Innovative Models Report Britta Lafont University of Alabama at Birmingham

A Gap in Current Instructional Design and Development Models

"Instructional design is a system of procedures for developing education and training materials in a consistent and reliable fashion" (Branch, 2017, p. 23). In order to move through the development of these materials in a predictable and logical manner, instructional design (ID) professionals employ the use of instructional design models. Instructional design models have been in use since the 1950's and the number of different models climbs each year (p. 27). There are so many models, that the novice designer might not see a need for any additions to the group. Yet, as research expands in learning theory, social sciences, business and education, new models must be developed to keep instructional design current with other disciplines. In addition, the field of instructional design requires constant innovation, so it follows that newer and better ways of meeting learner and stakeholder needs should be developed by ID practitioners.

This paper examines five existing instructional design models, comparing them to an "ideal" model via a rubric designed for these purposes. The Innovative Models Rubric describes four approaches to the design of instruction, which, in combination, create a unique but necessary and new perspective in the field of instructional design. It is the position of this paper that the approach of an instructional design model should be: 1) systematic and comprehensive; 2) iterative and self-correcting; 3) learner-centered; 4) positive. The first three approaches to instructional design are commonly accepted as foundational to practice of instructional design, but the last one—a positive approach—is not commonly utilized in ID models (Branch, 2017, pp. 26-27).

The term "positive" originates from the field of positive psychology, which advocates a turn toward the study of wellness (rather than disease). "It calls for as much focus on strength as on weakness, as much interest in building the best things in life as in repairing the worst, and as

much attention to fulfilling the lives of healthy people as to healing the wounds of the distressed" (Peterson, 2006, p. 5). One application of positive psychology is the practice of Appreciative Inquiry. Appreciative Inquiry advocates a positive approach for human performance and organizational interventions and was created as an approach to change management, as "a radical departure from the traditional deficit-based change to a positive, strengths-based approach" (Cooperrider, n.d.). This approach was further organized to form a model for the business world, called "The Four-D Model of Appreciative Inquiry," which will be examined later in this paper (Bushe, 2013, p 41).

Using the search engine Google Scholar (https://scholar.google.com), a review was conducted of research published in 2018, related to the search terms "Appreciative Inquiry" (AI) and "Instructional Design" (ID). The result was a list of 30 journal articles (and dissertations). One topic, "The Four-D Model of Appreciative Inquiry," appeared repeatedly as a focus of the articles, though it was rarely referred to as a "model," but was more often called a strategy, a methodology, or an approach. Just one article reported that the Four-D Model was paired with action research, so that a university could use the blended approach to develop a program (Martyn, Scott, Westhuyzen, Spanhake, Zanella, Martin, & Newby, 2018). In addition, the Four-D's Model was referred to as a "change implementation approach," used as an evaluation tool, and as a analysis tool to explore the experiences of teachers and learners (Dawson, Allen, Campbell, & Valair, 2018; Helens-Hart, 2018; Kung, Giles, & Rogers, 2018). This short database search suggests the possibility of a gap in the literature in relation to the application of an AI approach in instructional design. Further exploration with by expanding keyword searches, publication date windows, and the number of databases is warranted in order to confirm a gap in research.

In terms of the findings of this paper, the rubric featuring four approaches to instructional design, described previously, revealed a gap as well. Of the instructional design models considered—ADDIE, the Successive Approximation Model (SAM2), Merrill's First Principles of Instruction, Keller's ARCS Model of Motivation, and the Four-D's Model of Appreciative Inquiry—none received a perfect score. Out of a possible 100 points, ADDIE received 35 points, SAM2 received 85 points, Merrill's First Principles received 35 points, Keller's ARCS Model of Motivation received 20 points, and the Four-D's Model of Appreciative Inquiry received 20 points, and the Four-D's Model of Appreciative Inquiry received 55 points. Clearly, there is a place for a model that combines the best of these other, well-known instructional design models to develop instruction that is systematic, comprehensive, iterative, self-correcting, learner-centered, and positive.

A Rubric to Evaluate IDD models

Because "the instructional design process centers around outcomes that can be measured," measuring the effectiveness of instructional design models is important (Branch, 2017, p. 26). Reliability refers to the consistency of a tool regardless of the passage of time and of the differences between the individuals using it, where validity is concerned with the tool measuring what it is intended to measure (p. 27). When comparing instructional design models, designers can find themselves to be perpetrators of bias or inconsistency due to human nature. The use of a rubric provides greater degrees of both reliability and validity and decreases the possibility of bias occurring when comparing multiple, related, yet in some ways dissimilar, tools such as ID models.

A rubric is a scoring instrument that allows subjective comparisons to be made more objectively and allows qualitative data to be quantified (Hodges, 2018). A rubric consists of three parts: 1) the criteria being considered (in this case the approaches to ID), 2) performance levels or standards used to judge the object (in this case inadequate, adequate, or ideal), 3) descriptors that depict the characteristics associated with each dimension (explaining the scoring of the object, demonstrating what ideal, adequate, or inadequate "look" like) (Carnegie Mellon University, n.d.).

The Innovative Models Rubric takes the best aspects of various ID models and combines these characteristics to create standards to use in identifying well-rounded and exemplary ID models. Instructional Design models should facilitate the creation of instructional design products and programs in keeping with the seven characteristics of the process of Instructional Design:

1. Learner-centered

- 2. Goal-oriented
- 3. Creative
- 4. Focused on meaningful performance
- 5. Oriented to outcomes
- 6. Empirical, iterative, and self-correcting
- 7. Collaborative (Branch, 2017, p. 26).

For this rubric, the criteria initially began with a focus on the five phases of ADDIE (Analysis, Design, Development, Implementation, and Evaluation) on the basis of the idea that good ID models are thorough and systematic, useful for jobs of all sizes. Yet, in order to streamline the rubric and add in some other important ideas, these five principles were combined, and are represented by the criterion "systematic and comprehensive." Finally, as previously discussed, in order to investigate the use of AI in ID, the degree to which a model has a "positive" approach is also a part of the rubric. Consequently, the four approaches to instructional design being compared are:

- 1. Systematic and comprehensive
- 2. Iterative and self-correcting
- 3. Learner-centered
- 4. Positive

The scoring was 0 for inadequate, 10 for adequate, and 25 for ideal, so that the highest possible score would be 100 points. The descriptors were customized to reflect how a dimension of the model (where the standard was applied to the criterion) would be ideal, adequate or inadequate.

Approach	Ideal – 25 points	Adequate – 10 points	Inadequate
Systematic &	Conforms to rules and	All steps of the model	The order of the
Comprehensive	procedures to address	are clearly outlined,	process is unclear, ill-
	each aspect of	but the logic behind the	defined, unsystematic;
	instructional design,	order or process is not	some or most aspects
	where each step	evident, momentum is	of ideal project
	logically progresses to	not built into the	development are
	the next ^a	model; some aspects of	missing
		ideal project	
		development may be	
		missing	
Iterative, Self-	Prototype driven;	Responds to formative	No prototype, no
correcting	cultivates an agile,	evaluation, and has	collaboration occurs,
	collaborative dynamic	some dynamic	any evaluation tends to
	design & development	characteristics, but is	be summative rather
	process; responsive to	not prototype driven,	than formative
	formative feedback ^b	some collaboration	
Learner-	Focuses on learner	Product may be	Focuses meeting needs
centered	needs (seeks to know	learner-centered, but	of organization/
	learners, consistently	process is not (learners	stakeholders/
	collaborating with	participate in few	instructors/ designers;
	learners, responding to	steps)	learner is a means to an
	learner feedback) ^c		end
Positive	Focuses on strengths,	Positive growth-	Focuses on/centered
	growth, goals; is	minded approach,	around problem(s),
	positive, collaborative	(bringing the best of	short-comings, the
	(bringing forward the	the past forward, but	negative (solely trying
	best from past) ^d	not goal-oriented	to overcome the past)

Table 1 Innovative Models Rubric to evaluate instructional design models

^a Branch, 2017, p. 23-24; Allen & Merrill, 2017, p. 50

^b Allen, 2017, p. 43

^c Reigeluth, Myers, & Lee, 2017, p. 10

An Ideal IDD Model to Fill the Gap

The Positive Design model combines the best features of the instructional design models discussed in this paper to develop instruction through a process that is systematic, comprehensive, iterative, self-correcting, learner-centered, and positive. First, the design team must is assembled. This new model is collaborative—knowing that there is richness in the experiences, strengths and perspectives provided by a team of varied individuals. The team should consist of the usual design and development professionals that are required to carry out the design of a project. In addition, recent learners and stakeholders (management/ administrators, trainers/educators) must be represented at each stage.

Appreciative Inquiry begins its process with the question, "What gives life?" (Cooperrider, n.d.). Instead of focusing on the negative, the gap, or the problem, AI finds opportunities for improvement by exploring the strengths and best practices of an organization. Cooperrider says that the visionary practice of AI allows "images of the future [to] emerge out of grounded examples from its positive past." In fact, one of the principles of AI that is included in the Positive Design Model is "plan to bring forward the best from the past." Other AI principles that serve as the focus of one of three creative design cycles are: 1) choose the right focus; 2) find what works; and 3) create the best reality (Van Tiem, Moseley, & Dessinger, 2012, p. 32).

The Positive Design Model is composed of three iterative, creative mini cycles of four steps of discovery and design (based on the 4-D Model of Appreciative Inquiry):

- 1. Discover the possibilities (exploring "life-giving" opportunities)
- 2. Delve into the details (weighing the options)
- 3. Discern the best of the best (making decisions)
- 4. Design (and develop):

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- a. The Plan (cycle 1): Identifying main goals, objectives, timeline, asking, "What gives life?"
- b. The Product/Program (cycle 2): Sketching out a prototype for product/program;
 repeat this cycle if necessary (up to three times), asking the questions, "What is working? What more can we add to make it better?"
- c. The Delivery (cycle 3): Plan deployment of product/program, asking, "What needs to be shared and brought forward?"

Between the iterative creative cycles, there are three periods of formative evaluation:

- 1. Reflect and respond, between cycles 1 and 2: consider the plan and re-enter the creative cycle to move forward (cycle 2 may be repeated up to three times)
- Implement and evaluate, between cycles 2 and 3: consider best tactics for deployment of the product/program
- 3. Deploy and extend, after the last creative cycle: launch the final iteration of the program/product, but remain open to constructive feedback.



Figure 1 The Positive Design Model

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Analyze Other Instructional Design Models Using the Rubric

The ADDIE Model



Figure 2 The ADDIE Model. Adapted from *Leaving ADDIE for SAM: An Agile Model for Developing the Best Learning Experiences*, by M. Allen, 2012, Danvers, MA: American Society for Talent Development. Copyright 2012 by the American Society for Talent Development.

The acronym ADDIE refers to a methodical design process that is considered the standard to which ID models are compared: Analysis > Design > Development > Implementation > Evaluation. ADDIE was born out of General Systems theory, behaviorism, cognitive learning theory (Reiser, 2018, pp. 13-15). It is orderly, logical, systematic and predictable to a fault (Allen, 2012, p. 16). ADDIE is often described as cumbersome, best for larger, full-scale projects that require extensive documentation. Some common concerns with ADDIE are that it is not collaborative (does not include learners or stakeholder in most processes), does not make a place for formative feedback and correction, and the first iteration of a product may be the final product, which can contribute to miscommunication and errors in judgment and/or planning (Allen & Merrill, 2018, p. 32; Allen, 2012, p. 16; Branch, 2018, p. 24).

The ADDIE model was also found wanting according to the Innovative Models Rubric created for this project. The score was a 35 out of a possible 100. Although the model is

systematic and comprehensive, it is not iterative, its process is not learner-centered, and the

approach is problem-oriented, rather than positive.

Approach	Score	Rubric Results for ADDIE
Systematic &	25	Conforms to rules and procedures to address each aspect of
Comprehensive		instructional design, where each step logically progresses to the
		next
Iterative, Self-	0	No prototype, rather linear, phased process, no collaboration
correcting		occurs, evaluation tends to be summative
Learner-	10	Product may be learner-centered, but process is not (learners
centered		participate in few steps)
Positive	0	Focuses on/centered around problem(s), short-comings, the
		negative (solely trying to overcome the past)
FINAL SCORE	35	

Table 2 Innovative Models Rubric for ADDIE

The SAM2 Model



Figure 3 The SAM2 Model. Adapted from "The Successive Approximation Model (SAM): A Closer Look," by M.W. Allen, in C. M. Reigeluth, B. J. Beatty, & R. D. Myers (Eds.), *Instructional design theories and models: The learner- centered paradigm of education*, (p. 44), 2017, New York, NY: Routledge. Copyright, 2017, by Routledge.

The Successive Approximation Model (SAM) is an iterative design process, dependent on the use of disposable prototypes to move the design and development process along. These prototypes improve communication by creating visual, tangible solutions to design problems. In addition, prototypes allow for extensive trouble shooting during the design and development stages so that the products are more likely to work well and perform as intended. SAM has two variations: 1) SAM1 is simpler, with an abbreviated information gathering phase and just one iterative cycle (it is more likely to be used with one-person design teams and on smaller projects). 2) SAM2 is a comprehensive and systematic process, yet supports creativity and collaboration. SAM is considered an agile design process, allowing for faster, more accurate design and development of instructional programs and/or products (Allen, 2012, pp. 40-41, pp.

92-97, p. 108).

SAM2 scored the best of all the existing models explored in this paper at an 85 out of 100. The prototyping model score "ideal" in three out of four categories. In the fourth category, positive approach, it scored as adequate, since the process is focused on solutions more than problems, but the questions asked throughout the process are negatively focused (such as: *What isn't working? What needs to change about the learners' performance? Why isn't this design* [referring to the prototype] a good solution?) (Allen, 2012, pp. 35-35, 41).

Approach	Score	Rubric Results for SAM2
Systematic & Comprehensive	25	Conforms to rules and procedures to address each aspect of instructional design, where each step logically progresses to the next
Iterative, Self- correcting	25	Prototype driven; cultivates an agile, collaborative dynamic design & development process; responsive to formative feedback
Learner- centered	25	Focuses on learner needs (seeks to <i>know</i> learners, consistently collaborating with learners, responding to learner feedback)
Positive	10	Positive growth-minded approach, (bringing the best of the past forward, but not goal-oriented
FINAL SCORE	85	

Table 3 Innovative Models Rubric for SAM2



Merrill's First Principles of Instruction

Figure 4 Merrill's Phases for Instruction. Adopted from "First Principles of Instruction," by M. D. Merrill, 2012, *Educational Technology Research and Development*, 50 (3), p. 45. Copyright, 2002, by Educational Technology Research and Development.

Merrill's First Principles of Instruction is considered an instructional design model, yet it is, self-referentially, simply a list of four principles, which was originally derived by analyzing and comparing several design models to find essential commonalities (Merrill, 2002, p. 44). It was not designed to be a model. Yet, it is used as a model by some, who would call it "a prescriptive set of interrelated instructional systems design (ISD) practices that consist of activating prior knowledge, using specific portrayals to demonstrate skills, application of newly acquired knowledge and skills, and integrating the new knowledge and skills into the learner's world" (Klein & Mendenhall, 2018, p. 93). However, with no prescriptive analysis, design, development or evaluation stages, it does not hold up well as a model. The focus is clearly on the actual learning event, which means all of its value lies with its treatment of the implementation stage. In keeping with these ideas, Merrill's First Principles performed very poorly when evaluated by the Innovative Models Rubric, receiving and "inadequate" rating (zero points) for lacking an iterative, self-correcting approach and not having a positive focus. The steps of the model are clearly outline, but the model lacks attention to the analysis, design, development, and evaluation processes, so it received ten points, an "adequate" for being systematic. However, it received an "ideal" rating for having a learner-centered approach, since this model is fully focused on the learner experience during the implementation phase.

Approach	Score	Rubric Results for Merrill's First Principles
Systematic &	10	All steps of the model are clearly outlined, but the logic behind
Comprehensive		the order or process is not evident, momentum is not built into
		the model; some aspects of ideal project development may be
		missing
Iterative, Self-	0	No prototype, no collaboration occurs, any evaluation tends to
correcting		be summative rather than formative
Learner-	25	Focuses on learner needs (seeks to <i>know</i> learners, consistently
centered		collaborating with learners, responding to learner feedback)
Positive	0	Focuses on/centered around problem(s), short-comings, the
		negative (trying to overcome the past)
FINAL SCORE	35	

Table 4 Innovative Models Rubric for Merrill's First Principles

Keller's ARCS Model of Motivation

Table 5 Keller's ARCS Model of Motivation	n.
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1. Define	Classify prAnalyze atPrepare m	roblem udience motivat notivational obje	ion ectives	
2. Design	GenerateSelect stra	potential strateg ategies	gies	
3. Develop	 Prepare m Integrate	notivational elen with instruction	nents	
4. Evaluate	 Conduct developmental try-out Assess motivational outcomes 			
Foundational Motivational Characteristics	Attention	Relevance	Confidence	Satisfaction

Note: Adapted from "Development and Use of the ARCS Model of Instructional Design" by J. Keller, 1987, *Journal of Instructional Development*, (10) 3, p. 7. Copyright, 1987, by Journal of Instructional Development.

Keller's ARCS Model of Motivation is best known for its four motivational concepts and characteristics: A – attention (gain the learner's attention); R – relevance (show the learner the relevance of the lesson); C – confidence (help the student expect to master the content); S – satisfaction (encourage the learner to feel positive toward the learning experience and their own performance) (Keller, 2000, p. 3). The four concepts are commonly referred to as "the ARCS Model" (Su & Cheng, 2015, 268). However, according to Keller, the author of the model, "The ARCS model utilizes a systematic process which can be specified into four steps: define, design, develop, and evaluate" (Li & Keller, 2018, p. 54).

When examining Keller's 4-step model, The first step seems to mimic ADDIE's analysis stage. Design and development are dealt with in steps two and three, with no step for implementation, and the last step being evaluation of motivational strategies (with no sign of

formative evaluation, at any point). Obviously, the model has a systematic direction and order, but fails at being comprehensive, and earns the designation of "adequate" with the score of 10 points. There is no iterative or self-correcting approach (inadequate with a score of zero), and the approach is clearly not positive (using terms like deficiency and problem). On the other hand, the model does receive 10 points (its only points) for being slightly learner-centered, with references to the learner (or audience) at the beginning.

Approach	Score	Rubric Results for Keller's ARCS Model
Systematic &	10	All steps of the model are clearly outlined, but the logic behind
Comprehensive		the order or process is not evident, momentum is not built into
		the model; some aspects of ideal project development may be
		missing
Iterative, Self-	0	No prototype, no collaboration occurs, any evaluation tends to
correcting		be summative rather than formative
Learner-	10	Product may be learner-centered, but process is not (learners
centered		participate in few steps)
Positive	0	Focuses on/centered around problem(s), short-comings, the
		negative (trying to overcome the past)
FINAL SCORE	20	

Table 6 Innovative Models Rubric for Keller's ARCS Model

The Four-D Model of Appreciative Inquiry



Figure 5 The Four-D Model. Adapted from "What is Appreciative Inquiry?" by D. Cooperrider, n.d., DavidCooperrider.com, retrieved from: http://www.davidcooperrider.com/ai-process/

As discussed previously, Appreciative Inquiry is an approach, strategy, and mindset toward change; it is considered a change model, but can be used to evaluate processes and products, for strategic planning, and for instructional design. Appreciative Inquiry is based upon these assumptions (among others): 1) in every system, something is working well; 2) what is focused on grows; 3) what is brought forward into the future should be the best of the past; and 4) the language used creates reality (Van Tiem, Moseley, & Dessinger, 2012, p. 30). Appreciative Inquiry "creator and thought leader," and creator of the Four-D Model of AI, David Cooperrider, writes that AI has the "ability to enable positive change, innovation, and sustainable design in systems of large and complex scale" (n.d.).

The Four-D Model of Appreciative Inquiry scored a 55 out of 100 with the Innovative Models Rubric. Obviously, Four-D was ideal in its positive approach, but otherwise, it

performed at the "adequate" level for the other dimensions. While it is systematic, it is not comprehensive, appearing as one iterative cycle with no indication of an evaluation stage. Though the Four-D's are cyclical, there is no indication of any prototyping, and collaboration is hinted at in the process, but not specified (no mention of learners at all, though their needs are implied). All in all, the performance of the Four-D Model of AI against the Innovative Models Rurbic is disappointing, but the model itself is a rich source to consult when assembling an ID model with a positive approach.

Approach	Score	Rubric Results for the Four-D Model (of AI)
Systematic &	10	All steps of the model are clearly outlined, but the logic behind
Comprehensive		the order or process is not evident, momentum is not built into
		the model; some aspects of ideal project development may be missing
Iterative, Self-	10	Responds to formative evaluation, and has some dynamic
correcting		characteristics, but is not prototype driven, some collaboration
Learner-	10	Product may be learner-centered, but process is not (learners
centered		participate in few steps)
Positive	25	Focuses on strengths, growth, goals; is positive, collaborative
		(bringing forward the best from past)
FINAL SCORE	55	

Table 7 Innovative Models Rubric for the Four-D Model



Analysis and Report of an Ideal Model

Figure 6 The Positive Design Model

The Positive Design Model combines the best features of ID models to create an ideal model that approaches instructional design with a systematic and comprehensive, iterative and self-correcting, learner-centered, positive approach. The systematic and comprehensive nature of the model means it addresses all the key stages of ADDIE in an order that makes sense and creates momentum. The Positive Design Model borrows its iterative and cyclical format from another prototype-based model—SAM2. The learner-centered approach is secured by involving recent learners and stakeholders throughout the process, as representative members of the design team. Finally, the positive nature of the model is based on the Four-D Model of Appreciative Inquiry, which sets out to find and capitalize on strengths.

The Positive Design Model is the ideal model for incorporating Appreciative Inquiry and positive psychology into instructional design for performance improvement in business, in

education, and in military training. This model stands apart from other ID models, having received 100 out of 100 points using the Innovative Models Rubric. From a brief review of the literature, it appears that there is only one AI model being used to design instruction, and it is being used sparingly for that purpose, which would indicate a true gap in the ID models. On a final note, positive methods are confirmed through this paper in another way—this ID model gap was discovered, proven, and solved using AI techniques—dreaming up the best of the best and using it to create a new reality.

Approach	Score	Rubric Results for the Positive Design Model
Systematic &	25	Conforms to rules and procedures to address each aspect of
Comprehensive		instructional design, where each step logically progresses to the
		next
Iterative, Self-	25	Prototype driven; cultivates an agile, collaborative dynamic
correcting		design & development process; responsive to formative
		feedback
Learner-	25	Focuses on learner needs (seeks to know learners, consistently
centered		collaborating with learners, responding to learner feedback)
Positive	25	Focuses on strengths, growth, goals; is positive, collaborative
		(bringing forward the best from past)
FINAL SCORE	100	

Table 8 Innovative Models Rubric for the Positive Design Model

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