



Association for Educational  
Communications and Technology

# iTECH DIGEST

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Linking Research and Practice to Improve Learning

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## Planning to Learn: The Role of Interior Design in Educational Settings

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American children spend a significant amount of time in a classroom setting. Many of these environments are in older buildings with outdated environmental systems such as heating and cooling, lighting, sound, or other acoustical controls. Student performance in school has been shown to have a relationship to the quality of the building. Sensory stimulation can both enhance and detract from the learning process of a young child. Visual, tactile, and auditory senses are crucial in learning and need to be considered in the design of the built environment. Many teachers and students, however, are coping with inadequate

classroom spaces, outdated buildings, and deteriorating interiors. Poor quality environments can create learning barriers such as impaired concentration for many students who will be distracted by negative attributes in these enclosed interior spaces. These impacts are especially significant for younger children in elementary school settings who are more susceptible to negative environmental stimulation.

Interior design strategies for elementary school settings, therefore, have the potential to substantially influence the learning and developmental needs of children...

This design case describes a design process-within-a-process concerning two related goals: 1) what occurred when teaching

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This article is excerpted from *International Journal of Designs for Learning*, Vol. 4, No. 2. Read the full text by logging in at the AECT website, <http://aect.org/>, and clicking on Publications.

### CALL FOR PAPERS

Check out calls for papers, proposals, and participants. Get involved.

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### JOURNALS

Members have instant online access to a wide variety of journals.

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### ISSUES IN FOCUS

The column this month discusses linear and nonlinear learning design.

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*This Summer!*

*Learning and  
Knowledge  
Analytics in  
Open  
Education*

**AECT International  
Research  
Symposium**

**Shanghai, China  
June 17-19, 2015**

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**Call for Proposals.** Plan now to present at the next AECT International Convention, which will be held in November in Indianapolis. Check the website for proposal submission information at <http://aect.org/>.

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**Call for Papers.** The AECT flagship practitioner journal, *TechTrends*, is seeking manuscript submissions, including from international and newer authors. For more information, see the Instructions for Authors online by clicking on Publications on the AECT website: <http://aect.org/>.

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## From Psychomotor to ‘Motorpsycho’: Learning Through Gestures with Body Sensory Technologies

Xinhao Xu, Florida State University

Fengfeng Ke, University of Electronic Science and Technology of China

Body sensory technologies like the [Microsoft] Kinect should provide new avenues to monitoring learners’ body movements and gestures, and enable learners to interact with instructional interventions via motors or haptic customs. It is necessary to examine the theoretical underpinnings for the design and implementation of a Kinect-integrated, gesture-based learning environment. For its novelty, it is not surprising to find only preliminary studies directly related to body-sensory-technology-based learning. Consequently, we have reviewed and analyzed the gesture-based learning studies whose designs may be extended with the help of Kinect and other body sensory technologies. In our discussion, we propose a concept framework that was distilled from the prior theoretical and empirical research—the motorpsycho learning approach. We project that motors facilitate information processing and communication so as to enhance psychological activities in learning....

From the perspective of embodied cognition, cognitive processes are deeply rooted in the body’s interactions with the world. Researchers of embodied cognition define humans as essentially “acting beings” or “embodied agents,” and argue that “our powers of advanced cognition vitally depend on a substrate of abilities for moving around in and coping with the world.” Researcher M. Wilson stated that there was a growing idea that “the mind must be understood in the con-

text of its relationship to a physical body that interacts with the world.” Although it sounds a little radical, the concept that the body shaped the mind does have sensible support in the embodied cognition community. And what is more important, it shows the close relationship between the body and mind....

In this article, we deliberately avoid diving too much into embodied cognition due to some controversy in the research community. As L.W. Barsalou commented, the embodied cognition community seemed to “problematically” insist on believing that physical movements and “bodily states are necessary for cognition and that these researchers focus exclusively on bodily states in their investigations.” Yet, there are cognitive activities which involve no bodily movements and are grounded in aspects other than gestures. In our article, we do not mean to compare ‘right’ from ‘wrong.’... However, we concentrate on cognitive learning that involve motor activities, like gesture-based mathematics and language learning, in which body movements are part of the learning activities, and serve to facilitate information processing and communication.

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*Editor’s note:* This is a small excerpt from the discussion section of this detailed study. Reference citation have been omitted. Readers are encouraged to read the full text, which is in *Educational Technology Research and Development (ETR&D)* 62:711-741, published online September 11, 2014. AECT members have online access at <http://aect.org/>. Click on Publications.

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#### **AECT Mission**

The mission of the Association for Educational Communications and Technology is to provide international leadership by promoting scholarship and best practices in the creation, use, and management of technologies for effective teaching and learning in a wide range of settings.

#### **Goals:**

- Define the disciplines and professional activities that comprise the field of educational communications and technology.
- Serve and represent professionals in the field and support professional growth.
- Advance scholarship and practice that contribute to and enlarge the knowledge base of the field.
- Promote policies that ensure the humane and ethical use of educational communications and technology at all levels, from the personal through the international.

### **Planning to Learn...continued from page 1**

interior design (ID) students how to understand the role of the built environment in supporting the educational process and overall learning experience of children; and 2) the process of having those ID students develop and provide built environment recommendations to real clients that would improve children's learning outcomes. Advanced level interior design students were provided an opportunity to work with Manhattan Catholic School (MCS), a private educational organization located in Manhattan, Kansas, a community of approximately 50,000.

Advances in design strategies for place-types such as educational settings can be influenced by returning to the fundamentals of what it is like to learn something for the first time. Every interaction that a child makes with their environment is a learning experience; one that adults may take for granted. This design case has detailed one experience of teaching interior design students how to understand the role of the built environment in supporting the educational process and overall learning experience. . . . These students were able to guide the project outcomes from the beginning of the project because they were able to help define the problems that needed to be addressed for the various user groups. Each stage of the project provided students with new skills and understanding of the problem-seeking and design process.

The significance of this design case lies also in what was learned about the expectations of grade school educators. . . . The grade school teachers initially expressed skepticism about the impact interior design solutions could have on the outcomes of delivery of their curriculum. During the course of the project, however, as the interior design students interacted with multiple user groups of the grade school setting, a revitalized sense of place was established. Teachers began to specifically articulate the significance of the quality of the perceptual environment on learning. Likewise for the interior design students, they were able to apply theories of child development as well as evidence-based design strategies that culminated in design decisions with real and rewarding impact.

*Editor's note:* Like most excerpts, this one cannot do justice to the actual study. Readers are advised to consult the full text online.

## Member Access Publications

### ***Educational Technology Research and Development (ETR&D)***

Bimonthly

ISSN: 1042-1629 (print)

ISSN: 1556-6501 (electronic)

Journal no. 11423

Springer US

### ***TechTrends***

Bimonthly

ISSN: 8756-3894 (print)

ISSN: 1559-7075 (electronic)

Journal no. 11528

Springer US

### ***Instructional Science***

An International Journal of the Learning Sciences

Bimonthly

ISSN: 0020-4277 (print)

ISSN: 1573-1952 (electronic)

Journal no. 11251

Springer Netherlands

### ***International Journal of Designs for Learning***

Semiannual

ISSN: 2159-449X

(electronic)

AECT

### ***Journal of Applied Instructional Design***

Semiannual

ISSN: 2160-5289

(electronic)

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## Shanghai This Summer

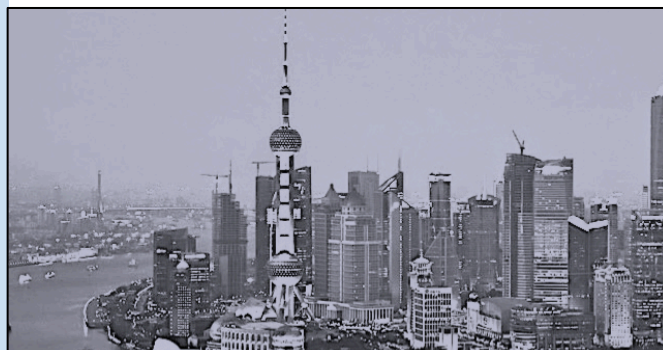
### **AECT International Research Symposium Set for June 17-19**

The theme is Learning and Knowledge Analytics in Open Education, a symposium sponsored by AECT and Indiana State University and hosted by East China Normal University.

AECT began the International Research Symposium initiative with the intent of encouraging greater participation around the world in our field of endeavor. This symposium is designed to serve as an open discussion forum, to draw together the best minds in our field for an intensive intellectual exchange of ideas and information on research, development, and application. The topics are many and varied, all related to learning and knowledge analytics in open education across all disciplines.

This symposium is the second such endeavor for AECT. The first International Research Symposium was held in Taiwan in 2013. The success of that event set a foundation.

A hallmark of the International Research Symposium initiative is the fostering of cross-cultural collaboration. According to AECT Executive Director Phil Harris, "We hope that out of this event will come new international projects that engender cooperation and sharing among the world's scholars and researchers. From these projects will come advances in educational technology, instructional design, teaching, and, ultimately, learning."



*Issues in Focus*

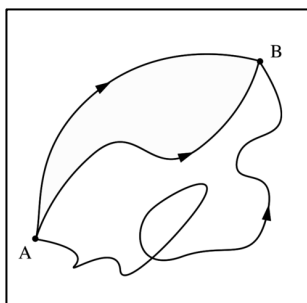
## Getting from Point A to Point B

If learning is a journey, then isn't teaching simply a matter of getting students from Point A to Point B—that is, from a position of not knowing something to knowing that thing: how to tie one's shoelaces, how to add two-digit numbers, how to solve a quadratic equation, how to read and write? Learning designers' self-understanding requires examining a common presumption that learning is a linear pursuit. The notion of linear learning is akin to believing that all roads are straight. Just as learners differ from one another and teachers must adopt views of teaching that suit the needs of their students, so too must there be the acknowledgment that students' learning pathways will differ according to the type of knowledge to be acquired and the skills needed to develop full understanding.

It is an understandable misconception to think in linear terms. For convenience, instructional design models tend to be framed as linear sequences. Consider, for example, the common ADDIE model:

1. Analysis
2. Design
3. Development
4. Implementation
5. Evaluation

That's straightforward: 1-2-3-4-5. Here is a road that stretches linearly from Point A (analysis) to Point B (evaluation)—or so it might seem. But this is the illusion of linearity. If students' knowledge and understandings differ, and how they acquire knowledge and construct understandings also differ, then getting from Point A to Point B often will not be straightforward. In fact, it's likely to be rather messy, something closer to the figure—and that figure represents only three students'



learning journeys.

Learning designs—incorporating all of the ADDIE features—must consider how teachers plan learning journeys that accommodate student differences. Thus a question for learning designers' self-understanding is to examine one's views of linear and nonlinear teaching. Maddux, Johnson, and Willis (2001) take their cue from multimedia technology to make the following distinction: "The ability to move about in a hypermedia program and choose what to explore next means this

material is nonlinear. Teacher-centered Type I instruction is generally linear instruction: the lesson begins at a particular point and proceeds through a set sequence. In contrast, nonlinear instruction, which is generally student-centered Type II instruction, does not have a prescribed

sequence."

This contrast is a useful frame of reference. But the contrast should not be seen as an either/or proposition. Some students' minds are like high-speed trains, for which a linear, A-to-B model may be well suited. Other students are better equipped to proceed in some nonlinear fashion. But "minds" are flexible, and learning acquired linearly in one context may be better acquired in a nonlinear fashion in another context. And vice versa.

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Maddux, C.D.; D.L. Johnson; and J.W. Willis. (2001). *Educational Computing: Learning with Tomorrow's Technologies* (3rd ed.). Boston: Pearson.

*Editor's note:* This essay was sparked, in part, by Johannes Cronjé's discussion of nonlinear "rhizomatic" learning, which was the subject of his keynote address at the 2014 AECT International Convention. The address is archived and available at <http://aect.org/>.