

RESPONSE

Third-Generation Instructional Models: More About Guiding Development and Design Than Selecting Training Methods

KURT KRAIGER
Colorado State University

Abstract

In this article, I summarize and respond to key comments and criticisms offered in commentaries on Kraiger (2008). At issue is whether the proposed third-generation instructional model is fundamentally sound, represents a new or better approach, overemphasizes the importance of learner–learner interaction, and underemphasizes the role of the instructor. Responses to these concerns are offered, along with clarification that the major contribution of the third-generation model is at the point of training design.

In Kraiger (2008), I suggested the emergence of a “third-generation” instructional model, one closely aligned with social constructivism philosophies of instruction and one well suited for applications of Web-based instruction (WBI). The designation of this instructional approach as third generation was meant primarily to distinguish it from prior approaches; however, the term can also be taken to mean that it is superior to or meant to supplant first- and second-generation models. So that we are all on the same page, a first-generation instructional model was a term I assigned to classic instructional design approaches in which training content was built around objectively defined knowledge or skills identified through task analysis. A second-generation instructional model was the term given to (cognitive) constructivist approaches in

which training emphasis is given to individually defined models of understanding. By a third-generation instructional model, I mean a system for identifying training objectives and developing and delivering training in a way that recognizes knowledge as dynamic and socially negotiated and places knowledge/skill acquisition and social competencies as joint objectives for training.

The article generated a number of thoughtful commentaries that affirmed, extended, challenged, or questioned the proposal of a third-generation learning model. Reading these commentaries was both humbling and enlightening. The authors’ insights helped me not only to see issues I had not considered but also to see ideas that I did not communicate as clearly as possible. Below, I summarize and respond to several of the key comments and criticisms and end by suggesting several avenues for future research.

Correspondence concerning this article should be addressed to Kurt Kraiger. E-mail: kurt.kraiger@colostate.edu

Address: Department of Psychology, Colorado State University, Fort Collins, CO 80523-1876

Kurt Kraiger, Department of Psychology, Colorado State University.

Old Wine–New Bottle or Bad Wine–New Bottle

Several authors questioned whether the proposal of a third-generation model is truly

a step forward, either because it is not fundamentally different from prior approaches or because it *is* different but not as useful as alternative perspectives.

Multiple authors (Brown & Klein, 2008; Landers, 2008; Saks & Haccoun, 2008; Sitzmann & Ely, 2008) question social constructivism as the philosophical basis for a third-generation model. Social constructivism posits that individual learning takes place in a dynamic social and cultural context such that the objectives for instruction are both shared meaning (within individuals) and the development of competencies for extracting, communicating, and understanding meaning (between individuals). Interestingly, although several authors including Sitzmann and Ely suggest that we are best served by a second-generation model, Saks and Haccoun recommend discarding the newly minted third-generation model for a fourth-generation model. Partly to sidestep the ongoing cognitive-social constructivist debate (see Landers), but mostly to focus on substantive concerns such as design, trainee, and instructor issues, I call attention to Ford (2008) who cites Sfrad's (1998) distinction between learning as acquisition versus learning as participation. Somewhere between foremen in the 1930s doing hands-on, behaviorally based training (see Kraiger & Ford, 2006) and the virtual instructional avatars described by Rupp, Gibbons, and Snyder (2008), we have come to appreciate the importance of motivated, engaged learners. The question is whether third-generation approaches to design, development, and implementation are the best way of engaging trainees.

Saks and Haccoun (2008) offer the old wine–new bottle critique. As they rightfully point out, learner–learner interaction has been encouraged in the educational domain for decades through activities such as action learning (Revans, 1982) and communities of practice (Wenger & Snyder, 2000). See also Brown and Klein's (2008) endorsement of Reigeluth's (1999) discussion of methods such as cooperative learning and guided discovery. Bedwell and Salas (2008) ask "what is the difference" between second- and

third-generation models because each require the same competencies of instructors. Arbaugh (2008), although acknowledging that the proposed third-generation model is a step forward, offers a commentary similar to both Saks and Haccoun and Bedwell and Salas: learner–learner interactions are important but not sufficient for learning, and the instructor (or course designer) remains a critical player in the design and implementation of effective learning systems.

Although I tend to believe the third-generation model *is* demonstrably different than prior instructional approaches, I agree with objections about overemphasizing learner–learning interactions, under-emphasizing the importance of the instructor/designer, and the dangers of a helter skelter system of novice learners "training each other." The potentially politically incorrect phrase "the blind leading the blind" comes to mind. So let me propose a more moderate position with respect to the delivery of training. A third-generation model places greater emphasis on learner–learner interaction than does prior instructional models. Careful design, given any instructional philosophy, generally would lead to decisions about whether certain tasks should be trained to certain learners using any of a variety of methods that include facilitating learner–learner interaction. This does not limit the role of the instructor/designer; rather, it increases the importance of that role in making sound decisions about how best to incorporate learner–learner interactions into instruction. All things equal (in the sense of tasks, learners, and context), more learner–learner interaction is beneficial to the third-generation model not because of increased instructional effectiveness but because of its effects on the prior design stage and the ability of participants to continue learning and negotiating meaning back on the job. I address these points in more detail below.

Two commentaries addressed the issue of whether social constructivism is the best foundation for a new model for the design and delivery of training. I will give my response first because the alternatives are

certainly worthy of consideration, and I do not want in any way to sound dismissive. Social constructivism, as characterized by the third-generation model, may be a better foundation for taking a systems perspective toward training needs assessment, design, and transfer. The alternatives proposed may be as good or better for the training design process, but I am not sure that they offer better perspectives on how to integrate what happens in training with how work gets done.

Brown and Klein (2008) endorse Reigeluth's (1999) call for new instructional design theories. In particular, Reigeluth argued that a new paradigm for instruction should be student directed or student/instructor directed, specific about methods for facilitating learning (and when to use and not use each method), clear about instructional outcomes, and clear about instructional conditions that will facilitate learning. Arbaugh (2008) calls attention to Garrison, Anderson, and Archer's (2000) Community of Inquiry framework that proposes that effective online learning occurs through the juxtaposition of three elements: teaching presence, social presence, and cognitive presence. Thus, for learning to be maximized, learners must actively construct meaning, confirm it through reflection and social discourse, and do so under a teaching presence that organizes content and the course, facilitates discourse, and provides direct instruction.

Both Brown and Klein (2008) and Arbaugh (2008) note that components of each alternative model or framework are similar to components of the third-generation model. Each is well cited within its respective discipline and bears consideration as a perspective on designing effective training programs. The implications of choosing different philosophical paradigms and the value of considering multiple paradigms as complementary were well addressed by Ford (2008).

Beware the Learner or Value the Instructor

One statement from Kraiger (2008) that drew a strong response was my assertion that

learner–learner interaction is the “cornerstone to third generation learning.” What I meant was not so much that learner–learner interaction is the foundation upon which all learning arises, but that it is the characteristic of the learning environment—and the learning design process—that differentiates third-generation learning from prior approaches. Several authors (Arbaugh, 2008; Bedwell & Salas, 2008; Crook & Beier, 2008; Sitzmann & Ely, 2008) either took exception with emphasizing the importance of co-learners or not placing enough emphasis on the importance of the instructor.

Arbaugh (2008) notes that although there is support for the proposition that learner–learner interactions influence course outcomes, it is not clear that learner–learner interactions are more predictive of course outcomes than are learner–instructor interactions. Bedwell and Salas (2008) suggest that instructors remain the critical drivers of both WBI development and implementation. What should the role of the instructor be? Bedwell and Salas argue that it is to build trust and ameliorate the burden of increased learner control through increasingly greater demands placed on the learner in modern WBI. Bedwell and Salas correctly note that relative to face-to-face instruction, technology-mediated instruction provides fewer cues (particularly nonverbal cues) that enable participant trust in others and the broader system (see Bickmore & Picard, 2005; Brown & Van Buren, 2007; Daft & Lengel, 1986; Rocco, 1998, for multiple perspectives on building trust in electronically mediated environments). Bedwell and Salas argue for the centrality of the competent instructor to design and manage the learning environment to guide the development of trust *in order to enable effective learner–learner interaction*. In other words, effective instructor behaviors enable peer-to-peer learning.

Arbaugh (2008) is clearer about the role and value of the instructor in online instruction. As noted above, instructors are responsible for course organization and design, facilitating discourse, and providing direct instruction (see Anderson, Rourke, Garrison, & Archer, 2001). Bedwell and Salas (2008)

describe the responsibilities of the online instructor as organizing and presenting content; demonstrating skills, knowledge, attitudes, or values; and providing for appropriate assessment. If social negotiation is critical to third-generation learning, this does limit the importance of the instructor but suggests that activities such as providing structure and monitoring discussion and feedback are essential roles that maximize the impact of learner–learner interaction. In my graduate training courses, I describe learning as magic. When the hat is empty and then it holds a rabbit, magic occurs; similarly, learning occurs when we know something or we can do something we did not know or could not do moments before. Extending the analogy, just as the role of the magician is to create a context where the rabbit magically appears, the role of the instructor is to create an environment where learning occurs. I think Arbaugh and Bedwell and Salas would agree. Where we *may* disagree is that I am advocating a move toward greater use of learning environments—in classrooms or online—where the magic happens more often in dyads, groups, and communities than in individual learners. Good instructors are crucial, but much of the magic should happen between learners.

Besides the shift from learning at the point of the learner to learning at the point of learner–learner interactions, there is one other important characteristic about the third-generation approach, at least with respect to WBI. When instruction takes place in an online learning environment, there is a shift in instructor competency from being able to provide support, build trust, and facilitate discourse to being required to design instruction so that learners benefit whether or not the instructor is present or attended to by learners (the instructor as invisible, guiding hand). For example, if I ask my students to discuss a difficult article in class, I can monitor how well this is going and simplify or complicate the discussion as indicated by their level of understanding. However, if the same assignment is given online, there are fewer cues available to gauge understanding, or discussions may

take place in settings beyond my capacity to monitor.

With loss of control (by the instructor) comes the need to be more thoughtful in planning. Several of the commentaries offered excellent suggestions for improving instruction either during planning or delivery. Crook and Beier (2008) raise several important points about considering the importance of skill complexity and the phase of skill acquisition when planning for learner–learner interactions. Particularly, for complex skills, during early phases of skill acquisition learners must devote considerable amounts of cognitive resources to the learning process, and requiring social interaction may divert attention from the learning task (Ackerman, 1988). Thus, it may be appropriate to plan for more direct instruction and individual practice early in skill acquisition but more learner–learner interaction as skills are initially mastered and trainees are preparing to leave training to enact those skills in social contexts on the job.

Rupp et al. (2008) offer several exciting ideas for using virtual reality and virtual avatars to not only simulate actual (social) work environments but also assist learners construct meaning and learn to learn. Imagine a trainee moving through a virtual world that resembles the actual work environment and encountering virtual avatars that represent coworkers or on-the-job mentors. Communicating and discerning meaning from the former not only help the trainee construct meaning but also develop competencies that aid them with similar processes on the job. The virtual mentor can provide much of the teaching presence advocated by Garrison et al. (2000) and also allows practice in learning on-the-job from a more experienced coworker.

Several authors took exception with the idea that online learning would work well for all learners. As I noted in the focal article and as echoed by Bedwell and Salas (2008), Crook and Beier (2008), Saks and Haccoun (2008), and Sitzmann and Ely (2008), extant research indicates that many individuals are poor judges of their learning (e.g., Koriat & Bjork, 2005) and enact poor learning strategies (Kraiger & Jerden, 2007). Thus, more

control and more responsibility assigned to learners is not necessarily a good thing.

Additionally, several authors raised the issue of individual differences in Web-based environments. For example, Saks and Haccoun (2008) cite several studies that suggest that the effectiveness of online learning may depend on individual learning styles or attitudes toward computer-based learning. Similarly, Sitzmann and Ely (2008) cite research that individuals vary in their willingness to engage in social interaction online.

Research on aptitude by treatment (or style by treatment) interactions has yet to provide a clear picture of what works for whom, in part because the determinants of engagement, motivation, and learning are likely complex and in part because of poor construct validity of the measures of style, orientation, and so forth. However, it is intuitively appealing that instructional methods that work well for one “type” of learner may not be as effective with a different type of learner. What is unclear is why endorsing individual differences leads to rejection of social constructivism as a general approach or WBI as a specific training strategy. If we interpret social constructivism narrowly and literally as an instructional philosophy then it feels like we are forcing all learners to learn through peer interaction and that is unlikely to work for everybody. However, if we agree, as I do, with Ford (2008) that third-generation approaches *complement* prior approaches or with Brown and Klein (2008) that third-generation approaches are another tool in the toolbox, then we believe that social constructivist approaches provide additional opportunities for tailoring instruction to different types of learners. At the hands-on level, it is difficult to understand how WBI restricts instructional methods, at least more so than traditional forms of stand-up training. Poorly implemented, WBI appears as a one-way, nonengaging instructional approach. However, when properly designed and implemented, WBI offers far more opportunities for customization and adaptation to individual learners than can be found in the classroom.

Next Steps—Directions for Future Research

Several authors discussed implications of third-generation models for future research (Crook & Beier, 2008; Ford, 2008; Rupp et al., 2008; Saks & Haccoun, 2008) and some of these comments bear repeating and amplification here. Ford notes that when we consider knowledge as nonobjective and socially negotiated, this changes how we might go about demonstrating transfer of training. Knowledge and skills may only be partially learned in third-generation training, with the recognition that trainees may need to continually refine that knowledge and those skills back on the job. The use of methods for determining gamma change (Golembiewski, Billingsley, & Yeager, 1976) could be used more commonly to identify how successful trainees are at continuing to refine their understanding of training concepts once back on the job. Similarly, one could assess adaptive expertise—knowing when and how to apply one’s training—may provide complementary evidence of transfer (see Smith, Ford, & Kozlowski, 1997).

In my mind, the implications of third-generation instructional models are as great for how we conduct needs assessments and design training as they are for how we deliver it. Either this point did not come through in the focal article or the commentators simply found the emphasis on learner–learner interaction and WBI more controversial than rethinking needs assessment. This is probably fair: Who really finds needs assessment controversial? However, the adoption of a third-generation model causes us to rethink the needs assessment process. For example, when interviewing subject matter experts (SMEs), we should not be looking just for agreement but also for diversity in understanding knowledge and skills and possibly being able to map that variability back onto differences in SMEs’ experience, roles, or organizational settings. By understanding the breadth of knowledge and skills within different enactments of the same job or role, we should be able to develop more effective strategies for training participants to negotiate meaning.

As recently noted by Aguinis and Kraiger (in press), there remains a dearth of research on training needs assessment. An important practical question that has not been adequately addressed by research is the relationship between the quality of information collected during needs assessment and the quality of the training design process. Can we do a better job of designing training when we work from more thorough, accurate information? Consideration of third-generation instructional models offers a somewhat different and perhaps more testable set of applied questions: (a) How does the adoption of a perspective on knowledge as dynamic and socially negotiated change the knowledge elicitation process? (b) Can job incumbents describe what they know (or can do) consistent with this perspective, or is it up to the job analyst to infer non-objectivity in knowledge from variability in responses across incumbents? (c) Does knowledge characterized as static and objective lead to different decisions about optimal training design than does knowledge characterized as dynamic and non-objective? (d) What competencies can be identified during needs assessment that predict both success in third-generation learning environments and successful transfer after training?

Whether or not third-generation models are adopted as state of the art, clearly there is a need for more research on strategies for engaging learners, promoting meaningful learner–learner interactions, training for adaptive transfer, and instilling positive attitudes for lifelong learning and development. None of these suggestions are novel and many of the commentaries offer specific starting points for each line of investigation. Although I do not think I wrote that either WBI or learner–learner interaction alone is the “best” or “only” way to train, I would agree that we simply need to know more about the organizational contexts, tasks, knowledge and skills, and learner characteristics in which WBI and/or learner–learner strategies are more effective than alternative delivery media and instructional methods. In this regard, perspectives offered by Arbaugh (2008), Brown and

Klein (2008), and Crook and Beier (2008) are particularly salient for understanding the likely boundary conditions and moderators of either instructional strategy.

Final Comments

I would be surprised if any training researcher or training director read my original article *and* the ensuing commentaries and then made the decision to change dramatically how they studied learning or designed training programs. But I would be even more disappointed if the same set of articles did not lead to reflection about whether one is studying the right variables, designing the optimal training programs, or generally thinking about training in the best way possible. It is this latter point that is the most important. Properly operationalized training is an open system that moves from gap analysis to training development to delivery to application and follow-up. Even discounting mischaracterizations of the model as the only or best way *to train*, it is important to consider whether alternative training approaches are more effective *at the systems level*. For example, is it likely that direct instruction is more effective than a third-generation approach for training some trainees on some tasks at some level of skill acquisition? Here, effectiveness is defined in terms of acquisition speed or performance level within training. At a systems level, can we say that whatever task analysis methods were used to derive skills amenable to direct instruction are superior to third-generation inspired approaches that lead to different decisions about what to train? Furthermore, most prior research comparing, say, learner–learner versus instructor-led methods again use within-training learning (or learner reactions) as the criteria. At a systems level, are we ready to say that these are the appropriate criteria for true training programs that are preparing workers for a dynamic performance environment (Kraiger, 1999)? The objective of the focal article was to stimulate thinking of our philosophies of instruction and the implications of a particular philosophy—social constructivism—into the systematic analysis and design of

performance and learning environments. There is more heavy lifting to be done.

References

- Ackerman, P. L. (1988). Determinants of individual differences during skill acquisition: Cognitive abilities and information processing. *Journal of Experimental Psychology: General*, 117, 288–318.
- Aguinis, H., & Kraiger, K. (in press). Benefits of training and development for individuals and teams, organizations, and society. *Annual Review of Psychology*, 60.
- Anderson, T. Rourke, L., Garrison, D. R., & Archer, W., Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks*, 5(2), 1–17.
- Arbaugh, J. B. (2008). Instructors as facilitators of learner–learner interaction in third-generation learning environments. *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 487–490.
- Bedwell, W. L., & Salas, E. (2008). If you build it, will they interact? The importance of the instructor. *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 491–493.
- Bickmore, T., & Picard, R. (2005). Establishing and maintaining long-term human-computer relationships. *ACM Transactions on Computer-Human Interaction*, 12, 293–327.
- Brown, K. G., & Klein, H. J. (2008). Third-generation instruction: “Tools in the toolbox” rather than the “latest and greatest.” *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 472–476.
- Brown, K. G., & Van Buren, M. E. (2007). Applying a social capital perspective to the evaluation of distance training. In S. M. Fiore & E. Salas (Eds.), *Towards a science of distributed learning* (pp. 41–63). Washington, DC: American Psychological Association.
- Crook, A. E., & Beier, M. E. (2008). Two heads are not always better than one: Defining parameters for collaboration in training. *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 484–486.
- Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness, and structural design. *Management Science*, 32, 554–571.
- Ford, J. K. (2008). Transforming our models of learning and development: How far do we go? *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 468–471.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *Internet and Higher Education*, 2, 87–105.
- Golembiewski, R. T., Billingsley, K., & Yeager, S. (1976). Measuring change and persistence in human affairs: Types of change generated by OD designs. *Journal of Applied Behavioral Science*, 12, 133–157.
- Koriat, A., & Bjork, R. A. (2005). Illusions of competence in monitoring one’s knowledge during study. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 31, 187–194.
- Kraiger, K. (1999). Employee performance and learning in today’s organization. In D. R. Ilgen & E. D. Pulakos (Eds.), *The changing nature of work performance: Implications for staffing, personnel actions and development* (pp. 366–396). San Francisco: Jossey-Bass.
- Kraiger, K. (2008). Transforming our models of learning and development: Web-based instruction as an enabler of third-generation instruction. *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 454–467.
- Kraiger, K., & Ford, J. K. (2006). The expanding role of workplace training: Themes and trends influencing training research and practice. In L. L. Koppes (Ed.), *Historical perspectives in industrial and organizational psychology* (pp. 281–309). Mahwah, NJ: Lawrence Erlbaum Associates.
- Kraiger, K., & Jerden, E. (2007). A new look at learner control: Meta-analytic results and directions for future research. In S. M. Fiore & E. Salas (Eds.), *Towards a science of distributed learning* (pp. 65–90). Washington, DC: American Psychological Association.
- Landers, R. N. (2008). Online social context does not imply social constructivism: A case for clear operationalization. *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 477–479.
- Reigeluth, C. M. (Ed.). (1999). *Instructional-design theories and models: A new paradigm of instructional theory* (Vol. 2). Mahwah, NJ: Erlbaum.
- Revans, R. (1982). *The origins and growth of action learning*. Bromly, England: Chartwell Bratt.
- Rocco, E. (1998). Trust breaks down in electronic contexts but can be repaired by some initial face-to-face contact. In C. M. Karat, A. Lund, J. Coutaz, & J. Karat (Eds.), *CHI 1998 conference proceedings* (pp. 496–502). New York: ACM Press.
- Rupp, D. E., Gibbons, A. M., Snyder, L. A. (2008). The role of technology in enabling third-generation training and development. *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 496–500.
- Saks, A. M., & Haccoun, R. R. (2008). Is the “third-generation model” new and is it the holy grail of adaptive learning? *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 480–483.
- Sfrad, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher*, 27, 4–13.
- Sitzmann, T., & Ely, K. (2008). Do second-generation models have more to offer? *Industrial and Organizational Perspectives: Perspectives on Science and Practice*, 1, 494–495.
- Smith, E. M., Ford, J. K., & Kozlowski, S. W. J. (1997). Building adaptive expertise: Implications for training design. In M. A. Quiñones & A. Ehrenstein (Eds.), *Training for a rapidly changing workplace: Applications of psychological research* (pp. 89–118). Washington, DC: APA Books.
- Wenger, E. C., & Snyder, W. M. (2000). Communities of practice: The organizational frontier. *Harvard Business Review*, 78, 139–145.