The Blended Training Design Model:
an Example of Instructional Model Adaptation

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Abstract **- Instructional designers and educators often desire to implement different educational theories and innovative instructional media that provide only a minimum of design and development guidance. Established instructional design models can accommodate a variety of theories and media but often make these choices implicit within the model. This article describes a blended training design model for socio-constructivist instruction that was created with this approach in mind. The end result is not simply another instructional design model, but rather it is an example of how instructional designers and educators can adapt models on a case-by-case basis for their own specific needs.**

Keywords **- Blended Learning, Design Models, Instructional Design**

I. INTRODUCTION

Instructional designers and educators often wish to create instructional materials that use different educational theories and innovative technologies. However, descriptions of new approaches provide only a minimum of design and development guidance.

Procedural instructional design models are frameworks that can accommodate the creation of a wide range of educational materials. The accommodation of various educational theories and different technologies / media are implicit in the models.

One possible solution to this problem is to create a more complicated instructional design model for a specific purpose. For example, Lee, Lim, and Kim [1] created an instructional design model for the creation of flipped learning materials in a higher education setting. Tracey [2] created an instructional design model that integrates the theory of multiple intelligences. However, this approach would require a vast library of models that correspond to various theories and technologies, and potential users might still not find a model that combined the particular attributes they desired. In addition, a study of published research articles from 1999 through 2014, found that 35% of the articles introduced instructional design models that did not appear again [3]. This may suggest that the proliferation of additional models is not particularly productive.

An alternative solution is to use established instructional design models as frameworks for ad hoc, modified models created for specific contexts. This article describes a blended training design model for socio-constructivist instruction that was created with this approach in mind. The end result is not simply another instructional design model, but rather it is an example of how instructional designers and educators can adapt models on a case-by-case basis for their own specific needs.

II. INSTRUCTIONAL DESIGN MODELS

The creation of educational materials can be approached as a craft or as a science. A craftsperson is someone who designs as a product is created [4]. Craftspeople create on a small scale. In contrast, the scientific approach begins with a well-defined goal and then continues with the processes of design, development, and testing [5]. This approach can produce results on a larger scale. More importantly, science attempts to create results that can be replicated. The craft of teaching is still highly valued in society, but the science of instructional of instructional design seeks to implement educational solutions that can be replicated on larger scales.

One of the fundamental tools for creating better educational materials is an instructional design model. Instructional design models describe procedures to be followed in order to create effective instruction. Models may be created from theoretical approaches, best practices in applied settings, or some combination of the two. As models, they are simplifications of the actual process of creating educational materials. Different models emphasize different aspects of the educational process and techniques for supporting it. Gustafson [6] organized a review of existing models into four categories those that focused on the creation of: 1) a lesson for a single classroom, 2) a self-instructional product, 3) school or college course, and 4) organizational development / training. In general, every model will specify a series of required / recommend phases that include design and development. At least one feedback loop, typically represented as formative evaluation, represents the systems-oriented approach in these models.

It is difficult to determine exactly when instructional design models were first developed and used. Large-scale military training in the United States during World War II led to more formal, process-oriented approaches to education [7]. After the war, various efforts were undertaken to research and organize learning as activities of analysis, design, development, implementation, evaluation, and management. In the early 1960s, a number of individuals were synthesizing this work into organized processes or models for the development of instructional materials [8]. Within two decades, the number of instructional design models would multiply dramatically. In a comparative analysis published in 1980, the authors examined similarities and differences in 40 instructional design models published between 1966 and 1979 [9]. Numerous other models were created and used by media developers, business training departments, military organizations, etc.

Instructional design models vary dramatically in terms of their specificity. One of the simplest is the ADDIE model. At its most basic, it merely encapsulates the primary phases of analysis, design, development, implementation, and evaluation [10]. It can be used to present the basics of instructional design in a workshop or other introductory setting.

On the other end of the spectrum are more complex models such as the U.S. Department of Defense's ISD/SAT (Instructional Systems Development / Systems Approach to Training and Education) model. It contains the ADDIE phases, but also describes management, support, administration, and delivery functions. In addition to the added complexity of more phases and a larger context, the model is described in a detailed, 185-page document [11]. Likewise, in corporate training settings, companies often developed very specific, proprietary instructional design models. For example, the accounting firm Arthur Andersen developed Method/E, an instructional design model for the creation of internal training. The printed materials describing Method/E occupied several feet of shelf space [12].

In a review of instructional design models, Gustafson and Powell [13], state that although there are hundreds of models, there may be only a few major distinctions among them. They also note anecdotally that in compiling research on instructional design models in the 1980s that there was a drop in activity towards the end of that decade. By the end of the

1990s, a follow-up review concluded "that there has been no substantive change [since 1991] in the general conceptual framework of ID models that suggests any trend" [14]. In summary, the early proliferation of instructional design models was slowed as commonality of forms were seen to emerge.

A recent study examined published research articles involving instructional design models from 1999 through 2014 [3].
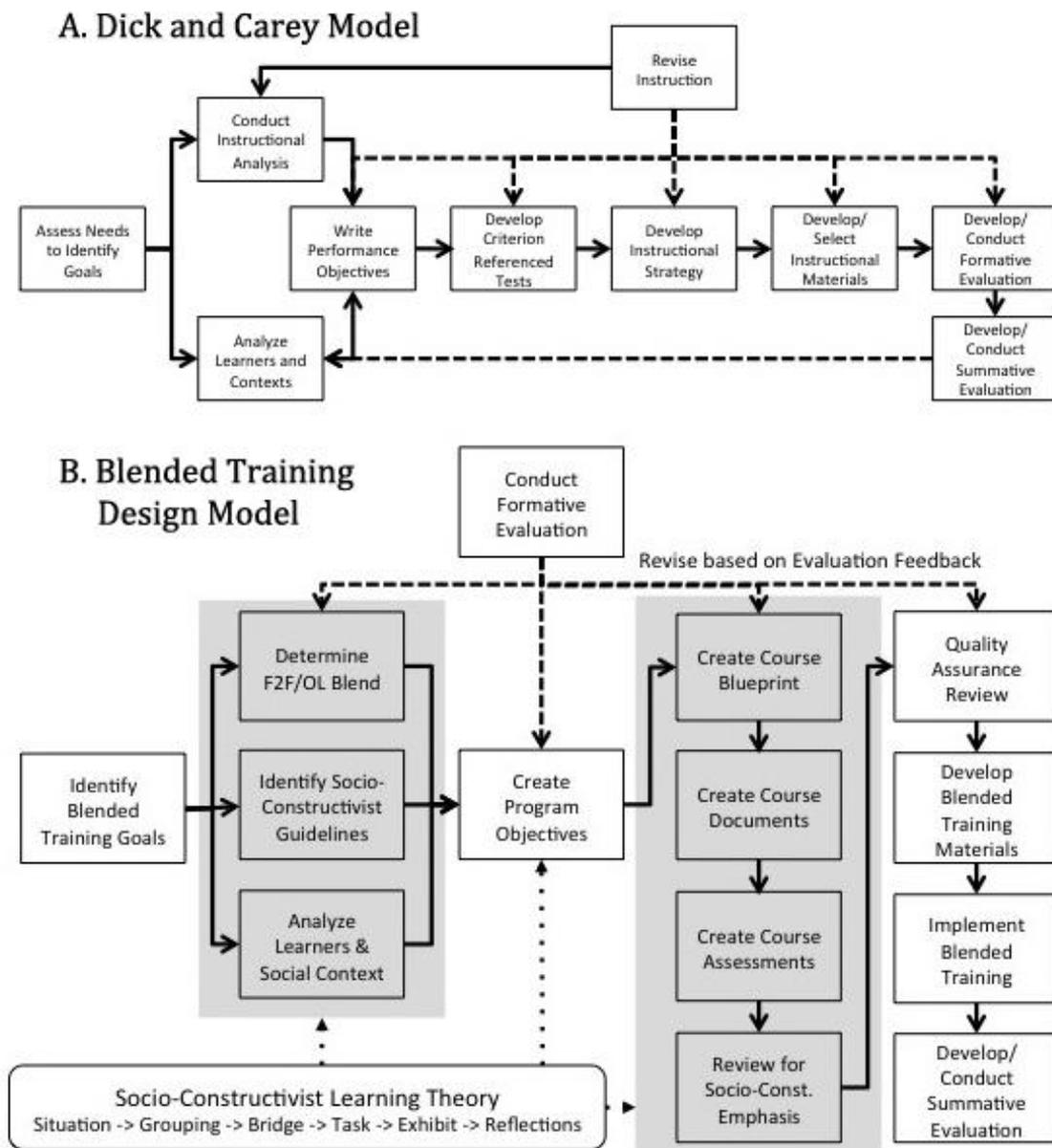
A. Dick and Carey Model

B. Blended Training Design Model

Fig. 1 Instructional Design Models.

The researchers identified 113 articles from 44 Social Science Citation Index (SSCI) and Science Citation Index (SCI) journals. The most cited models were: 1) ADDIE, 2) ARCS model, 3) Gagné and Briggs (3-tie), 4) 4C/ID, and 5) Dick and Carey. As previously mentioned, ADDIE is a simple model that has existed since the early 1970s [10]. ARCS is a model focusing on enhancing motivational aspects of instruction [15]. The Gagné and Briggs model was first described in their textbook Principles of Instructional Design

[16], which is currently in its fifth edition [17]. The 4C/ID model is a more recent creation focusing on complex instruction [18]. Like Gagné and Briggs, the Dick and Carey model was also first described in a textbook, The Systematic Design of Instruction [19]. It too has been in continuous publication since then and is currently in its eighth edition [20]. One implication of this study is the impact and utility of general-purpose instructional design models with sufficient documentation. Three of the five most cited models had been available since the 1970s, two in textbook form.

III. THE BLENDED TRAINING DESIGN MODEL

The authors of this article were involved in a project in which blended training materials were to be designed and developed using a socio-constructivist perspective. The approach used was to find a suitable set of guidelines for created blended training and socio-constructivist instruction and make them explicit by integrating them with an existing instructional design model. The Dick and Carey model from the fourth edition of The Systematic Design of Instruction was selected to be the basis of the project [21]. It is shown in Fig. 1a. This version of the model was specifically modified to reflect a better appreciation of educational context and the importance of evaluation [22]. The modified version, referred to as the Blended Training Design Model, is shown in Fig. 1b.

The biggest change in this revised model is its focus on blended training environments. In the Dick and Carey model, the selection of instructional materials is suggested to occur after the development of the instructional strategy. In the revised model, this decision is made a priori and therefore, the user of the model is identifying blended training goals as the first step.

Blending learning can be defined in a multitude of ways. It may be defined by delivery technology, by media and tools, by pedagogy, etc. [23]. For the purpose of the authors' revision, a definition and framework presented by Diaz and Brown [24] was determined to be the most useful. This framework is presented in Fig. 2. In this framework, blended learning is defined as a mix of face-to-face (F2F) and online activities (shown on the horizontal access) that uses a certain amount of media and complexity of technology (shown on vertical access). Although these two dimensions do not address all aspects of blended learning, they provide fundamental descriptors and constraints that can inform design decisions. In other words, the blended mix and level of technology can be determined as a part of the design and development processes. Therefore, the framework fits well within an instructional design model.
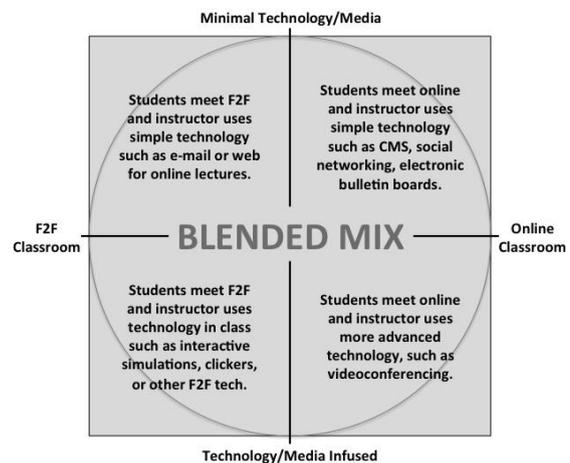

Fig. 2 Determining Blended Mix.

This is represented in the revised model when the user is instructed to determine the F2F/OL blend. This is not necessarily an easy process, but in the experience of the authors the decisions regarding the amount of face-to-face versus online activity and the level of technology use are typically made fairly early in the design process and are often constrained by external factors such as available resources and organizational culture. With these decisions made, documents, materials, and assessments must be created for both the face-to-face and online environments. A course blueprint ensures that the various components are consistent with regard to the overall blended training goals and with each other. A common mistake is for the face-to-face and online components to be created in isolation, resulting in

poor integration and confusion when implemented with students.

The second major change in the revised model involved making socio-constructivist learning theory more explicit. Although some believe well-established instructional design models are contrary to socio-constructivist practice [25], Dick [22] noted that when constructivist models are proceduralized, they look very similar to traditional design models. The current authors agree with the latter and felt that making the theory more explicit in a revised model was a practical approach.

The changes in the revised model are largely in the front-end activities. The learner analysis step has been renamed to more explicitly emphasize the social context. In addition, a process has been added in which socio-constructivist guidelines are identified and/or created for the project. These guidelines could range from guiding principles to specific strategies to be used during the creation of learner activities. Committing to these guidelines early in the process in conjunction with understanding the social context of the learner are very practical ways to integrate socio-constructivist theory in design and development projects.

One example of a socio-constructivist guideline is illustrated in the revised model. The constructivist learning design approach [26] emphasizes six features that should occur in an instructional setting: situation, grouping, bridge, task, exhibit, and reflections. As illustrated in the model, this particular strategy would be made explicit as part of the socio-constructivist guidelines. In addition, there is a specific review step after the creation of the design documents in which they are checked to ensure that they are consistent with the guidelines that had been established at the start of the project. The original Dick and Carey model does not prevent these types of activities from occurring, but making them explicit within a modified model gives them greater emphasis.

The Blended Training Design model was used to successfully create 52 hours of blended instruction for elementary teachers [27]. The instruction focused on learning in the 21st century. The teachers were able to learn the content and commented positively on the socio-constructivist aspects of the blended training, such as more collaboration and peer discussion. Twelve professionals in the areas of instructional design and ICT participated in three separate expert reviews of the model and instructional content, resulting in positive ratings.

IV. CONCLUSIONS

Instructional design models have long served as effective guides for educators interested in creating innovative materials for the classroom. Teaching is highly demanding in terms of time, effort, and intellectual challenge. Instructional design is meant to support teaching by the creation of materials utilizing the best knowledge about how people learn [28].

Research in areas such as blended learning and socio-constructivist learning will continue to suggest new strategies and techniques for learning. This will create challenges to find ways in which this research can be applied in classroom environments. Shavelson [29] makes the point that educational research doesn't replace professional experience, judgment, or intuition. However, educational professionals need to be able to have the skill to apply research to the various novel contexts in which they find themselves.

The ability to apply theoretical concepts and empirical results in new materials by embedding new guidelines into existing instructional design models is a simple and practical solution. One of the creators of the Dick and Carey model, Walter Dick wrote, "It is understood that in the real world designers work in teams, they use adapted models…I have never been convinced that the [Dick and Carey] model in any way constrains the creative processes of the designer or causes designers to do dumb things" [22]. Educators

just need to follow this advice.

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