescribes an instructional design sequence where the instruction is broken down into small components. The designers identify sub-skills that should be mastered in order for learners to acquire the intended behaviors.

Then they select the relevant stimulus to build in each of those sub-skills. However, whether the behaviors are as predictable as suggested by the DC model is open to question.

MORRISON, ROSS AND KEMP MODEL (MRK)

The systematic design process suggested by the MRK model consists of nine interrelated steps:

- **identifying instructional design problems and specifying relevant goals,**
- **examining learner characteristics,**
- **identifying subject content and analyzing task components that are related to instructional goals,**
- **stating instructional objectives for the learners,**
- **sequencing content within each unit to sustain logical learning,**
- **designing instructional strategies for each learner to master the objectives,**
- **planning instructional delivery,**
- **developing evaluation instruments, and**
- **selecting resources to support learning activities.**

The model is circular rather than linear as opposed to the DC model. More specifically, nine elements listed above are interdependent. Moreover, they are not required to be considered in an orderly way to realize the instructional learning systems design. What differentiates the MRK model from most other models is that it considers instruction from the perspective of the learners, it provides a good application of the systems approach where the ID process is presented as a continuous cycle, and finally it puts a greater emphasis on how to manage an instructional design process.

COMPARATIVE SUMMARY OF THE TWO MODELS

Both models appear to have a systems focus. However, Gustafson and Branch (2001) classifies the MRK model as a classroom orientation ID model and the DC model as a system orientation ID model. The classroom focus involves teachers in deciding appropriate content, strategies, media usage and evaluation. It is of interest primarily to teachers who looks for *instructional solutions* to learning problems. However, the MRC model suggests both *instructional* and *non-instructional* solutions and assigns flexible roles to members of a larger team. If one is to be too rigid in assigning models to different orientation categories, it might be claimed that the DC model could be more appropriate for a classroom orientation whereas the MRC model might be suitable for a systems focus. On the other hand, if the output of instructional design rather than the ID process is taken into account, the MRK model could be considered as a classroom orientation model since it leads to an output of one or few hours of instruction, whereas systems-oriented models lead to an output of a whole course or curriculum.

The DC model is a rectilinear ID model which suggests a lockstep approach. Rectilinear models fail to recognize complexities of the design process. On the other hand, the MRK model is a curvilinear ID model which communicates more interaction between the components of the model. Thus, the MRK model corresponds with a more flexible ID process. An interesting point with real-life application in the MRK model is that the model claims that not all nine elements are required for all instructional design process (Gary R. Morrison, personal communication, 2005). On the other hand, the DC model claims that each component is critical and none should be skipped.

There are two types of instructional design models. Fixed models prescribe same type of method regardless of conditions whilst adaptive methods prescribe different methods depending on conditions.

In this respect, Dick and Carey model seems to represent a fixed model whilst Kemp, Ross and Morrison model seems to represent an adaptive model. As also stated by Morrison et al. (2004), two instructional problems can never be exactly alike. Moreover, different designers approach the same problem in different manners. Thus, an instructional design model should be flexible and adaptable rather than prescribing rigid methods regardless of the contextual differences. In this respect, the MRK model looks more applicable for the average design process.

The MRK model looks more useful for large-scale instructional design processes involving several team members and multiple types of resources. It provides a robust synthesis on how to use multiple team members and resources. Besides, it is less prescriptive and allows designers to be more creative in turning design elements into design processes. Even though the DC model provides a systematic approach to curriculum and program design, the rigidity suggested by the model makes it hard to adapt to multiple team members and different types of resources. Although the DC model considers all important items necessary to create effective instruction, following it so strictly might impede ID professionals` creative expression skills or might prevent them from accommodating to real-life ID processes.

Novice designers might favor the DC model, since it is too rigid and prescriptive in terms of the order of the steps to be followed, whilst experienced designers might favor the MRK model since it allows more creativity and helps the designers to start the design process from any step the context requires. Both models could be used by both novice and experienced designers requiring few or no additional resources to understand the models; however the MRK model seems to provide more opportunities for creativity and represent the real-life instructional design processes better.

CONCLUSION AND DISCUSSION

The current paper summarized and compared the two well-known instructional design models with a critical point of view. Scrutinized information about the two models could be attained through referring to Dick and Reiser (1989), Dick and Carey (2001) and Morrison et al. (2004). It should be born in mind that all instructional design models are advantageous to other models in specific contexts.

Therefore, the current paper does never assume a role to imply the superiority of one model over another. It only tries to imply the instructional design contexts where either of the models could be applicable. Either model might be used by instructors for different curricula, different subject matters, different units, students at different levels, and designers at different experience levels. The problem is selecting the most appropriate one to apply in a particular setting, or constructing one's own instructional design model through integrating relevant aspects of each model.

One of the recent trends that have become increasingly important for the instructional design profession is the considerable interest in delivering instruction through distance learning practices. Since 1995, there has been a considerable increase in delivering instruction at a distance (Bassi & Van Buren, 1999). What is challenging is that distance learning practices cannot be on-line replicas of the instruction delivered in classrooms (Reiser, 2002). Applying same instruction delivered in classrooms through distance learning practices might lead the Web to become a mere broadcasting mechanism (Horton, 2000).

In such situations, students are isolated and the educational experience becomes passive and alienating (Bostock, 1997). Thus, the activities should be carefully designed in the light of grounded theory along with appropriate instructional principles so that the instruction serves as an efficient tool to enhance learning.

Analysis, design, development, implementation and evaluation of distance learning materials should be realized by instructional designers who are proficient in terms of both the grounded theory and the principles of instructional design.

Instructional designers have the opportunity and responsibility to invent ways to teach through electronic materials, enable students with disabilities to access electronic sources, designing multimedia packages, studying student characteristics to realize instructional design accordingly, design for different subjects and levels, explore ways to apply virtual reality and evaluate all these applications (Hawkridge, 2002).

However, the instructional designers and technologists who can work in the new global electronic environment are in short supply (Hawkridge, 2002). The current discussion of instructional design models might be suggestive and useful for instructional designers interested in distance learning in choosing suitable design procedures for their unique contexts.

Further analyses could focus on educated ways to apply either model in an eclectic way to provide instructional practices and materials of high quality among a variety of instructional settings. Among these settings, distance learning carries utmost importance, since it seems to be the trend of forthcoming decades.

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