Reflections on the Future of Instructional Design and Technology

J. Michael Spector, *Florida State University*

The Instructional Design & Technology Futures group, an informal group of scholars that has been meeting for a few short years, put together this panel addressing the compound question: Where are we going and how will we get there? We have come to ask this question as a result of thinking about where we have been and wondering how we survived. We evolved from early groups working with new (at the time) educational technologies such as the mimeograph and overhead projector and applying systematic engineering processes to the design of instruction and learning environments. We have been affiliated with a number of disciplines including educational psychology, information studies, and library science. We claim to be a discipline that applies theory to practice – learning theory to instructional design practice. The much promised benefit of doing so would be improved learning and more efficient instruction. Well, something always seems to get in the way. Technologies become obsolete, teachers become frustrated, and researchers are lured into industry.

Instructional Design and Technology is an interesting and eclectic discipline. We have more instructional design models than there are elements in the periodic chart, which was up to 112 the last time I looked. Just as there are groups of elements (nine by some accounts), the various instructional design models can be grouped – by context or setting (see Branch and Gustafson, 2002) or by many other differentiating factors such as underlying learning theory, delivery mode, and so on.

We are so eclectic that we cannot even agree on our most basic terminology. Debates have raged for years over the difference between instructional design and instructional development, each with a small ‘d’ and a capital ‘D’ as well as other variations. Being interesting and eclectic has led to other disputes as well. Some claim that the systems thinking that formed the core of Instructional Systems Development (ISD) is outdated and inappropriate for instructional design and development; what is needed is more rapid prototyping and user-centered design and development. A few go so far as to claim that constructivism is inconsistent with the design of instruction – learners create their own knowledge and in effect design their own learning, according to some accounts. Whether or not the latter is a descriptive or prescriptive claim is yet another cause for debate within out discipline.

Given such a contentious history, some have chosen to abandon what they perceive to be a sinking ship and join a different community of professional practitioners who call themselves learning scientists. This is a phenomenon more common in North America than in Europe and may be related to the perceived funding favoritism of government agencies (especially NSF) towards learning researchers (primarily psychologists) as compared with educators and instructional designers.

Given that brief caricature of the discipline, one might say that IDT has been all over the map and has surprisingly survived a number of intentional and unintentional assaults. I am not certain that the caricature is accurate in relevant ways; nor am I confident that I have captured what is most interesting about the discipline. Nonetheless, I am concerned about the future of our discipline.

First of all, does Instructional Design & Technology actually constitute a discipline? The way that academic and professional disciplines are defined is somewhat arbitrary and variable. There was not always a distinction between physicists and chemists or physicians and dentists. These evolved over time and have been modified as knowledge and technology progressed. Given that sort of academic fickleness, it seems perfectly okay to say yes, IDT is a legitimate discipline.

I am inclined to think that we need to establish two additional things to minimize the loss of interesting people to other disciplines and to shore up our own reputation as a serious academic discipline: a unifying theme and a captivating logo. In order to facilitate the process of developing (or is it designing?) a unifying theme, I propose that we first adopt a theme song. The one that I propose is Malvina Reynolds' Little Boxes (see http://www.ocap.ca/songs/littlbox.html). The common refrain in this song is "little boxes make of tickytacky" – this phrase may be used to characterize the various development models. Moreover, given the frequent analogies to architectural models and our concern that the too rigid application of ISD leads to problems, this song, which is about small tract houses all designed the same way for their inhabitants in spite of the obvious differences that exist, appropriately captures the designer's concern to balance functionality and individuality.

Second, we need a logo that captures our interesting but eclectic vision and the imagination of professional practitioners and interested onlookers. I recommend a logo based on the hummingbird. A hummingbird can beat its wings about 30 to 50 times a second, which is suggestive of the frequency of change in the requirements over the life of a design effort. These birds can also fly in all directions, including upside down, which is often a situation in which instructional designers and technologists find themselves.

On a slightly more serious note, I do not think that our primary concern should be about our identity, although that secondary conversation is worth having and should continue in the hallways and next to water coolers. We all have multiple identities. We have multiple roles and engage in a multitude of activities. Our graduates become instructional designers, technology coordinators, training managers, educational researchers, university professors, military training specialists, advisors, consultants, and so on. We should avoid the "tickytacky" nature of rigidly imposed standard solutions and approaches, as Malvina Reynolds reminds us. We are rich in identity and should embrace that richness and diversity.

We should most definitely pursue collaborative efforts with those who consider themselves learning scientists, cognitive psychologists, systems theorists, design specialists, and so on. This is admittedly difficult. An interdisciplinary, international group that involved folks such as Dijsktra, Merrill, Scandura, Seel, Spector, and van Merriënboer held a series of three meetings between 1999 and 2002 – one at the University of Twente hosted by Sanne Dijkstra, one at the University of Bergen hosted by Mike Spector and one at the University of Freiburg hosted by Norbert Seel. These meetings did bring together prominent international scholars in the combined areas of Instructional Design and the Learning Sciences. The first and third of these meeting led to special issues of *Instructional Science* and the second resulted in an edited volume (Spector & Anderson, 2000).

This group has not been able to sustain the face-to-face interdisciplinary, international collaboration that occurred in the period of time between 1999 and 2002. Perhaps that is due to the many other demands from local institutions and primary disciplines placed on individuals. I am not sure. That group is largely responsible for the new journal *Technology, Instruction, Cognition and Learning* (TICL; see http://www.scandura.com/) so it should be considered a success regardless of the lack of recent meetings. One of our goals is surely improved articulation with communities of practice that we believe are closely associated with our own work and interests. This is a reasonable goal but it appears to be difficult to turn into a meaningful reality on a sustainable and significant scale. We should investigate if this perception is accurate and what the potential causes might be.

Gibbons has characterized a framework for thinking about Instructional Design & Technology that accommodates behavioral, cognitive and other perspectives. This framework provides a way to generate more specific instructional design theories and associated research hypotheses and questions. This approach is perhaps more rational than simply generating so many models and seeing which one sells the most copies and will survive. Indeed, the survival value of an instructional design model should be that it generates testable hypotheses. I imagine that this claim might be contentious.

Examining the underlying assumptions of our discipline is likely to prove to be a valuable way to go about envisioning our future. I have written about two different sets of assumptions that lead to an atomistic perspective (learners are rational, individuals are the proper unit of analysis, and conditions and methods can be manipulated to effect outcomes) or to an holistic perspective (learners are intermittently rational, language communities are the proper unit of analysis, and learning occurs within the context of dynamic systems) (Spector, 2001). These perspectives are not distinct camps or positions. Rather, they are more like points along a continuum.

What strikes me as worth serious consideration in addressing the topic of this panel is finding out what others think. Jan Visser provided a preliminary view through the *Book of Problems* sessions that he convened at AECT in 2002 and 2003. A compendium of the ideas of leading scholars can be found on the Learning Development Institute Website (see http://www.learndev.org and click on Book of Problems). This effort was aimed at identifying the most important things about learning that we do not understand. I conclude with a sampling of some of the questions that contributors thought worth exploring.

John Shotter asked in his Book of Problems paper:

- "To what extent does our learning depend on our bodily involvement in (and vulnerability to) events that can provoke surprise and wonder, as well as anxiety and risk, in us?
- To what extent is it important that those teaching us have that kind of continuous 'in touchness' with us, so that at various crucial points in their teaching, they are able to say to us: "Attend not to 'THAT' but to 'THIS';" "Do it 'THIS WAY' not 'THAT WAY'"?
- To what extent is our living involvement in a whole situation necessary for us to get an *evaluative* grasp of the meaning for action of a small part of it - as when a music teacher points out a subtle matter of timing, or a

painter a subtle change of hew, or a philosopher a subtle conceptual distinction, such as that between, say, a *mistake* and an *accident*?

- Is learning possible without the bodily risk of, at least, disorientation and confusion, and without the *surety* of being able "to go on" (Wittgenstein), as *guides* to inform us as to the value of our relations to our surroundings?
- And finally, is the *individual* pursuit of truth possible, without being immersed in an ongoing, unending, chiasmically-structured dialogue with the others and othernesses about us - given that we all must continually re-evaluate our values as the world around us changes and develops, and the order of multiple values we once thought adequate begin to reveal themselves as inadequate?"

Vera John-Steiner asked: "How would our understanding of learning be transformed if its purpose were joint discovery and shared knowledge rather than competition and achievement?" Gavriel Salomon concludes that "what we'd need to study is what makes socialization and acculturation so effective and how their 'active ingredients' could be incorporated into instruction." Leon Lederman suggested that we should figure out "how to construct a dossier of misconceptions, of 'natural' assumptions that must be viewed with suspicion." Alison Gopnik found interesting questions to explore concerning both the computational and the biological mechanisms that underlie learning.

Basarab Nicolescue posted these seven questions:

1. "If we distinguish three types of learning, the mental (cogintive), the feeling (affective) and the body (instinctive), how important are, for a given type of learning, the other two types?
2. How can one reach an equlibrium between the mental, feeling and body learning? Can we assert that this equilibrium corresponds to a new type of learning (a learning that is "all comprehensive")?
3. What is the role of the traditional methods of meditation and relaxation for the process of learning?
4. Can we imagine that, in the future, learning through initiatives outside formal institutional settings will be more important than in institutional settings? How can one help the development of such an evolution of learning?
5. Are questions more important than answers in the process of learning? How can one generate a science and an art of questioning?
6. What is the practical role of the included middle (paradox, oxymoron, etc.) in the process of learning ? How could the included middle build transcultural and transreligious attitudes?
7. Could life stories stimulate the process of learning?"

Ron Burnet asks about the evolving role of all disciplines in the networked information age and is especially interested in the phenomenon of auto-didacticism made possible by the Internet. Federico Mayor observes that we do not know much about "learning *to be*, to transform information into personal knowledge" even though we know a lot about learning to know and learning to do. David Perkins posed four general questions about learning in his contribution to the Book of Problems:

1. The Question of Mechanism - When we learn, in what form is that learning captured in us and our physical, social, and symbolic surround? -- in the form of mental representations, the weightings of neural networks, conditioned reflexes, runnable mental models, priming or expectancy and different degrees of primability, distributed cognition, etc.? …
2. The Question of Difficulty - When learning is hard, what makes it hard? When learning is easy, what makes it easy? Answers would have to deal with the match between mechanism and the things to be learned. …
3. The Question of Design - What can we do to make learning something easier? This is the problem of instructional design taken broadly, not just for schools but for groups, teams, families, societies, even for immune systems and genetic codes. …
4. The Question of Worth - What's worth learning, for whom, for what purposes practical or ideological, at what cost? Do we find the guide to what's worth learning … in Adler's great books, in Dewey's pragmatism, in Socrates' insistence that we know our own ignorance, in more humble crafts and skills of the kitchen, the tailor's shop, the chemist's laboratory, the accountant's spreadsheet, in the ancient human modes of love, parenting, friendship, ownership, command, peace, war? …

This is a brief review of what a distinguished group of scholars thought we ought to be investigating. Some of these questions and concerns may seem more appropriate for investigation by psychologists or sociologists. Some are surely at the heart of instructional design. Regardless, if one is committed to the fundamental trans-disciplinarity of instructional design and technology, then such a diverse range of perspectives ought to inform our envisioning of our future.

The IDT Futures group is pushing in much the same directions as Visser's *Book of Problems* group and Scandura's *TICL* group. What I have to contribute to this dialogue are my ears.

References

Branch, R. M., & Gustafson, K. L. (2002). *Survey of instructional development models* (4th ed.). Syracuse, NY: ERIC Information and Technology Clearinghouse.

Spector, J. M. (2001). A philosophy of instructional design for the 21st century? *Journal of Structural Learning and Intelligent Systems 14*(4), 307-318.

Spector, J. M., & Anderson, T. M. (Eds.) (2000). *Integrated and holistic perspectives on learning, technology and instruction: Understanding complexity*. Dordrecht: Kluwer.