

Instructional Design and Creativity II

Editor's Note: Rowland, G. (1995). Instructional Design and Creativity: A Response to the Criticized. *Educational Technology*, 35(5), 17-22.

In his recent essay in this magazine, *Instructional Design and Creativity: A Response to the Critics* (1995), Walter Dick seeks to combat a particular form of criticism relating to the creative attributes or “creativity” of instruction produced through systematic instructional design. Since I have criticized traditional ISD methods and was listed in the references to his article, I must assume that I am one of “the critics” to whom he was responding. I would not previously have described myself as part of what he describes as the “Situating Cognition/Constructivist/Anchored Instruction crowd,” but I do find merit in much of the work in these areas, so I’ll accept the label for the sake of argument. Similarly, I will assume Professor Dick to represent “the criticized,” i.e., those who argue for the strength of ISD methods.

Professor Dick makes a number of statements on which I would imagine critics and criticized to concur. For example, he says that creativity can be enhanced by designers having “broad subject-matter knowledge or access to it, as well as knowledge of the context in which the newly learned skills will be used” (p. 7), and that conditions can be set up to facilitate creative approaches. He speaks of practicing designers going beyond the sequence of tasks suggested by models, and also makes an important point regarding the “Fallacy of Self-Projection” (the false perspective obtained by seeing oneself as the audience of a design intended for others). In a number of other areas, though, the two groups would likely depart.

Professor Dick makes a variety of arguments. The two most central appear to be that (1) creativity or “creativity,” something argued for by “the critics,” should not dominate the traditional criteria of effectiveness and efficiency, and (2) ISD methods do result in “creative instruction” when they are used appropriately. I’ll use these statements and a few of the assumptions or claims that appear to underlie them as the organization for my response below. I hope they do not somehow distort Professor Dick’s intents. Likewise, where I refer to “the critics,” I hope I do justice to the arguments of those who might identify themselves as such. First, here is a list of the statements and some associated assumptions/claims I identified. I hope they will at least frame issues in ways that foster dialogue.

1. “Creativity” should not dominate effectiveness and efficiency

- 1a. *“Creativity is a criterion that can be meaningfully applied to design products.”*
- 1b. *Designers must balance criteria and not allow one criterion to dominate all others.*
- 1c. *If “creativity” were to dominate other criteria, the result would be edutainment or infotainment—engagement and fun rather than learning.*
- 1d. *Effectiveness and efficiency are the appropriate criteria for instruction.*
- 1e. *“The critics” argue for “creative instruction.”*

2. ISD methods do result in “creative instruction” when they are used appropriately.

2a. *Following a particular process has predictable results.*

2b. *High-quality instructional products result from following high-quality procedures.*

2c. *ISD methods lead to boring instruction no more than any other methods.*

2d. *Appropriate use of ISD includes careful learner analysis, various instructional strategies, and extensive formative evaluation.*

2e. *ISD methods involve more than linear representations suggest.*

1. “Creativeness” should not dominate effectiveness and efficiency.

For circumstances where effectiveness and efficiency are appropriate and are sought, I believe that the critics and criticized would agree. It's tough to argue with a desire to do the right things right. However, the critics would probably ask for clarification on what is meant by “creative instruction” or “creativity,” and would likely say that the criticized base their response on a misunderstanding of the critic's arguments. I'll try to explain the concerns that might be raised with this statement more clearly by exploring the assumptions/ claims that appear to underlie it.

1a. *“Creativeness” is a criterion that can be meaningfully applied to design products.*

Professor Dick suggests that “creative” or “creativity” could be added as a third criterion to effectiveness and efficiency, and refers to “creative instruction” at the opposite end of a continuum from “boring instruction.” He avoids giving a precise definition for “creative” or “creative instruction,” choosing instead to offer at different points that to be creative, instruction might be interesting, engaging, motivating, fun, and, of course, not boring. He adds that creative instruction might keep learners on task, go beyond expectations, and be unusual.

The critics and the criticized would probably agree with Professor Dick that it would be challenging to define to the agreement of many, a complex construct such as “creative.” Some might push for it to be done and refer to the large body of literature on creativity for a starting point. This literature, at least that with which I am familiar, tends to address process more often than product, i.e., creativity in designing as opposed to creativity of designs. For example, Akin (1994) talks of problem setting as opposed to problem solving as an area where creativity might be important in designing. But some sort of definition could be selected nonetheless. (Tardif & Sternberg, 1988, provide an excellent summary that would be useful.)

A couple of points that one might consider in doing this come to mind. First, designs are by definition creative. That is, to design is to initiate change and to create something new—a unique pattern for a situation (Holt, Radcliffe, & Schoorl, 1985; Jones, 1992). So if “boredom,” “motivation,” or something related is the construct to be examined, it would be better to call it that rather than “creative” or “creativity.” My personal view is that “creative” applied to a design product would better focus on elegance and uniqueness, for example, on the parsimony of a product's form or the degree or unique ways in which it brings powerful and beneficial change to a problematic situation. Earl's (1987) notion of a design respecting but outwitting constraints would seem especially appropriate.

Second, Professor Dick's argument mirrors the debate of style versus substance in many design fields. I imagine that the critics and the criticized would strongly agree with the admonitions that he cites regarding the importance of emphasizing substance (Norman, 1988). So investigating the conditions and potentially negative consequences of a dominating “style” criterion in instruction (“style” describing outward appearances or form, as in fields such as industrial or interior design) could be worthwhile and beneficial. As I will address below, however, the critics would argue that taking “creative instruction” or “style” as the defining characteristic of their philosophy (or any philosophy) is awkward.

1b. *Designers must balance criteria and not allow one criterion to dominate all others.*

I cannot think of an authentic situation where I or other critics would disagree. The nature of such balance will vary according to the situation and the needs and desires of the client, of course, but there will always be some competing

criteria to be considered and balanced.

1c. *If “creativity” were to dominate other criteria, the result would be edutainment or infotainment—engagement and fun rather than learning.*

I like being engaged in tasks, having fun, and learning, and associate all three with my more powerful learning experiences. I’m not sure that the criticized or critics would argue that these characteristics are exclusive, but Professor Dick seems to load “creative” with a sort of “dominating evil” that has to be combated (in response to the “dominating evil of ISD” opinion held by the critics?). I suspect that the groups would agree on the statement that designers should focus on treating people with respect—helping them to have powerful experiences from which they learn—not on entertainment. They might differ on just what “respect” and “powerful experiences” might mean, of course, but would agree on learning being the primary purpose of designs.

1d. *Effectiveness and efficiency are the appropriate criteria for instruction.*

Whether this claim read the appropriate criteria or just appropriate criteria, the critics would likely agree, but with one important caveat relating to the assumptions underlying the statement. When one assumes, as the criticized appear to do, that there is knowledge in the world that can be communicated to a learner through instruction, the designer should attempt to do so as well and as easily as possible. She or he should define up front what skills are to be obtained and how they will need to be demonstrated, select the best strategies for teaching them, then measure what is accomplished. This may even include situations where “creativity” is explicitly sought, i.e., where creative” objectives are defined and strategies selected accordingly.

But the critics would argue that when one does not accept the assumptions of knowledge being “in the world” or independent of the knower, or the possibility of knowledge being somehow “communicated to” learners, then “instruction” with its connotation of furnishing learners with knowledge is not a very useful construct. And “effectiveness” and “efficiency” (the degree and cost of communicating a set body of content) are not appropriate criteria. They are biased to the view that knowledge can be defined precisely prior to the learning experiences of a class of people, thus held as a standard for post-measurement.

I certainly do not claim to be an expert on constructivism, and would defer to other critics for a response. But I do recognize that it refers to a philosophy, in particular to a set of epistemological assumptions about how humans come to know things, not merely to methods or to the properties of designs (Jonassen, 1991). There are designs that are better matched to constructivism (e.g., those that support situated learning), as there are designs that better fit the assumptions of an objectivist view (e.g., those that stress behavioral or information-processing principles). But criticizing designs created from a constructivist view in terms of criteria derived from an objectivist view, and vice versa, is fruitless. It makes no more sense than judging the quality of a naturalistic study in terms of objectivist criteria such as validity and reliability (Lincoln & Guba, 1985). So criticizing designs that are created by an individual or team that has chosen (either explicitly or tacitly) to make constructivist epistemological assumptions with the objectivist criteria of effectiveness and efficiency makes no sense. And adding “creative” or “creativity” as another objective criterion does not help.

1e. *“The critics” argue for “creative instruction.”*

I cannot claim to have read everything that we critics have written (or to even know who “we” are). I’ll simply refer to my statements above. The “Constructivist/Situated Learning/Anchored Instruction crowd” may be proposing alternative features for learning environments based on their differing epistemological assumptions. But the term “creative instruction” is itself so confusing from what I understand constitutes a constructivist view that I doubt they would argue for such.

1. ISD methods do result in “creative instruction” when they are used appropriately.

There are many parts to this statement, making it difficult to respond to the whole. In general, the critics would likely see it as an overstatement born of overconfidence in methods.

2a. *Following a particular process has predictable results.*

This is, perhaps, the central reason for being systematic. If a particular pattern of thought and action are taken, then a particular result can be expected. In terms of instructional design, this means that valid instructional prescriptions can be made based on what is known to have worked in the past. The critics would probably agree with this claim as long as it is made in reference to designers and design teams who hold an objectivist view and to situations where it is productive to treat problems as well-defined or “tame.” By well defined I mean situations where one can assume that a fairly complete understanding of a problem or the initial conditions of a situation will be achieved prior to engaging in solution specification, where appropriate and efficient paths to the solution can be identified up front, and where single correct or optimal solutions can be obtained (Rittel, 1972).

The criticized seem to argue that the large majority of the situations instructional designers face can be effectively treated in this manner. The critics, and based on my own experience I am certainly a critic in this area, argue that situations effectively treated as well-defined represent a minority of those encountered. And with the increasing pace of change in the workplace, they are growing less common rather than more. We would argue that with increasing frequency, designers are called upon to create for unique and complex circumstances, where standard answers to predefined categories or classes of problems are ineffective. In a recent issue of *Performance Improvement Quarterly* (Rowland, 1994), these situations were said to require transformation rather than elimination of differences.

From the critics’ perspective, designers are required to solve ill-defined or “wicked” problems. Or, more accurately, they find it necessary to treat situations as such (Buchanan, 1992). Rather than reducing complex situations to a set of values for variables in order to apply known rules (prescriptive principles applied to the results of an “analysis phase”), the designer needs to “see through” complexity, propose alternative models that may lead forward, and invent the forms that bring new definition. He or she finds it necessary to maintain a posture of reflective skepticism throughout the design process, giving only weak and tentative faith to definitions of the situation derived at the outset through “performance analysis” or “needs assessment” processes. (Senge, 1990, does a nice job of explaining this point with regard to organizational change.) Unfortunately, the latter approach is not yet well developed in the educational technology field. Maybe the criticized would call it something besides instructional design? (Perhaps the domain of the “learning systems designer”?) We critics would argue that this manner of thinking falls more clearly under the umbrella of “design” than the technical task of applying rules in solving well-defined problems. If nothing new is needed, then design is unnecessary.

2b. *High-quality instructional products result from following high-quality procedures.*

This adds the notion of “high quality” to 2a above. It suggests that procedures exist, high-quality procedures presumably, that lead with a degree of certainty to high-quality products. If one defines quality (or “creative instruction”) in terms of motivation, for example, then learner analysis is assumed to result in facts about what will motivate learners; strategies for motivating these learners can be systematically selected using these facts as data (i.e., applying known principles such as those of the ARCS Model); and motivation can be insured through formative evaluation. Professor Dick states that “The routine use of the ARCS strategy should insure that even the least creative of designers can develop instructional experiences that are engaging to learners. Keller’s ARCS model can be interpreted as a set of specific strategies for designers to use in order to be creative in their designs” (p. 6). Elsewhere he states “It is nearly impossible to think about a situation in which the designer could fail to create engaging instruction” (p. 9). The latter statement is made in the context of a discussion regarding the widening range of alternative technologies and delivery systems, but both statements illustrate the strong confidence the criticized have in systematic methods.

I won’t repeat what I stated above, but the well defined versus ill-defined distinction is important here again. The critics might agree that faith in determinism underlying claim 2b is well founded, or at least not especially harmful, for simple, routine situations where well-defined and independent problems can be identified and solved. However, they would

argue that such faith is not warranted for more complex, unique (and today, more common) situations where a perception of ill-definedness is more appropriate. Some would even say that these latter situations represent all instances of designing (see Buchanan, 1992).

What I can add to the debate here is a brief reflection on studies of designing and systems thinking. While results are certainly preliminary in the instructional design context and should be viewed with skepticism (as should any other results in preliminary form), the views that appear to dominate traditional models and pedagogy do not seem to match practice well, at least not in terms of what is revealed from observing experts solving problems. Experts appear to make a conscious choice based on experience to treat problems as ill-defined (see Thomas & Carroll, 1979). For example, solution ideas seem to be proposed in concert with inquiry into problem details rather than being determined by prescriptive principle after such details are established. Is that because the knowledge base of prescriptive principles is immature? Studies in other fields, such as architecture, that have been around for many years longer than instructional design have similar results (Cross, 1982), so perhaps not.

Similarly, the literature of systems science reflects a brief period, primarily the 1960s and 1970s, where deterministic methods were applied in the “human activity” or social systems context. Such methods are today often given the label “hard systems thinking,” meaning that systems are treated as hard or concrete entities. The most salient characteristic of hard systems thinking is the reduction of complex situations to manageable, simple representations that can be treated as those situations (Checkland & Scholes, 1990). Such methods were generally ineffective in the social systems context and have been supplanted by “soft systems thinking,” something having much in common, both methodological and philosophical, with the approach to treating design problems as ill-defined (Rittel, 1972). For example, in soft systems thinking, systems models are seen as relevant to debate about situations, or as a means to consider the nature of an ill-defined situation, not as those situations or as truthful definitions (Checkland, 1995).

2c. *ISD methods lead to boring instruction no more than any other methods.*

Professor Dick says that the critics argue that ISD methods reduce creativity and lead to boring instruction. I’m not sure that I am one of the critics here. While I agree with Jones (1992) that systematic design processes tend to artificially separate logic and imagination, and problems and solutions, if I have said or implied that ISD resulted *necessarily* in a loss of creativity or in boring instruction, shame on me. There is nothing inherent in ISD methods that results in either. But in contrast to what Professor Dick seems to imply, the critics would likely argue that there is nothing in ISD that leads to “creative instruction” either. He states that examples of boring instruction that were not prepared using ISD methods exist. I would add that plenty of examples of “creative instruction” (to use his ideas for definition, examples of interesting, engaging, and motivating instruction) that were not prepared using ISD exist also. In fact, in my classes when we begin to engage in generating ideas for new designs I have made a habit of asking my students to recall their “best learning experiences” and the “features that made them so good.” Since starting to ask these questions, I have received close to 400 responses, and I have yet to be able to make a direct link in any single response from what is cited as responsible for high quality to the use of ISD, or to systematic methods in general. Am I blinded by a critic’s perspective? I don’t believe so. Are methods invisible in the recall of design artifacts? I’m not convinced that they are, since I find it quite easy to recall features from my own learning experiences that indicate that systematic methods were used.

I believe that the issue is that ISD methods do not in and of themselves provide the core creative elements of the best designs, those that people recall as being especially good. So if these core ideas that result in the best experiences are not to be found in systematic development processes, I (and perhaps other critics) am forced to conclude that ISD may be helpful, but it is insufficient and apparently unnecessary. (And if someone wants to say that ISD is not intended or in many circumstances able to produce “best experiences,” and wishes to cite time and cost constraints, for example, then I would ask “Why not?” and suggest that the critics and criticized had begun a useful inquiry into creativity in design!) As Glenn Wilson and I have noted elsewhere, where ISD is most helpful may be more in managing design processes, for example, in communicating among team members than in designing (Rowland & Wilson, 1994). Is it great tool that gets misinterpreted and therefore misapplied?

2d. *Appropriate use of ISD includes careful learner analysis, various instructional strategies, and extensive formative evaluation.*

Professor Dick argues that the critics may be responding to inappropriate use of ISD when they say it has undesirable results. He identifies three elements that would constitute at least part of “appropriate use” in contexts where creative instruction was desired. I believe that the critics would agree that “extensive use of learner analysis, various instructional strategies, and extensive formative evaluation” (p. 7) are appropriate. They might counter that what remains of “appropriate use” in the thinking and acting within these elements and outside of them is unclear. My own impression is that “appropriate use” severely underestimates the task. I believe that carried out expertly—with expertise that we have just begun to understand—ISD can be helpful and can, in situations where such is sought, result in “creative instruction.” To say that it does help and that it does result in creative instruction from appropriate use seems quite a stretch.

2e. *ISD methods involve more than linear representations suggest.*

Professor Dick states that no designers think linearly (i.e., follow lock-step linear processes in their thinking), and that the critics who use this in their arguments against systematic development are employing a “straw man argument of the first magnitude” (p. 9). In defense of this position, he says that the Dick and Carey Model is a pedagogical tool, never intended to be used in practice. I won’t presume to answer for the critics here; I can only reflect on my own experience (which I readily acknowledge to be far less than Professor Dick’s). The majority of my own design experiences, and the reports I have received from students and other colleagues tend to reinforce Professor Dick’s position. However, I have seen and heard about a number of settings where ISD models, often the Dick and Carey Model, are in fact imposed as strict controls over designing. They are employed as lock-step linear patterns consistent with their graphic representations. In such circumstances, the intent may be to provide a tool to help achieve control over designing, say by helping the designer to manage the complexity of many factors and many tasks to accomplish, but the effect is to place constrictive control in designing, for example, to constrain the designer’s ability to pose solution ideas as a means to better understanding problems. So from my perspective, the argument may be relevant in a minority of situations, but it is no straw man.

For example, outside of major corporations (and, in a couple of cases, inside) I have seen design fail entirely to inexperienced individuals, those who have taken a single course in design or a single workshop, or even to those just given a book to read. As Professor Dick suggests, some are able to adapt processes to their situations and work in the manner they find works best. Others attempt to “follow the rules” precisely and expect those rules to be sufficient in and of themselves. My own students often return and say that “we follow the Dick and Carey Model in our organization,” and when I probe to understand what that means, I learn on occasion that they have been required to carry out a series of independent steps, one after the other with little thought and no room for discussion given to the next until the time for that step has come. To emphasize this point, I recall in my work with a Fortune 100 company a few years ago, a team that had modified the company’s systematic process of 9 steps to include 70 sub-steps, most to be completed in a prescribed order. They boasted of a more detailed version that included several hundred independent tasks to be completed one after the other. As Professor Dick argues, a hundred steps in a model does not translate directly to thinking about step 95 only after step 94, etc., but the designers in this setting gave every indication that they had placed considerable faith in creating instruction by doing just that.

As an aside, I was pleased to see Professor Dick’s description of the use of his model, in print. I have heard him say such things in person, but worry that others have not. When I look at a linear representation, I imagine a variety of interpretations: a lock-step sequence, starting and ending points or milestones for overlapping activities, or placeholders that are filled iteratively like blank pages tacked to the wall). The first interpretation emphasizes acting systematically, while the last emphasizes thinking systemically. Professor Dick would have us interpret his model as systematic and systemic. Apparently “appropriate use” implies such.

Regardless, I believe that the critics will find “linear” versus “non-linear” or “iterative” to be a deceptive framing of the issue. Perhaps more profitable would be a discussion of determinism and definedness. Traditional ISD models are built

on assumptions of determinism (see Buchanan, 1992). They assume the capability of calculating the features of the best possible design by thoroughly analyzing a situation to identify its definite conditions, then applying the correct “if-then” principles and prescriptions (i.e., prescriptions of the form: if X conditions exist and Y outcomes are desired, then Z methods will work best). That sort of thinking may be helpful where principles are known and where problems are productively treated as well-defined. Otherwise not. And this is a special cause for concern where someone interprets a situation as well-defined (e.g., instruction is the answer) when in fact the defining statements have oversimplified a complex of interdependent factors. I believe that the field of human performance technology grew out of such concern.

In Closing

I hope that my thoughts expressed here are useful in furthering the debate on issues relating to instructional design and creativity. The critics argue the power of ISD methods and the quality (e.g., “creative” attributes) of products resulting from their appropriate use. I believe that the critics would argue that such power lies more in the experience, expertise, and creativity of the designer than in ISD methods. They would find the posing of constructivism versus a “creative” criterion awkward, also.

My own view is that our understanding would be enriched by clearer distinctions between epistemological and methodological issues, and by inquiry addressing determinacy, indeterminacy, and perceptions of definedness in design thinking. I believe there is much more to designing than what we currently know, that methods need to be reconsidered, and that creativity is an area where we would benefit from careful definition, dialogue, and research. A few of the questions that come to mind include:

- Where and when should designers choose to view situations as ill-defined?
- Is there room for both determinacy and indeterminacy in designing? In what areas and contexts?
- Whose point of view is most important, and how can this perspective be best respected in designing? Can a designer who holds a constructivist view design well for a client wanting objectivist instruction and vice-versa? Where and how are the learners’ and other stakeholders’ views involved?
- How much faith should we have in methods? For what?
- If creativity is not encouraged by current methods, what sort of alternative tools would do so? Would these alternatives necessarily constrain or de-emphasize other criteria?

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