ET Contents Pages

January, 2000-December, 2015
Volume 40-Volume 55
CONTENTS

Articles

5 The Maturing of Constructivist Instructional Design: Some Basic Principles That Can Guide Practice
   Jerry Willis

17 The Quality-Interactivity Relationship In Distance Education
   Guglielmo Trentin

28 The New Sciences and Systemic Change in Education
   Alison A. Carr-Chellman

38 Designing Technology-Based Performance Support
   Kent L. Gustafson

45 Three Principles of Perception for Instructional Interface Design
   Linda L. Lohr

53 The Human Touch: Synchronous Communication in Web-Based Learning
   Paul G. Shotsberger

57 Some Design Strategies for Developing an Online Course
   Nancy Harrison and Carole Bergen

61 A Suggested Model for a Working Cyberschool
   Mahnaz A. Javid

This issue begins the fortieth year of publication of this magazine.
## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>A General Set of Procedures for Constructivist Instructional Design: The New R2D2 Model</td>
<td>Jerry Willis and Kristen Egeland Wright</td>
</tr>
<tr>
<td>21</td>
<td>Transforming Learning with Technology: Beyond Modernism and Post-Modernism or Whoever Controls the Technology Creates the Reality</td>
<td>David H. Jonassen</td>
</tr>
<tr>
<td>26</td>
<td>A Three-Space Design Strategy for Digital Learning Material</td>
<td>Jef Moonen</td>
</tr>
<tr>
<td>33</td>
<td>Activity Theory as a Framework for Project Work in Learning Environments</td>
<td>David W. L. Hung and Angela F. L. Wong</td>
</tr>
<tr>
<td>38</td>
<td>A Survey of Course Web Sites and Online Syllabi</td>
<td>Walter Rankin</td>
</tr>
<tr>
<td>43</td>
<td>Faculty Motivators and Inhibitors for Participation in Distance Education</td>
<td>Catherine C. Schifter</td>
</tr>
<tr>
<td>47</td>
<td>The Program Planning Model for Adult and Continuing Education</td>
<td>Jerry Blank and James D. Russell</td>
</tr>
<tr>
<td>52</td>
<td>Wanted: Educational Technologist—Whatever That Is</td>
<td>Samantha Jenkins and Allison Rossett</td>
</tr>
<tr>
<td>58</td>
<td>Systematic Planning in the Design of an Educational Web Site</td>
<td>Michael F. Ruffini</td>
</tr>
</tbody>
</table>

About This Issue

A general issue covering varied aspects of educational technology
CONTENTS

Articles

5 The Formative Evaluation of a Web-Based Course-Management System Within a University Setting Ralf Maslowski, Adrie J. Visscher, Betty Collis, and Paul P. M. Bloemen

20 The Four Levels of Web Site Development Expertise Albert L. Ingram

29 Appropriating and Negotiating Knowledge: Technologies for a Community of Learners David W. L. Hung and Der-Thanq Chen

33 The Distance Education Learning Systems Model (DEL) Gary "Lee" Frantz and James W. King

41 Enhancing Interactivity in Web-Based Instruction: A Review of the Literature Shu-sheng Liaw and Hsiu-mei Huang

46 Building Effective Interaction in Distance Education: A Review of the Literature Kim Flottemesch

52 Are You Ready for Web-Based Training? Gary C. Powell

56 A Learning Ecology Perspective for the Internet Chee-Kit Looi

61 Letter to the Editor: A Response to Jerry Willis M. David Merrill
CONTENTS

Articles

5 Interactivity Demystified: A Structural Definition for Distance Education and Intelligent Computer-Based Instruction
   Michael Yacci

17 The 'Digital Divide' Versus Digital Differences: Principles for Equitable Use of Technology in Education
   Suzanne K. Damarin

23 Thriving and Not Just Surviving: New Directions for Tomorrow's Performance-Improvement Managers
   Roger Kaufman

29 Social-Cultural Perspectives of R & D in Educational Technology
   W. L. David Hung, Thiam Seng Koh, and Chee Lay Chua

33 The Assessment and Instructional Management System: An Innovative Approach to Evaluating the Progress of Students with Disabilities
   Deborah E. Bennett

37 Virtual Textbooks: Features and Implementation
   Shu-sheng Liaw

40 Letter to the Editor: Comments on R2D2 and ISD
   Fred Nickols

41 Instructional Technologies Facilitating Online Courses
   Hsiu-mei Huang

47 Publishing in the Field of Educational Technology: Getting Started
   Robert V. Price and Nancy J. Maushak

53 The Language of Instruction: Assessing the Instructional Syntax of Technology-Based Training
   Hoyet Hemphill

57 Effectiveness and Cost-Effectiveness of Online Education: A Review of the Literature
   Insung Jung and Iju Rha

61 Virtual Games for Real Learning: Learning Online with Serious Fun
   Marie Jasinski and Sivasailam Thiagarajan

About This Issue

A general issue covering varied aspects of educational technology
CONTENTS

Articles

5 Pedagogical Motivations for Student Computer Use That Lead to Student Engagement
Henry Jay Becker

18 Descending into the Maelstrom of the 21st Century with Marshall McLuhan
Robert J. Campbell

28 Knowledge Management Technology in Education: An Overview
Jeremy Galbreath

34 Training and Performance Support Systems (TPSS): A Case Study from Needs Assessment to Return on Investment
Steven L. Griffin and Charles A. Beagles

43 Designing Instruction for Emotional Intelligence
Richard Goldsworthy

49 The Handheld Web: How Mobile Wireless Technologies Will Change Web-Based Instruction and Training
Paul G. Shotsberger and Ronald Vetter

53 Designing Discussion Questions for Online, Adult Learning
Zane L. Berge and Lin Muilenburg

57 Supporting Instructors in the Creation of Online Distance Education Courses: Lessons Learned
Hoseung Paul Byun, Karen Hallett, and Christopher Essex

61 Multipoint Desktop Videoconferencing as a Collaborative Learning Tool for Teacher Preparation
Leslie Sharpe et al.
CONTENTS

Articles

5 Methods for Developing Constructivist Learning on the Web
Kevin M. Oliver

19 Socially Responsible Educational Technology Research
Thomas C. Reeves

29 The Case for Design: Creating a Culture of Intention
Harold G. Nelson and Erik Stolterman

36 Learning Objectives from the Perspective of the Experienced Cognition Framework
Iksoon Choi and David H. Jonassen

41 Constructivism in Online Learning: A View from the Science Faculty
Pascal de Caprariis

46 A Strategy for Effective Change in Instructional Behavior: Staff Development That Works
Dennis H. Sorge and James D. Russell

49 The Impact of Technology on Educational Equivalency: Capabilities Based Educational Equivalency Units
Ryan Watkins and Charles Schlosser

55 Faculty Strategies for Distance Teaching
Melodee Landis

58 Collaborative Online Course Development: Converting Correspondence Courses to the Web
Cheryl White

61 Toward an Information and Instructional Technology Research Framework for Learning and Instruction
David W. L. Hung and Philip S. K. Wong
About This Issue

Design on demand: Five designers explain their decisions with a science lesson

Designers were asked to create technology-based instruction covering the same content and to discuss the reasoning behind their design decisions.
## CONTENTS

### ARTICLES

5  From Formal Training to Communities of Practice via Network-Based Learning  
   *Guglielmo Trentin*

15 A Framework for the Design of Research in Technology-Mediated Learning Environments: A Sociocultural Perspective  
   *Joan K. Gallini*

22 Toward a Collaborative Model for the Design of Web-Based Courses  
   *Shumin Kang*

31 A Framework for Designing Interactivity into Web-Based Instruction  
   *Pam Northrup*

40 Constructivism and e-Learning: Balancing Between the Individual and Social Levels of Cognition  
   *David Hung and Maish Nichani*

45 Knowledge Engineering and Education  
   *Antonio M. Lopez, Jr., and James Donlon*

51 Don't Forget the High-Touch with the High-Tech in Distance Learning  
   *Dean R. Spitzer*

56 The Instructional Planning Self-Reflective Tool: A Method for Promoting Effective Lesson Planning  
   *Amy Baylor, Anastasia Kitsantas, and Hyunmi Chung*

60 An Integrated Instructional Design Approach for Fostering Lasting Behavioral Change  
   *Susan D. Moisey*
CONTENTS

Articles

5  Stretching the Mold or a New Economy?
Part I: Scenarios for the University in 2005
Betty Collis and Lisa Gommer

19  The Future of Distance Learning:
Defining and Sustaining Useful Results
Roger Kaufman, Ryan Watkins, and Ingrid Guerra

27  Haptic Interfaces:
Getting in Touch with Web-Based Learning
Linda Bussell

33  Design Principles for Web-Based Learning:
Implications from Vygotskian Thought
David Hung

42  Silk and Silicon:
Technology Paradigms and Education
Brad Hokanson

47  Knowledge Management in Education:
Helping Teachers to Work Better
Wallace Hannum

50  Supporting Scientific Inquiry
Through Museum Websites
Katherine S. Cennamo and Susan Eriksson

56  Interactive Learning for Global Education:
Project ICONS
Brigid Starkey

61  Undergraduate Degree Programs in Instructional Design and Technology:
Do They Make Sense?
Kent L. Gustafson

About This Issue
A general issue covering varied aspects of educational technology
CONTENTS

Articles

5 Stretching the Mold or a New Economy:
Part 2: Realizing the Scenarios for
the University in 2005
Betty Collis and Lisa Gommer

15 Designing, Implementing, and Evaluating
Web-Based Learning Modules
for University Students
Tim J. Weston and Leicia Barker

23 Teaching in a Technology-Rich Classroom
Drew Tiene and Pamela Luft

32 What's Wrong with Media Comparison Studies?
Daniel W. Surry and David Ensminger

36 Activity Theory as a Framework for
Analyzing CBT and E-Learning Environments
Peggy M. N. Pang and David W. L. Hung

43 The ABCs of Online Course Design
Gary C. Powell

48 A Conceptual Framework for a Web-Based
Knowledge Construction Support System
Myunghee Kang and Hoseung Paul Byun

54 The E-Book:
Technological Promise for Learning
Jeremy Galbreath

57 Internet Use in the Classroom:
Potential and Pitfalls for Student
Learning and Teacher-Student Relationships
Ahmed Ali and Teresa Franklin

60 Online and Onsite Training:
When to Mix, When to Match
Steve Barkley and Terri Bianco

About This Issue
A general issue covering varied aspects of
educational technology
**Contents**

**Special Issue Articles:**

### Knowing the Web

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Introduction to Special Issue on Knowing the Web</td>
<td>Laura E. Skandera Trombley</td>
</tr>
<tr>
<td>7</td>
<td>No Longer Conveyor but Creator: Developing an Epistemology of the World Wide Web</td>
<td>Laura E. Skandera Trombley and William G. Flanagan</td>
</tr>
<tr>
<td>12</td>
<td>The World Wide Web, the Reorganization of Knowledge, and Liberal Arts Education</td>
<td>Jeremy J. Shapiro and Shelley K. Hughes</td>
</tr>
<tr>
<td>17</td>
<td>The Web and the Rites of Knowing</td>
<td>Bruce Michelson</td>
</tr>
<tr>
<td>23</td>
<td>The Web, Sacred and Profane</td>
<td>Randy Bass</td>
</tr>
<tr>
<td>29</td>
<td>Future Promises, Today's Realities: Computers, the Web, and Liberal Arts Colleges</td>
<td>Milton &quot;Mickey&quot; Eder</td>
</tr>
<tr>
<td>34</td>
<td>Emerging Models of Online Collaborative Learning: Can Distance Enhance Quality?</td>
<td>Stephen C. Ehrmann and Mauri Collins</td>
</tr>
<tr>
<td>39</td>
<td>The Economics of Attention: The Pure State</td>
<td>Richard A. Lanham</td>
</tr>
<tr>
<td>42</td>
<td>The Fly's Tale: Technoskepticism, Electronic Pedagogy, and the Web</td>
<td>Gina Hausknecht</td>
</tr>
<tr>
<td>46</td>
<td>Teaching and Technologies for Human Development</td>
<td>Arthur W. Chickering, Carla Payne, and Gail Poitras</td>
</tr>
</tbody>
</table>

**Regular Articles**

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>Experience-Based Pedagogical Designs for e-Learning</td>
<td>Albert Ip and Som Naidu</td>
</tr>
<tr>
<td>59</td>
<td>Knowledge Analysis of Tasks for Instructional Design</td>
<td>Lorna Uden and D. Scott Brandt</td>
</tr>
</tbody>
</table>
## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors/Contributors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Learning Tools for Knowledge Nomads: Using Personal Digital Assistants (PDAs) in Web-Based Learning Environments</td>
<td>Christian Sebastian Loh</td>
</tr>
<tr>
<td>15</td>
<td>A Systematic Web-Course Development Process: User-Centered Requirements</td>
<td>Ming-Chou Liu</td>
</tr>
<tr>
<td>23</td>
<td>We Are What We Weave? Guidelines for Learning by Web Design</td>
<td>Byung-Ro Lim, Jonathan A. Plucker, and Jeffrey A. Nowak</td>
</tr>
<tr>
<td>28</td>
<td>Distinguishing Between Online and Face-to-Face Communities: How Technology Makes the Difference</td>
<td>David Hung and Der-Thanq Chen</td>
</tr>
<tr>
<td>33</td>
<td>Responsive Instructional Design: Scaffolding the Adoption and Change Process</td>
<td>Peggy A. Ertmer</td>
</tr>
<tr>
<td>44</td>
<td>Developing Awareness of Client Relations Through Immersion in Practice</td>
<td>Katherine S. Cennamo and Glen Holmes</td>
</tr>
<tr>
<td>50</td>
<td>Developing a User Acceptance Model for Web-Based Learning</td>
<td>Shu-sheng Liaw</td>
</tr>
<tr>
<td>55</td>
<td>Virtual Schools and Educational Futures</td>
<td>Glenn Russell</td>
</tr>
<tr>
<td>58</td>
<td>Integration of Performance-Centered Design in Knowledge Management</td>
<td>Sunghye Kim and Margie Joyce</td>
</tr>
<tr>
<td>61</td>
<td>Technology, Integrated Learning, Staff Development: It's a Total Package</td>
<td>Ivan A. Shibley</td>
</tr>
</tbody>
</table>
**CONTENTS**

**Articles**

5  The Integration of Instructional Technology into Public Education: Promises and Challenges  
_Rodney S. Earle_

14 Exploring Current Issues in Educational Technology Using a Problem-Based Approach to Instruction  
_Drew Tiene_

23 Understanding How Thriving Internet Quasi-Communities Work: Distinguishing Between Learning About and Learning to Be  
_David Hung and Der-Thanq Chen_

28 Quality in Web-Supported Learning  
_Jill Fresen_

33 Online Collaboration: Making It Work  
_Lesley G. Hathorn and Albert L. Ingram_

41 Is Online Learning for Everybody?  
_Greg Kearsley_

45 The Many Hats of an Instructional Designer: The Development of an Instructional Card Game  
_William Sugar and Anthony Betrus_

52 A Simplified Method of Eliciting Information from Novices  
_D. Scott Brandt and Lorna Uden_

56 Anxiety and Waiting: A Heideggerian View of Instructional Simulation  
_Ron Saito_

59 Dimensions of E-Learning  
_Badrul H. Khan_

---

**About This Issue**

A general issue covering varied aspects of educational technology
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><em>Special Issue</em></td>
<td>Broadening the Definition of Learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yusra Laila Visser, Gordon Rowland, and Jan Visser</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>A Pirate's Life: A Model and a Metaphor for Learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>David L. Solomon</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Undefining Learning: Implications for Instructional Designers and Educational Technologists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jan Visser and Yusra Laila Visser</td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>Profound Learning: Stories from Museums</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deborah L. Perry</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>The Individual Nature of Powerful Learning Experience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gordon Rowland, John Hetherington, and Jennifer Raasch</td>
</tr>
<tr>
<td>31</td>
<td></td>
<td>The Meaning of Learning from the Perspective of Rapid Technological Change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>James C. Spohrer</td>
</tr>
<tr>
<td>35</td>
<td></td>
<td>Learning: Towards Health and the Human Condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paul David Nussbaum</td>
</tr>
<tr>
<td>40</td>
<td></td>
<td>Undefining Learning: &quot;Participative Learning&quot; Within Dialogically-Structured Activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>John Shotter</td>
</tr>
<tr>
<td>45</td>
<td></td>
<td>Learning as Activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>David H. Jonassen</td>
</tr>
<tr>
<td>52</td>
<td></td>
<td>Expanding Our Vision for Educational Technology: Procedural, Conceptual, and Structural Knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tina A. Grotzer</td>
</tr>
<tr>
<td>60</td>
<td></td>
<td>Mental Models as a New Foundation for Instruction Design</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jeroen J. G. van Merriënboer, Norbert M. Seel, and Paul A. Kirschner</td>
</tr>
<tr>
<td>67</td>
<td></td>
<td>Context, Technology, Communication, and Learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ron Burnett</td>
</tr>
<tr>
<td>71</td>
<td></td>
<td>Technology and Pedagogy: Why Don't We See the Promised Revolution?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gavriel Salomon</td>
</tr>
<tr>
<td>Special Section: The Meaning of Quality in Educational Technology Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 5 | Introduction to Special Section  
Karen Sheingold |
| 7 | A Framework for Quality in Educational Technology Programs  
Jere Confrey, Nora Sabelli, and Karen Sheingold |
| 21 | How Should We Think About Educational Technology Programs  
Ronald Thorpe |
| 25 | “Making the Pieces of the Jigsaw Fit”: An Interview with Ann Grady of the Boston Public Schools  
Karen Sheingold |
| 29 | Reflections on A Framework for Quality in Educational Technology Programs  
Carol E. Edwards |
| 33 | The Expert Panel’s Framework for Assessing the Quality of Educational Technology Programs  
Marshall S. Smith and Catherine M. Casserly |
| 37 | Evaluating Learning Technologies: Comments on A Framework for Quality in Educational Technology Programs by Confrey, Sabelli, and Sheingold  
Barbara Means |

<table>
<thead>
<tr>
<th>Regular Articles</th>
</tr>
</thead>
</table>
| 41 | Information Technology in Education: The Critical Lack of Principled Leadership  
Cleborne D. Maddux |
| 51 | Linking Learning Theories to Instructional Design  
Robert D. Tennyson |
| 56 | A Conversation with Charles M. Reigeluth  
Daniel F. Oswald |
| 60 | Unconventional Instructional Design: Faster, Cheaper, Better  
Sivasailam Thiagarajan |
| 63 | What Trainers and Performance-Improvement Specialists Can Learn from Tragedy: Lessons from September 11, 2001  
Roger Kaufman |

**educational technology**

Volume XLII  
Number 3  
May–June 2002

**About This Issue**  
A special issue examining a framework for quality in educational technology; plus regular articles
Special Section:  
Looking into the Future of Educational Technology

5  Introduction to Special Section  
Hoyet H. Hemphill

6  Emerging Technologies in Education  
Kathleen Fulton and Margaret Honey

9  Beyond Technology Integration:  
The Case for Technology Transformation  
Charles M. Reigeluth and Roberto Joseph

13 Effective Use of Instructional Technology  
Requires Educational Reform  
M. David Merrill

17 Since Computers Came to School  
David C. Dwyer

19 When Worlds Collide:  
Introducing Information Technology (IT)  
Culture to Public Education  
Tim Best

21 A Vision of Education  
in the Year 2010  
Sylvia R. Cadena Smith and  
Janine Onffroy Shelley

Regular Articles

24 The Evolution of Authoring Tools  
and Hypermedia Learning Systems:  
Current and Future Implications  
Nada Dabbagh

32 What Hardware and Software Are Most Critical  
for Learning Effectively with Technology?  
Drew Tiene and Pamela Luft

39 Educational Mediators in Continuing  
and Distance Education  
Guglielmo Trentin

49 Can a Community of Practice Exist Online?  
Maish Nichani and David Hung

55 Laptops and University Students:  
A Review and Survey  
George Kontos

60 A Conversation with Bela H. Banathy  
Daniel Oswald

About This Issue

A special issue providing perspectives on the future of educational technology; plus regular articles
A special section featuring winners of a learning software design competition; plus regular articles
CONTENTS

Articles

5 Connecting Instructional Design to International Standards for Content Reusability
  Michael D. Bush

14 Boundary Talk: A Cultural Study of the Relationship Between Instructional Design and Education
  Ellen Rose

23 Keys to Successful E-Learning: Outcomes, Assessment, and Evaluation
  Thomas C. Reeves

30 Staging Experiences: A Proposed Framework for Designing Learning Experiences
  Hilary McLellan

38 Digital Libraries as Instructional Aids for Knowledge Construction
  Richard E. Mayer, Terrence R. Smith, Christine L. Borgman, and Laura J. Smart

43 Trends in Online Learning and Their Implications for Schools
  Cher Ping Lim

49 A Model for Selecting Technology Mediated Learning Strategies
  Tom Palaskas

55 Beyond Web-Based Training: Learning Unplugged
  Diane M. Gayeski

58 Supporting Instructors in the Creation of Digital Video Projects: Lessons Learned
  Christopher Essex and Karen Hallett

60 A Conversation with Michael J. Hannafin
  Daniel F. Oswald


About This Issue

A general issue covering varied aspects of educational technology

educational technology®

Volume XLII
Number 6
November–December 2002
## CONTENTS

**Special Issue:**
Perspectives on Training and Performance Improvement in Business

5
Introduction to Special Issue
*Dean R. Spitzer*

6
From e-Training to e-Performance: Putting Online Learning to Work
*Mariano Bernárdez*

12
Proposing an Optimal Learning Architecture for the Digital Enterprise
*Tony O’Driscoll*

20
Myths and Reality of e-Learning
*Stephen J. Gill*

25
e-Learning: Managing for Results
*James R. Cook and William B. Heacock*

32
Valuing Learning: The Measurement Journey
*Greg Wang*

38
Innovative Evaluation: Creating Speed and Efficiency in Your Level 3 Evaluation Processes
*Thomas Riley, Holly Davani, Pat Chason, Ken Findley, and Dale Druyor*

45
Prioritizing Training to Maximize Results: The 3 Box System
*Paul Kearns*

50
Lessons Learned: 20 Keys to Successful Training and Performance Improvement
*Dean R. Spitzer*

54
Optimizing Human Performance: An Introduction to the HPT Method
*Edward W. Schneider*

59
Human Performance Improvement: Lessons to Be Learned from Quality Improvement
*Paul A. Hummel*
## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>No Cliché Left Behind: Why Education Policy Is Not Like the Movies</td>
<td>Chris Dede</td>
</tr>
<tr>
<td>19</td>
<td>The Moral Dimensions of Instructional Design</td>
<td>Russell T. Osguthorpe, Richard D. Osguthorpe, W. James Jacob, and Randy Davies</td>
</tr>
<tr>
<td>24</td>
<td>In Defense of the Solitary Learner: A Response to Collaborative, Constructivist Education</td>
<td>Keith B. Hopper</td>
</tr>
<tr>
<td>30</td>
<td>A Social-Constructivist Adaptation of Case-Based Reasoning: Integrating Goal-Based Scenarios with Computer-Supported Collaborative Learning</td>
<td>David Hung, Der-Thanq Chen, and Seng Chee Tan</td>
</tr>
<tr>
<td>36</td>
<td>Video and Learning Redux: New Capabilities for Practical Use</td>
<td>Gary Marchionini</td>
</tr>
<tr>
<td>42</td>
<td>Transitioning Instructor Skills to the Virtual Classroom</td>
<td>Sharon Levitch and William D. Milheim</td>
</tr>
<tr>
<td>47</td>
<td>From Need to Ownership: Socialization into Online Teaching</td>
<td>Constance A. Mellon</td>
</tr>
<tr>
<td>51</td>
<td>Faculty Adoption of Technology: Training Comes First</td>
<td>Ahmed Ali</td>
</tr>
<tr>
<td>54</td>
<td>Using a Virtual Learning Environment in Collaborative Learning: Criteria for Success</td>
<td>Pierre van Eijl and Albert Pilot</td>
</tr>
<tr>
<td>57</td>
<td>Reader Comments: -Instructional Design and Education -What’s in a Definition?</td>
<td>Pierre van Eijl and Albert Pilot</td>
</tr>
<tr>
<td>59</td>
<td>A conversation with Michael Molenda</td>
<td>Daniel F. Oswald</td>
</tr>
</tbody>
</table>

### About This Issue

A general issue covering varied aspects of educational technology.
## CONTENTS

**Special Issue:**
Online Learning and Information Technology in the Asia-Pacific Region: Perspectives, Issues, and Divides

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
</table>
| 5    | Introduction to Special Issue  
*David Hung and Der-Thanq Chen* |
| 9    | Online Education for Adult Learners in South Korea  
*Insung Jung* |
| 16   | Toward Online Learning: The Hong Kong Perspective  
*Fong-Lok Lee and Chi-Chung Lam* |
| 23   | A Panorama of Online Education in China  
*Zhu Zhiting, Gu Xiaoping, and Wang Qiyun* |
| 27   | Exploring the World Wide Web for Online Learning: A Perspective from Taiwan  
*Shu-sheng Liaw and Hsiu-Mei Huang* |
| 33   | ICT Implementation and Online Learning in Japan  
*Satoru Fujitani, Madhumita Bhattacharya, and Kanji Akahori* |
| 37   | IT Integration and Online Learning in the Singapore Schools  
*David Hung, Seng Chee Tan, and Der-Thanq Chen* |
| 45   | On-Campus and Online in Australia: Issues Emerging from This Convergence of Technologies  
*Peter G. Taylor* |
| 54   | Catching the Wave: Online Learning in Higher Education in Guam  
*Yu-mei Wang and Der-Thanq Chen* |
| 59   | Online Education at Massey University in New Zealand  
*Kinshuk* |

**About This Issue**
A special issue covering online learning and information technology in the Asia-Pacific region
CONTENTS

5 The Vain Quest for a Unified Theory of Learning
   David H. Jonassen

9 Optimizing the Design of Computer Classrooms:
   The Physical Environment
   Heather B. Huffman et al.

14 Planning for Technology:
   The Link Between Intentions and Use
   Barry J. Fishman and BaoHui Zhang

19 I Object!
   Moving Beyond Learning Objects to Learning Components
   Thor A. Anderson

25 Dale’s Cone Revisited:
   Critically Examining the Misapplication of a Nebulous Theory to Guide Practice
   Deepak Prem Subramony

31 Extreme Thinking:
   Transforming Traditional Student Projects into Effective Learning Environments
   Annette Lamb

41 The Cultural Discourses of Educational Technology:
   A Canadian Perspective
   Denis Hlynka

46 An Electronic Performance Support System for Learning and Doing
   Instructional Design Tasks
   Chi-Cheng Chang

52 Supporting and Assessing Online Interactions in Higher Education
   Mark Hawkes and Terry Dennis

57 Developing High-Quality Web-Based Training for Adult Learners
   Paul Giguere and Jennifer Minotti

59 A Conversation with Todd Hoover
   Daniel F. Oswald

62 Reader Comments:
   – No Child Left Behind:
     More Rhetoric than Reality
   – The Cultural Divide
CONTENTS

5  Cognitive Flexibility Theory: Hypermedia for Complex Learning, Adaptive Knowledge Application, and Experience Acceleration
   Rand J. Spiro, Brian P. Collins, Jose Jagadish Thota, and Paul J. Feltovich

11  The Practice of Instructional Technology: Science and Technology
    Andrew S. Gibbons

17  Design Principles of Next-Generation Digital Gaming for Education
    The Games-to-Teach Research Team at MIT

24  Why Children Are Left Behind and What We Can Do About It
    Charles M. Reigeluth and Brian J. Beatty

33  Building Community as a Critical Element of Online Course Design
    Donald A. Stepich and Peggy A. Ertmer

44  Building an Online Instructional Design Community: Origin, Development, and the Future
    Suzy Cox and Russell T. Osguthorpe

49  Are You Considering All Students, Including Those with Disabilities, When Planning for Technology Integration?
    Jennison V. Asuncion and Catherine S. Fichten

53  Publications in Educational/Instructional Technology: Perceived Values of Ed Tech Professionals
    Terry L. Holcomb, Kaye E. Bray, and David L. Dorr

58  A Conversation with David Jonassen
    Daniel F. Oswald

61  Reader Comments:
   –Is Dialogue the Method of Choice in Collective Communication?
   –Keeping an Open and Creative Mind
Contents

5 Beyond Constructivism: A Return to Science-Based Research and Practice in Educational Technology
William Winn

15 I Had No Idea: How to Build Creative e-Learning Experiences
Michael W. Allen

21 Using Instructional Design for Faculty Development in a Post-Secondary Technology-Enhanced Environment
Mauri P. Collins and Zane L. Berge

28 Scaffolding for Online Learning Environments: Instructional Design Strategies that Provide Online Learner Support
Maria Schutt

36 Managing the Complexity of E-learning Systems
Guglielmo Trentin

43 Design Languages: A Powerful Medium for Communicating Designs
Kay Kyeongju Seo and Andrew S. Gibbons

47 Educational Web Sites: A Classification System for Educators and Learners
Trey Martindale, Ward Mitchell Cates, and Yufeng Qian

51 Building Effective Blended Learning Programs
Harvey Singh

55 The Benefits/Costs of Distance Education: Are the Benefits Worth the Costs?
Barry Willis

58 Virtual Learning Environments Designed in Brazil
Marcelo L. Eichler et al.

61 Eliminating Barriers for All E-Learners
Lisa Holstrom

63 Reader Comments: The Worthwhile Quest for Integration of Theories of Learning

64 A Measure of Greatness: Bela H. Banathy in Memoriam
CONTENTS

5 How's the E-learning Baby?
Factors Leading to Success or Failure of an Educational Technology Innovation
Alexander J. Romiszowski

28 Assessing Professional Competence:
Some Basic Considerations
Jan van Weeren

34 Paperless Teaching:
Automation of the Elementary School Turnaround Document
David Dee

40 Online Learning and Groupware:
Proposing a Convergence
Diane Gayeski and Jennifer Brown

45 Learning and Design:
The Quest for a Theory of Learning
Philip Duchastel and Markus Molz

49 Preparing K–12 Teachers
to Teach Online
Greg Kearsley and Robert Blomeyer

53 Enhancing Interpersonal Interaction in Online Courses
Henry Kelly

57 Is This Course Instructionally Sound?
An Updated Guide to Evaluating Online Training Courses
Ginger Brill Pisik

61 Shared Online and Face-to-Face Pedagogies:
Crossing the Brick-and-Click Divide
Cynthia McIntyre

64 Reader Comments:
On the Origins of the "Retention Chart"
## CONTENTS

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Instructional Design and Curriculum Development: Deconstructing the Difference</td>
<td><em>Ellen Rose</em></td>
</tr>
<tr>
<td>13</td>
<td>ISD: The ‘S’ Is for Systems!</td>
<td><em>Barbara L. Martin</em></td>
</tr>
<tr>
<td>20</td>
<td>Technical Troubleshooting and Differential Diagnosis</td>
<td><em>Andrea Crossland</em></td>
</tr>
<tr>
<td>28</td>
<td>A Conceptual Framework for External Representations of Knowledge in Teaching and Learning Environments</td>
<td><em>Youngmin Lee and David W. Nelson</em></td>
</tr>
<tr>
<td>37</td>
<td>Expert Practice and the Development of Learning Objects: Essential Resources for Online and Distributed Education</td>
<td><em>Susan Crichton and Qing Li</em></td>
</tr>
<tr>
<td>43</td>
<td>Motivating Online Collaborative Learning: Design Implications from a Learning Goal Orientation Perspective</td>
<td><em>Hae-Deok Song</em></td>
</tr>
<tr>
<td>48</td>
<td>A Social-Cultural View of Information Technology Integration in School Contexts</td>
<td><em>David Hung and Thiam Seng Koh</em></td>
</tr>
<tr>
<td>54</td>
<td>Fostering Constructive Dialogue: Building Toward More Effective Communication in the Educational Technology Field</td>
<td><em>Carol Watson, Ana Correia, Mimi Lee, and Thomas Schwen</em></td>
</tr>
<tr>
<td>59</td>
<td>A New Direction for Distance Education in the US Army</td>
<td><em>Sonja S. Moyer</em></td>
</tr>
<tr>
<td>61</td>
<td>Reader Comments:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;E-learning&quot; Outdated?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A Bridge or a Paradigm Debate?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Psychology, the Proper Guide?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More Reasons Why a Universal Theory Is Neither Possible nor Desirable</td>
<td></td>
</tr>
</tbody>
</table>
# Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Introduction to Special Issue: Learning Sciences and Instructional Systems: Beginning the Dialogue</td>
<td>Alison A. Carr-Chellman and Christopher M. Hoadley</td>
</tr>
<tr>
<td>6</td>
<td>Learning and Design: Why the Learning Sciences and Instructional Systems Need Each Other</td>
<td>Christopher M. Hoadley</td>
</tr>
<tr>
<td>13</td>
<td>Theory and the Design of Learning Environments: Reflections on Differences in Disciplinary Focus</td>
<td>Thomas M. Duffy</td>
</tr>
<tr>
<td>16</td>
<td>Using Design to Advance Learning Theory, or Using Learning Theory to Advance Design</td>
<td>Sasha A. Barab</td>
</tr>
<tr>
<td>20</td>
<td>Instructional Systems and Learning Sciences: When Universes Collide</td>
<td>Brian K. Smith</td>
</tr>
<tr>
<td>26</td>
<td>The Learning Sciences: What's in a Name?</td>
<td>Timothy Koschmann</td>
</tr>
<tr>
<td>27</td>
<td>The Parallel Universes of the Learning Sciences and Instructional Design: A Historical Perspective</td>
<td>Daniel C. Edelson</td>
</tr>
<tr>
<td>30</td>
<td>Instruction, Learning, and Knowledge Building: Harnessing Theory, Design, and Innovation Dynamics</td>
<td>Marlene Scardamalia</td>
</tr>
<tr>
<td>34</td>
<td>The Learning Sciences: Past, Present, Future</td>
<td>Janet L. Kolodner</td>
</tr>
<tr>
<td>45</td>
<td>The Science of Instruction and the Technology of Instructional Design</td>
<td>M. David Merrill</td>
</tr>
<tr>
<td>47</td>
<td>Instructional Technology and the Learning Sciences: Multiple Communities and Political Realities</td>
<td>J. Michael Spector</td>
</tr>
<tr>
<td>53</td>
<td>Comparing Beans and Potatoes, or Creating a Balanced Diet? Different Purposes and Different Approaches</td>
<td>Charles M. Reigeluth</td>
</tr>
<tr>
<td>57</td>
<td>Conclusion: Looking Back and Looking Forward</td>
<td>Alison A. Carr-Chellman and Christopher M. Hoadley</td>
</tr>
<tr>
<td>60</td>
<td>Reader Comments:</td>
<td></td>
</tr>
</tbody>
</table>
## CONTENTS

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Customized Video Playback: Standards for Content Description, Customization, and Personalization</td>
<td>Michael Bush, Alan K. Melby, Thor A. Anderson, Jeremy M. Browne, Merrill Hansen, and Ryan Corradini</td>
</tr>
<tr>
<td>14</td>
<td>The Case for Case-Based Teaching in Online Classes</td>
<td>Hilary McLellan</td>
</tr>
<tr>
<td>19</td>
<td>Instructional Technologists' Inattention to Issues of Cultural Diversity Among Learners</td>
<td>Deepak Prem Subramony</td>
</tr>
<tr>
<td>25</td>
<td>Teachers as Online Educators: Requirements for Distributed Learning and Teacher Preparation</td>
<td>Susan Crichton and Elizabeth A. Childs</td>
</tr>
<tr>
<td>31</td>
<td>Concurrent Design of Performance Systems</td>
<td>Robert K. Branson and Donna M. Gabrielle</td>
</tr>
<tr>
<td>36</td>
<td>Technology Planning: The SIMPLE Model</td>
<td>Stephanie Huffman and Wendy Rickman</td>
</tr>
<tr>
<td>41</td>
<td>Technology Implementation Fitness Quiz: How Ready Is Your School to Reap the Benefits of Teaching with Technology?</td>
<td>Gail A. Rathbun</td>
</tr>
<tr>
<td>45</td>
<td>Learning at Large: Situating Learning in the Bigger Picture of Action in the World</td>
<td>Clark N. Quinn</td>
</tr>
<tr>
<td>50</td>
<td>Perspectives on the Role of an Instructional Design and Technology Program</td>
<td>William Sugar, Trey Martindale, Diane Kester, and Marilyn Sheerer,</td>
</tr>
<tr>
<td>55</td>
<td>Schools, Governance, and Media-Induced Illusions: Teaching, Technology, and Preparing Students for the Future</td>
<td>Dennis Adams</td>
</tr>
<tr>
<td>60</td>
<td>Augmentation in Learning: Supports Which Do Not Fade Away</td>
<td>Der-Thanq (Victor) Chen and David Hung</td>
</tr>
</tbody>
</table>
CONTENTS

5  The Educational Semantic Web: A Vision for the Next Phase of Educational Computing
   Terry Anderson

10 Design Tradeoffs in Usability and Power for Advanced Educational Software Authoring Tools
    Tom Murray

17 Revolutionizing School Reform for Educational Transformation
    John B. Keller and Charles M. Reigeluth

24 The Gathering: An Ethical and Educational Criterion for Educational Technology
    Bryan R. Warnick and David Waddington

33 The People–Process–Product Continuum in E-Learning: The E-Learning P3 Model
    Badrul H. Khan

41 Value-on-Investment and the Future of E-Learning in the Training Market
    William V. West

46 Why I Am Not a Constructivist
    Clifton Chadwick

50 Dual-Mode Programs: A Quagmire for Distance Education Development?
    Bude Su

55 Diverse Populations and Cognitive Flexibility Theory: An Instructional Model
    Qing Li and Brad Johnson

59 The Technology of Digital Media: Helping Students to Examine the Unexamined
    Edward L. Counts

62 Reader Comments:
   –Learning Sciences and Instructional Science: A Continuum, Not a Competition
   –Debate, Dialogue, and Growth in the Field
CONTENTS

5  Time for Content:  
The Real Role of Technology in Education  
Roger Schank

14  Levels of Teaching:  
A Taxonomy for Instructional Design  
Brad Hokanson and Simon Hooper

23  Animated Pedagogical Agents in Educational Technology  
Roxana Moreno

31  Toward an Instructional-Design Theory for Fostering Self-Directed Learning  
Daniel Oswald

39  Instructional Design and Development:  
A Brief Historical Overview  
Shumin Kang

46  Design-Artifacts in Learning:  
The Mediation of Emotions and Ideas for Innovation  
Horn Mun Cheah, David Hung, and Philip Wong

50  Teachers and Students as Investigators:  
The Collaborative Project in Technology-Based Learning Environments  
Augustine Goh and Cynthia Lim

55  Electronic Journals in Instructional Technology:  
Resources for Distance Education Programs  
Robert V. Price and Chaohua Ou

58  Computer Simulations:  
A New Learning Environment for Professional Development of Educational Leaders  
David F. S. Ng and Pak Tee Ng

61  iTV: An Emerging Tool in Education  
Li-Ling Chen and Carole Iris
Special Issue: Design-Based Research

5 Why Design-Based Research Is Both Important and Difficult
   Chris Dede

8 Resuscitating Research in Educational Technology: Using Game-Based Learning Research as a Lens for Looking at Design-Based Research
   Kurt D. Squire

15 Eat Your Vegetables and Do Your Homework: A Design-Based Investigation of Enjoyment and Meaning in Learning
   Sasha Barab, Anne Arici, and Craig Jackson

21 Design-Based Research Strategies for Developing a Scientific Inquiry Curriculum in a Multi-User Virtual Environment
   Brian Nelson, Diane Jass Ketelhut, Jody Clarke, Cassie Bowman, and Chris Dede

28 The Classroom as “Living Laboratory”: Design-Based Research for Understanding, Comparing, and Evaluating Learning Science Through Design
   Yasmin B. Kafai

34 Design-Based Research: More than Formative Assessment? An Account of the Virtual Solar System Project
   Kenneth E. Hay, Beaumie Kim, and Tonya Couch Roy

42 Design-Based Research Methods and Theory Building: A Case Study of Research with SpeakEasy
   Christopher M. Hoadley

48 Design-Based Research in Educational Technology: Progress Made, Challenges Remain
   Thomas C. Reeves

Regular Articles

53 Toward a Model of Development for Instructional Design Expertise
   Patricia L. Hardré, Xun Ge, and Michael K. Thomas

58 Appropriate Design and Utilization of Computer-Based Instructional Simulations
   William D. Milheim and Douglas M. Harvey

61 Distinguishing Between Facilitating and Coaching in Problem-Based Learning: Issues in Problem and Process Authenticity
   David Hung and Horn Mun Cheah

About This Issue

A special issue describing case studies of design-based research in educational technology; plus regular articles
A Special Section: Cultural Studies in Instructional Design

5 Introduction to Special Section: Cultural Studies in Instructional Design: Building a Bridge to Practice
   Ellen Rose

10 Broadening Our Foundation for Instructional Design: Four Pillars of Practice
   Brent G. Wilson

16 Embracing the Aesthetics of Instructional Design
   Patrick E. Parrish

25 Crossing Cultural Corridors: From Philosophy to Practice
   David L. Solomon

35 Educational Semiotics and Instructional Design
   Deidre Bonycastle

39 Neoliberalism, the Technological Sublime, and Techniques of the Self
   David Shutkin

48 Cultural Studies in Instructional Design: A Bibliography

Regular Articles

50 On Media and Learning: When Learners Need Instant Feedback, Only a Computer Can Implement the Requisite Instructional Method
   Kenneth J. Luterbach

56 The Dinosaur and the Computer Lab Hog: Eight Teachers' Experiences with Computers
   Min Shi

About This Issue

A special section examining cultural studies in the area of the design of instruction; plus regular articles
CONTENTS

Articles

3 Technology and the Future of Educational Crafts
   Michael Eisenberg

12 A Growing Revolution in American Education: Toward Transformation and the Rising Expectations of Today's Students
   Susan Patrick

20 Five Powerful Ways Technology Can Enhance Teaching and Learning in Higher Education
   Richard E. West and Charles R. Graham

28 Designing a Tool for Evaluating Web-Based Instruction: Description and Lessons Learned
   Robert A. Reiser, Cathleen S. Alfano, Erin H. Brooks, Jessica Pethel, Erin Brogan and Jay Vann

40 Systematic and Systemic Design of Instruction as an Iterative Process: A Functional Model for Practice in the Real World
   Katherine S. Cennamo and Debby Kalk

49 Psychology, Instructional Design, and the Use of Technology: Behavioral, Cognitive, and Affordances Perspectives
   Mitchell Rabinowitz and Emily J. Shaw

54 Merrill Plus: Blending Corporate Strategy and Instructional Design
   Betty Collis and Anoush Margaryan

59 Choosing Success: The Rationale for Thinking, Planning, and Doing Mega
   Roger Kaufman

62 Interviews with Badrul Khan:
   Interview with Sir John Daniel

About This Issue

A general issue covering varied aspects of educational technology
CONTENTS

5  Instructional Systems Development: A 30 Year Retrospective
   Wallace Hannum

22  In Digital Games for Education, Complexity Matters
    Marc Prensky

29  Teaching Research to Instructional Design and Technology Students
    James D. Klein et al.

34  Toys and Technology: A Circuitous Evolution
    Mark Hawkes and Maroe Cambre

38  ADL/SCORM Gets Interesting: Instructional Design as a New Focus
    Eric Roberts

41  Facilitating Inter-Collaborations in the Learning Sciences
    David Hung et al.

45  Where Do Objectives Come From? A Personal Journey
    Roger Kaufman

48  Computer Mediated Communication as a Collaborative Tool for Facilitating
    Student-Centered Learning in Project-Based Classrooms
    Quek Choon Lang et al.

52  Reader Comments:
   • Flying Planes Can Be Expensive (and Dangerous): Do Media Cause Learning,
     or Sometimes Make It Less Expensive (and Safer)? Richard E. Clark
   • From Two Opposing Perspectives on Instructional Media Come Two Views on the Inseparability of
     Instructional Media and Methods
     Kenneth J. Luterbach
   • Educational Transformation: A First Step?
     Paul D. Hood

58  Educational Technology Classics:
    Mass Media and Communication
    Charles A. Siepmann

60  Interviews with Badrul Khan:
    Interview with Gerald Heeger
## CONTENTS

**Special Issue:**  
Technology-Based Collaborative Learning:  
A European Perspective

5  
Introduction to Special Issue  
*Paul A. Kirschner*

8  
Is Technology-Based Collaborative Learning Antisocial?  
or, What We Are Doing to Make It So!  
*Paul A. Kirschner et al.*

13  
Collaborative Learning and ICT Tools  
*Martin Valcke et al.*

17  
The Use of Virtual Forums to Promote  
Collaborative Learning in Higher Education  
*Begoña Gros and Mariella Adrian*

21  
Collaborative Learning at a Distance  
with the Project Method  
*Joerg M. Haake et al.*

25  
Online Collaborative Learning:  
Will Collaboration Scripts Reduce Uncertainty?  
*Kati Mäkitalo et al.*

30  
3D Learning in the Workplace and at School:  
Playing, Learning, or Both?  
*Frank P. C. M. de Jong et al.*

34  
How to Make Collaborative Learning  
More Successful with Innovative Technology  
*Sanna Järvelä and Päivi Häkkinen*

39  
Situating Collaborative Learning:  
Educational Technology in the Wild  
*Sten R. Ludvigsen and Anders I. March*

44  
Support in Learning Environments:  
Touching the Limits of Instructional Design  
*Jan Elen and Geraldine Clarebout*

48  
Designing Electronic Tools for  
Collaborative Learning Environments  
*Paul A. Kirschner et al.*

### Regular Articles/Features

53  
Textbooks Used in Graduate Programs  
in Instructional Design and Technology:  
Changes Over the Past Twelve Years  
*Robert A. Reiser, Melissa Mackal, and Steven G. Sachs*

62  
Interviews with Badrul Khan:  
Interview with Khaled Al-Sultan
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Toward Even More Authentic Case-Based Learning</td>
<td>John M. Carroll and Mary Beth Rosson</td>
</tr>
<tr>
<td>12</td>
<td>Using Handheld, Wireless Computers to Improve Assessment of Learning and Instruction</td>
<td>Mahnaz Moallem et al.</td>
</tr>
<tr>
<td>22</td>
<td>On Being a Radical Constructivist</td>
<td>Priya Sharma et al.</td>
</tr>
<tr>
<td>31</td>
<td>Achieving the Benefits of Blended Learning Within a Fully Online Learning Environment: A Focus on Synchronous Communication</td>
<td>Janet Groen and Qing Li</td>
</tr>
<tr>
<td>38</td>
<td>Instructional Design Expertise: How Will We Know It When We See It?</td>
<td>Peggy A. Ertmer and Donald A. Stepich</td>
</tr>
<tr>
<td>44</td>
<td>Beyond Technical Competence: Literacy in Information and Communication Technology</td>
<td>Irvin R. Katz</td>
</tr>
<tr>
<td>48</td>
<td>A Kaleidoscopic View of European Research in Educational Technology</td>
<td>Kevin Walker</td>
</tr>
<tr>
<td>52</td>
<td>The Design of 3-D, Fast-Action Digital Games for the Classroom</td>
<td>Erick Lauber</td>
</tr>
<tr>
<td>56</td>
<td>Evaluation of an Online Learning Program: What We Are Hearing from Adult Students</td>
<td>Henry L. Smith and Badrul H. Khan</td>
</tr>
<tr>
<td>58</td>
<td>Point of View: Accountabilism and the Web</td>
<td>David Weinberger</td>
</tr>
<tr>
<td>61</td>
<td>Educational Technology Classics: The Secrets We Keep from Students</td>
<td>William A. Deterline</td>
</tr>
</tbody>
</table>
**CONTENTS**

3  The New Gutenberg Revolution: Radical New Learning, Thinking, Teaching, and Training with Technology...Bringing the Future Near  
*Introducing Column by Rand J. Spiro*

7  **Special Issue on Learning Objects**  
*Guest Editors: Peter G. Fairweather & Andrew S. Gibbons*

10  A Polymath in Every Pocket  
*J. D. Fletcher*

18  The Interplay of Learning Objects and Design Architectures  
*Andrew S. Gibbons*

*Ira Fischler*

26  Learning Objects Across the Educational Landscape: Designing for Knowledge Sharing and Generation  
*Patricia McGee*

32  The Role of Ontologies in E-Learning  
*Howard W. Beck*

39  Observations on the Structure, Metadata, and Reuse of Learning Objects  
*Peter G. Fairweather*

43  Challenges for Ubiquitous Learning and Learning Technology  
*Daniel R. Rehak*

49  The Future of Learning Objects  
*H. Wayne Hodgins*

55  *Transparent Reality: A Simulation Based on Interactive Graphical Models Emphasizing Visualization*  
*Sansun Lampotang, David E. Lizdas, Nikolaus Gravenstein, and Edwin B. Liem*

59  Adaptive and Flexible Learning Management Infrastructure for Virtual E-Learning Communities  
*Gilliean Lee and Stanley Y. W. Su*

65  Perspectives on Making Learning Objects Useful  
*Sherman Mohler and Lauren Whitiker*

70  Dynamic Assembly of Learning Materials in a Corporate Context  
*Robert Farrell*

74  **Regular Features**  

78  Reader Comments  
*Clifton Chadwick & Priya Sharma et al.*
## CONTENTS

3  The New Gutenberg Revolution: Radical New Learning, Thinking, Teaching, and Training with Technology...Bringing the Future Near  
   Column by Rand J. Spiro

5  Special Issue on Educational Systemic Change  
   Guest Editor: Patrick M. Jenlink

7  Systems Designing: Responding to the Limitations of Strategic Planning  
   Gordon Rowland

11  What Are We Saying? Metaphor and Systemic Change  
   Peggy Barnes Gill

14  Story as a Transformational Tool in Systemic Change  
   Karen E. Norum

20  Educational Systemic Change: Aesthetics and the Systems Design Experience  
   Patrick M. Jenlink

26  From Theory to Research to Practice: The Process of Creating Participant-Designed Schools Through Systemic Change  
   Randy J. Siebold

34  The Excluded Stakeholder: In Search of Student Voice in the Systemic Change Process  
   Roberto Joseph

39  Personal Resource Systems Management: Coordinates for Learner-Centered Technology Development  
   Barbara S. McFall, Cindy V. Beacham, and Neal Shambaugh

### Regular Articles/Features

43  In Everyday Life, Tool-Free Abilities Do Not Exist  
   David D. Preiss and Robert J. Sternberg

48  Technology Comes to College: Understanding the Cognitive Consequences of Infusing Technology in College Classrooms  
   Richard E. Mayer et al.

54  Is Technology an Effective Tool to Improve Schools? Two Views  
   Janet Buckenmeyor and David Freitas

57  Q & A with Ed Tech Leaders: Interview with David Gibson  
   Trudy Le Doux, Susan Veronikas, and Michael F. Shaughnessy

62  Point of View: Emerging Trends in Educational Computing  
   David D. Thornburg
CONTENTS

3 The New Gutenberg Revolution: Radical New Learning, Thinking, Teaching, and Training with Technology...Bringing the Future Near
Column by Rand J. Spiro

5 Special Issue on the Learning Sciences
Introduction to Special Issue: Capacity Building, Critical Areas, and Concerted Impact
Chee-Kit Looi and David Hung

8 Implementation Paths: Supporting the Trajectory Teachers Traverse in Implementing Technology-Based Learning Environments in Classroom Practice
Katerine Bielaczyc and Allan Collins

15 Translating Learning Sciences Research into Classroom Practices
Seng-Chee Tan and Thiam-Seng Koh

22 Linking the Learning Sciences to Teacher Education: Teachers' Beliefs, Professional Development, and Scalability Issues
Chee-Kit Looi, David Hung, and Leo Tan

27 A Design-Based Research Strategy to Promote Scalability for Educational Innovations
Jody Clarke, Chris Dede, Diane Jass Ketelhut, and Brian Nelson

37 Optimal Capacity Building: Integrating Brain-Based Learning and Educational Research into Technology-Supported Learning
Tak-Wai Chan, Hwa-Wei Ko, Ovid Tzeng, and Chih-Yueh Chou

45 The Learning Sciences and the Need for Close Couplings Between Research Paradigms
Philip Bell and Nora Sabelli

54 Technology Enhanced Learning in Science (TELS): Research Programs
Marcia C. Linn, Freda Husic, Jim Slotta, and Bob Tinker

A Regular Feature

69 Q & A with Ed Tech Leaders: Interview with John Sweller
Susan M. Veronikas, Michael F. Shaughnessy, and Trudy Le Doux
CONTENTS

3 The New Gutenberg Revolution: Radical New Learning, Thinking, Teaching, and Training with Technology...Bringing the Future Near
   Column by Rand J. Spiro

Articles

5 Levels of Instructional Strategy
   M. David Merrill

11 Typology of Case-Based Learning: The Content, Form, and Function of Cases
   David H. Jonassen

16 Online Learning: Looking Forward Through the Rear-View Mirror
   Greg Kearsley

22 Learning Sciences and Instructional Design: Observations, Reflections, and Suggestions for Further Exploration
   Glenn E. Snelbecker, Susan M. Miller, & Robert Zheng

28 School Administrators' Responses to No Child Left Behind: Insights from the Alaskan Arctic and Elsewhere
   Deepak Prem Subramony

34 Using PowerPoint to Promote Constructivist Learning
   Susan Elliott & Mordechai Gordon

39 Digital Imaging Trek: A Model for Managing the Collision of Creative Output and Digital Publishing
   Stephen Andrade

43 Why Is Education Not in the Ubiquitous Web World Picture?
   Judy Breck

Regular Features

47 Q & A with Ed Tech Leaders: Interview with Clark Aldrich
   Susan Walsh Veronikas & Michael F. Shaughnessy

52 Significant Contributors to the Field of Educational Technology
   Introduction to a New Series Edited by Thomas C. Reeves

54 John Dewey: A Significant Contributor
   Peter Rich & Thomas C. Reeves

57 Topics for Debate:
   Quality Assurance in Distance Learning:
   Some Micro, Macro, and Mega Issues
   Introducing a New Column Series by Alexander J. Romiszowski

60 Point of View: The Dysfunction of 'Fun': How Today's Educational Computing Corrupts the Character of Learning
   Michael Schrage

62 Educational Technology Classics:
   Evaluation: The Ultimate Reality
   Ralph W. Tyler

64 New Issues, New Answers: 'If We Share, We're Halfway There'
   Introducing a New Column Series by Marc Prensky
CONTENTS

Articles

5 Should You Be a Media Ecologist? Bridging the Gulfs of Understanding Between Educational Technology and Media Ecology Ellen Rose

14 Information Technology: Four Conditions Critical to Integration in Education Lamont Johnson & Cleborne D. Maddux

20 Networked Collaborative Learning in University Teaching Guglielmo Trentin

26 Digital Storytelling: Bridging Old and New Hilary McLellan

32 A One-Way Ticket to Nowhere? The Importance of Matching the Use of Instructional Technology to Situational Instructional Styles Susan Stansberry

39 Quality Online Degree Programs: Steps and Requirements in Development and Delivery Michael A. Mariasingam & Donald E. Hanna

42 A Model for Analyzing and Evaluating Instructional Interventions Michael Cenkner

46 A Grassroots Initiative to Promote Teaching with Technology in the United Arab Emirates Kevin Schoepp

50 Socratic Dialogue and Order in Online Chat Rooms Stephanie Huffman & Jeff Whittingham

Regular Features

53 Q & A with Ed Tech Leaders: Interview with Gavriel Salomon Terri Flowerday & Michael F. Shaughnessy

58 Jerome Bruner: A Significant Contributor to the Field of Educational Technology Frankie S. Jones & Thomas C. Reeves

61 Column by Alexander J. Romiszowski: Constructivism Revisited: Progress in Ever-Decreasing Circles.

64 Interviews by Badrul Khan: Interview with Fazle Hasan Abed

66 Point of View by Roger Kaufman: Let’s All Follow the Leader

68 Conditions for Innovation in Educational Technology Educational Technology Classic by Leo E. Perssellin

69 Reader Comments: Steven Hackbarth, Charles M. Reigeluth

72 Column by Marc Prensky: The Prensky Challenge

educational technology.

Volume XLVI
Number 5

September–October 2006

About This Issue
A general issue covering varied aspects of educational technology
CONTENTS

3 The New Gutenberg Revolution: Radical New Learning, Thinking, Teaching, and Training with Technology...Bringing the Future Near
   Column by Rand J. Spiro

7 SpotLight Mentor: A Technical Troubleshooting Learning Environment
   Andrea Crossland

18 Learning On-Demand Via Technologies that Facilitate Mobility: The Issues of Relevancy and Access
   David Hung, Seng Chee Tan, & Victor Chen

24 Coming Out of the Darkness: Utilizing a Systematic Approach to Evaluate Discussion Forums in the Light of Learning Objectives
   Kay Kyeongju Seo

29 Instructional Technologies that Support Learning Preferences of Today's Students
   Rhonda Ficek & Joann Segovia

35 Be Excited, Stay Cool, and Take the Lead: Embracing the Opportunities in ICT
   Ying Wang

40 Consulting with Faculty to Facilitate Instructional Improvement in Higher Education
   John Nworie

44 Strategies for the Design and Delivery of Blended Learning Courses
   William D. Milheim

48 Radio, Radio: Student-Run Radio Stations as Examples of Authentic, Hands-On Learning Environments in K–12
   Daniel Oswald

51 The 6-R Model for E-Folios
   Marian Maxfield

53 Web-Based Higher Education in China
   Hu Tianzhuang, Wang Lixing, & Chen Fangrong

55 Q & A with Ed Tech Leaders: Interview with Farhad Saba
   Susan Walsh Veronikas & Michael F. Shaughnessy

58 Michael Graham Moore: Significant Contributor to Ed Tech
   Michael K. Barbour & Thomas C. Reeves

61 Point of View by Larry Cuban: Reflections on 1:1 Laptops

65 Interviews by Badrul Khan: Interview with Lenny Solomon

67 Column by Alexander J. Romiszowski: First Principles of ID

72 Learning Trails: Traversing the European Ed Tech Scene
   Introducing New Column by Kevin Walker

75 Reader Comments: Clifton Chadwick, Zane Berge, Michael Bush

80 Column by Marc Prensky: The Train That Won't Stop
CONTENTS

Special Issue: Pedagogical Agents

3
Introduction to Special Issue
Amy L. Baylor

4
Technologies that Empower Pedagogical Agents and Visions for the Future
Sarel van Vuuren

11
Pedagogical Agents as a Social Interface
Amy L. Baylor

14
How Marni Teaches Children to Read
Ronald Cole et al.

19
AutoTutor Holds Conversations with Learners that Are Responsive to Their Cognitive and Emotional States
Arthur C. Graesser et al.

23
Pedagogical Agents as Social Models to Influence Learner Attitudes
Yanghee Kim and Amy L. Baylor

28
Affective Learning Companions
Winslow Burleson and Rosalind Picard

33
Emotive Characters Can Make Learning More Productive and Enjoyable: It Takes Two to Learn to Tango
Heidy Maldonado and Clifford Nass

39
Virtual Peers for Literacy Learning
Justine Cassell et al.

43
Sustaining Engagement Among Young Children with Pedagogical Agents
Susan R. Goldman et al.

47
Long-Term Interactions with Pedagogical Agents
Timothy W. Bickmore

51
A Virtual Speech Therapist for Individuals with Parkinson's Disease
Ronald Cole et al.

56
Pedagogical Agents for Learning by Teaching: Teachable Agents
Kristen Blair et al.

62
Emerging Metaphors and Constructs from Pedagogical Agent Networks
Eric R. Hamilton

Regular Features

67
Q & A with Ed Tech Leaders: Interview with Richard Mayer
Susan Walsh Veronikas and Michael F. Shaughnessy

70
Educational Technology Classics:
The Instructional Technologist
Robert F. Mager
CONTENTS

Articles

5  When Computers Teach: A Review of the Instructional Effectiveness of Computers
Wallace H. Hannum

14 Educational Inquiry in Transition: Research and Design
Gordon Rowland

24 Web 2.0 and Possibilities for Educational Applications
Daniel Churchill

30 Gen Mobile: Kids of the Commons
Judy Breck

35 What Makes Nexters Tick? Implications for the Design of Instruction
Diane M. Gayeski

39 Knowledge Management for Teachers: The Collection, Organization, and Sharing of Educational Wisdom
Farhad Saba & Daniel McDowell

45 Student Plagiarism and the Internet
Tim S. Roberts

48 Instructional Design in a Flat World
Russell T. Osguthorpe

Regular Features

51 Q & A with Ed Tech Leaders: Interview with Michael Hannafin
Susan Walsh Veronikas & Michael F. Shaughnessy

54 Donald P. Ely: A Significant Contributor to the Field of Educational Technology
Qi Li & Thomas C. Reeves

57 Point of View: Technology’s Impact on Visions of the Future
Joel Barker

59 Learning Trails: Traversing the European Ed Tech Scene—A Conversation About Conversation
Kevin Walker

61 Topics for Debate: Dare We Practice What We Preach?
Alexander J. Romiszowski

educational technology

Volume XLVII
Number 2
March–April 2007

About This Issue

A general issue covering varied aspects of educational technology
## CONTENTS

**Special Issue on Highly Mobile Computing**

3  
Introduction to Special Issue  
Mark van 't Hooft and Philip Vahey

6  
Educational Technology for the Mainstream: A Call for Designing for Simplicity and Reliability  
Cathleen Norris et al.

10  
Highly Mobile Devices, Pedagogical Possibilities, and How Teaching Needs to Be Reconceptualized to Realize Them  
Karen Swan et al.

13  
Using Handhelds to Link Private Cognition and Public Interaction  
Philip Vahey et al.

16  
Teacher Uses of Highly Mobile Technologies: Probes and Podcasts  
Robert Tinker et al.

21  
Classroom Connectivity: Increasing Participation and Understanding Inside the Classroom  
Stephen Hegedus

26  
What Happens to “Writing Across the Curriculum” with Handheld Devices?  
Louise Yarnall et al.

29  
Can Handhelds Make a Difference? Lessons Learned from Large and Small Scale Implementations  
Christine Tomasino et al.

33  
Learning Bridges: A Role for Mobile Technologies in Education  
Giasemi Vavoula et al.

37  
In and Beyond the Classroom: Making Informal Learning Truly Ubiquitous with Highly Mobile Devices  
Yimei Lin

40  
Handheld Computers in Education: An Industry Perspective  
Mark van 't Hooft and Philip Vahey

43  
Blurring Lines with Mobile Learning Games  
Eric Klopfer

47  
Creating a Powerful Learning Environment with Networked Mobile Learning Devices  
Valerie M. Crawford

50  
Education's Intertwined Future  
Judy Breck

### Regular Features

54  
Francis Keppel: An Ed Tech Classic

56  
Richard E. Clark: Point of View

60  
Alexander J. Romiszowski: Topics for Debate

62  
Kevin Walker: European Educational Technology

64  
Marc Prensky: New Issues, New Answers
CONTENTS

Articles

5 Preparing Educational Technology Leaders: Reflections on the Past, Present, and Future
Vanessa P. Dennen and J. Michael Spector

13 Instructional Design as a Living Practice: Toward a Conscience of Craft
Russell T. Osguthorpe and Richard D. Osguthorpe

24 Education, Technology, and the Asian-American Community: Forging a Unique Identity in the Face of Unique Challenges
Deepak Prem Subramony

33 A Practical Design Model for Novice Teachers
Laurie Brantley-Dias and Brendan Calandra

39 Recognition of the Japanese Zero: What We Have Learned 65 Years Later
Denis Hlynka and Pauline Broderick

41 Some Further Reflections on User-Design for Instructional Design and School System-wide Change
Alison A. Carr-Chellman

Regular Features

44 Reader Comments:
Taking Control of Our Metaphors

45 Q & A with Ed Tech Leaders:
Interview with Morten Flate Paulsen
Michael F. Shaughnessy and Susan M. Fulgham

51 M. David Merrill: A Significant Contributor to the Field of Educational Technology
Alan L. Young and Thomas C. Reeves

54 Educational Technology Classics:
The Social Role of Technology
Clark C. Abt

56 Learning Trails—Traversing the European Ed Tech Scene:
Rendezvous of Old and New
Kevin Walker

58 Interviews with Badrud Khan:
Interview with Jeoung-Keun Lee

61 Topics for Debate:
Instructional Design, Learning Objects, and SCORM Revisited
Alexander J. Romiszowski

64 New Issues, New Answers:
Changing Paradigms
Marc Prensky
CONTENTS

Articles

5 A Principle-Based Model of Instructional Design: A New Way of Thinking About and Teaching ID
Kenneth H. Silber

20 What Research Has to Say About Designing Computer Games for Learning
Sigmund Tobias and J. D. Fletcher

30 A Taxonomy of Meaningful Learning
David H. Jonassen

36 A Multidimensional Approach to E-Learning Sustainability
Guglielmo Trentin

Francis M. Dwyer

45 Analogies: Explanatory Tools in Web-Based Science Instruction
Shawn M. Glynn, Gita Taasoobshirazi, and Shawn Fowler

51 Games, Learning, and Society: Building a Field
Kurt D. Squire

Regular Features

55 Wilbur L. Schramm: A Significant Contributor to the Field of Educational Technology
Kuan-Chung Chen and Thomas C. Reeves

59 Q & A with Ed Tech Leaders: Interview with Chris Dede
Susan M. Fulgham, Michael F. Shaughnessy, and Trudy LeDoux

63 Learning Trails: Traversing the European Ed Tech Scene – Scandinavian Surprises
Kevin Walker
CONTENTS

Special Issue on Opening Educational Resources

3 Introduction to Special Issue
   Judy Breck

5 Towards a Global Learning Commons: ccLearn
   Ahrash Bissell and James Boyle

10 The Infrastructure of Open Educational Resources
    Marshall S. Smith and Phoenix M. Wang

14 The Economics of Open Educational Resources
    Catherine M. Casserly

19 Connexions: An Open Educational Resource for the 21st Century
    C. Sidney Burrus

23 The OpenCourseWare Model: High-Impact Open Educational Content
    Stephen Carson

26 Open Content in Open Context
    Sarah Whitcher Kansa and Eric C. Kansa

32 OOPS! A Miracle Created by Confucius
    Agnes Chang and Lucifer (Luc) Chu

35 The Other End of the Telescope: Opening Educational Resources in a South African University
    Eve Gray

38 The Virtual University Becomes a Reality
    Paul G. West

41 Open Educational Resources: A Bridge to Education in the Developing World
    Mike Pereira

43 Mobile Web 2.0, Microlearning, Intertwingularity, and Mobile Widgets
    Ajit Jaokar

46 When Educational Resources Are Open
    Judy Breck

Regular Features

51 Q & A with Ed Tech Leaders: Interview with Margaret Riel
   Susan M. Fulgham, Michael F. Shaughnessy, and Trudy LeDoux

56 Edgar Dale: A Significant Contributor to the Field of Educational Technology
   Sang Joon Lee and Thomas C. Reeves

60 Topics for Debate: Learning Management in Historical Perspective
   Alexander J. Romiszowski

62 Learning Trails: Traversing the European Ed Tech Scene—Reading Text and Tech
   Kevin Walker

64 New Issues, New Answers: To Engage, Engage With
   Marc Prensky
## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors/Contributors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The Semantic Web and Educational Technology</td>
<td>Cleborne D. Maddux</td>
</tr>
<tr>
<td>10</td>
<td>Massively Multiplayer Online Games as an Educational Technology: An Outline for Research</td>
<td>Constance Steinkuehler</td>
</tr>
<tr>
<td>21</td>
<td>A Brave New World: Understanding the Net Generation Through Their Eyes</td>
<td>Sarah Lohnes, Dana J. Wilber, and Charles K. Kinzer</td>
</tr>
<tr>
<td>27</td>
<td>Narrative Structure, Myth, and Cognition for Instruction Design</td>
<td>Brad Hokanson and Robert Fraher</td>
</tr>
<tr>
<td>32</td>
<td>Cognitive Load Theory and the Use of Educational Technology</td>
<td>John Sweller</td>
</tr>
<tr>
<td>35</td>
<td>Mobile Devices at School: Possibilities, Problems, and Tough Choices</td>
<td>Dennis Adams and Rebecca Angeles</td>
</tr>
<tr>
<td>39</td>
<td>Re-Reconsidering Research on Learning from Media: Comments on Richard E. Clark's Point of View Column on Serious Games</td>
<td>J. R. Parker, Katrin Becker, and Ben Sawyer</td>
</tr>
<tr>
<td>44</td>
<td>Models of Digital Collection Use in a University Community</td>
<td>Kristin M. Bass, Cassidy Puckett, and Saul Rockman</td>
</tr>
<tr>
<td>50</td>
<td>Web 2.0, Meet Literacy 2.0</td>
<td>Diane Penrod</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors/Contributors</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Thomas C. Reeves</td>
<td>Susan M. Fulgham and Michael F. Shaughnessy</td>
</tr>
<tr>
<td>58</td>
<td>Educational Technology Classics: Tomorrow's Educational Engineers</td>
<td>Gabriel D. Ofiesh</td>
</tr>
<tr>
<td>60</td>
<td>Learning Trails: Traversing the European Ed Tech Scene–An Ed Tech Tour of Italy</td>
<td>Kevin Walker</td>
</tr>
<tr>
<td>62</td>
<td>Topics for Debate: Constructivist Theory Applied to Instruction: The Continuing Debate</td>
<td>Alexander J. Romiszowski</td>
</tr>
<tr>
<td>64</td>
<td>New Issues, New Answers: Backup Education?</td>
<td>Marc Prensky</td>
</tr>
</tbody>
</table>

**About This Issue**

A general issue covering varied aspects of educational technology.
About This Issue
Special section on smart objects and intelligent contexts; plus regular articles and Ed Tech features
## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Pedagogical Biases in Educational Technologies</td>
<td>Marlene Scardamalia &amp; Carl Bereiter</td>
</tr>
<tr>
<td>11</td>
<td>Enhancing Distance Learning for Today's Youth with Learner-Centered Principles</td>
<td>Wallace H. Hannum &amp; Barbara L. McCombs</td>
</tr>
<tr>
<td>21</td>
<td>Instructional Design as Design Problem Solving: An Iterative Process</td>
<td>David H. Jonassen</td>
</tr>
<tr>
<td>32</td>
<td>Learning and Knowledge Sharing Within Online Communities of Professionals: An Approach to the Evaluation of Virtual Community Environments</td>
<td>Guglielmo Trentin</td>
</tr>
<tr>
<td>39</td>
<td>Raising the Bar for Instructional Outcomes: Toward Transformative Learning Experiences</td>
<td>Brent G. Wilson, Patrick Parrish, &amp; George Veletsianos</td>
</tr>
<tr>
<td>45</td>
<td>The AECT FutureMinds Initiative: Transforming America's School Systems</td>
<td>Charles M. Reigeluth &amp; Francis M. Duffy</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Allan Collins</td>
<td>Cynthia Kleyn Kennedy &amp; Michael F. Shaughnessy</td>
</tr>
<tr>
<td>54</td>
<td>Educational Technology Classics: Theories and Models and Their Utility</td>
<td>Robert E. Silverman</td>
</tr>
<tr>
<td>56</td>
<td>Reader Comments:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Richard E. Clark</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Ahrash Bissell, C. Sidney Burrus, &amp; Judy Breck</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Learning Trails: Traversing the European Ed Tech Scene—Science Fiction and Swedish Ships</td>
<td>Kevin Walker</td>
</tr>
<tr>
<td>61</td>
<td>Topics for Debate: Distance Learning and Higher Education Export (Part 2)</td>
<td>Alexander J. Romiszowski</td>
</tr>
<tr>
<td>64</td>
<td>New Issues, New Answers: The Courage to Change: Guiding Teachers to the New Paradigm</td>
<td>Marc Prensky</td>
</tr>
</tbody>
</table>

---

**eductional technology**

Volume XLVIII
Number 3

May–June 2008

**About This Issue**

A general issue covering varied aspects of educational technology
Volume XLVIII
Number 4
July–August 2008

CONTENTS

Articles

3 Deepening Online Conversation: How and Why to Use a Common Referent to Connect Learners with Diverse Local Practices
   Alyssa Wise, Thomas M. Duffy, & Poornima Padmanabhan

12 Why Reflection Matters for Instructional Designers: Implications for Practice, Pedagogy, and Politics
   Ellen Rose

18 The Role of Acquired Shared Mental Models in Improving the Process of Team-Based Learning
   Tristan E. Johnson, Mohammed K. Khalil, & J. Michael Spector

27 Culture, Change, and Educational Improvement
   Clifton Chadwick & Soledad Valenzuela

36 Journeys in the Learning Sciences: The Singapore Experience
   Thiam Seng Koh, David Huang, Kenneth Y T Lim, Victor Chen, & David Hung

41 The School System Transformation (SST) Protocol
   Francis M. Duffy & Charles M. Reigeluth

Regular Features

49 Q & A with Ed Tech Leaders: Interview with Michael G. Moore
   Michael F. Shaughnessy & Susan M. Fulgham

54 Alfred Bork: A Significant Contributor to the Field of Educational Technology
   David Porcaro & Thomas C. Reeves

57 Reader Comments: View from the Trenches: A Response to Silber
   Barbara L. Martin

60 Learning Trails: Traversing the European Ed Tech Scene—Oslo Account
   Kevin Walker

62 Topics for Debate: ICT4E: Think Regionally—Act Appropriately
   Alexander J. Romiszowski

64 New Issues, New Answers: Coming Together: Lessening the Fragmentation of What We Create
   Marc Prensky

About This Issue

A general issue covering varied aspects of educational technology
CONTENTS

Articles

3 Towards Volitional Media Literacy Through Web 2.0
   Heikki Kynäsälähti, Olli Vesterinen, Lasse Lipponen, Sanna Vahtivuori-Hänninen, & Seppo Tella

10 Technology Integration in the College Classroom: A Baker's Dozen Frugal but Promising Strategies
   Keith Hopper & Rebecca Hendricks

18 Digital Storytelling: Expanding Media Possibilities for Learning
   Hilary McLellan

22 Is There a Wiki in Your Future? Applications for Education, Instructional Design, and General Use
   Sacip Toker, James L. Moseley, & Ann T. Chow

28 Preparing Engineering Faculty to Teach Online
   Greg Kearsley

34 The Affordances of Weblogs and Discussion Forums for Learning: A Comparative Analysis
   Qiyun Wang & Huay Lit Woo

39 Digital Video Policy and Practice in Higher Education: From Gatekeeping to Viral Lectures
   Gary Marchionini

42 The Learner-Centered Paradigm of Education
   Sunnie Lee Watson & Charles M. Reigeluth

Regular Features

49 Q & A with Ed Tech Leaders: Interview with Roger Kaufman
   Susan M. Fulgham & Michael F. Shaughnessy

52 Educational Technology Classics: What Is Computer Assisted Instruction?
   Lawrence M. Stolurow

54 Reader Comments: Educational Technology: After Years of Stagnation Under Bush Administration, New Federal Role Is Needed
   Charles Blaschke

56 Point of View: Distance Education 20/20: Vision Meets Reality, or Not
   Barry Willis

59 Topics for Debate: Is Second Life Serious?
   Alexander J. Romiszowski

62 Learning Trails: Traversing the European Ed Tech Scene—Paper Windmills
   Kevin Walker

64 New Issues, New Answers: Moving Deck Chairs on the Titanic: Are the Fights We Are Having Really Worth It?
   Marc Prensky
CONTENTS

Articles

3  Design and Research: Partners for Educational Innovation
   Gordon Rowland

10 Rethinking Learning Measurement:
    Transformational Impact of New Measures of Performance
    Dean R. Spitzer

16 Augmenting the ADDIE Paradigm for Instructional Design
    Xiaopeng Ni & Robert Maribe Branch

20 Personal Response Systems:
    Is Success in Learning Just a Click Away?
    John Flynn & James Russell

23 E-Portfolios: Review of an Innovative Tool
    for Reflection and Assessment
    Pao-Nan Chou & Chi-Cheng Chang

27 Open and Distance Education in Russia:
    Thoughts About Russian Distance Education
    from the American Perspective
    Tatyana Daletskaya

29 E-learning, Constructivism, and Knowledge Building
    Chang Zhu

32 Roles for Technology in the Information-Age
    Paradigm of Education: Learning Management Systems
    Charles M. Reigeluth et al.

Regular Features

40 Q & A with Ed Tech Leaders:
    Interview with Allison Rossett
    Michael F. Shaughnessy & Susan M. Fulgham

43 Educational Technology Classics:
    The Budding Innovation Vs. the Baby in the Bath Water
    Sidney J. Drumheller

45 Point of View: It's Just a Theory
    David H. Jonassen

48 Looking Ahead, Looking Back:
    Educational Technology: A Definition for the 21st Century
    Denis Hlyinka

51 Reader Comments: Grappling with the
    Assertions of Cognitive Load Theorists
    Steven HackbARTH

53 Bela H. Banathy: A Significant Contributor
    to the Field of Educational Technology
    Boyoung Chae & Thomas C. Reeves

56 Topics for Debate: What Is Educational Technology Anyway?
    Alexander J. Romiszowski

59 Interviews with Badrul Khan: Robert A. Wisher

62 Learning Trails: Traversing the European
    Ed Tech Scene—Handheld Histories
    Kevin Walker

64 New Issues, New Answers:
    The Role of Technology in Teaching and the Classroom
    Marc Prensky
CONTENTS

Articles

3 The Value of the Operational Principle in Instructional Design
   Andrew S. Gibbons

9 Open Educational Resources on U.S. Public History Websites: Implications for Designers and Developers
   Ward Mitchell Cates & Paige Hawkins Mattke

19 Learning from the Pros: How Experienced Designers Translate Instructional Design Models into Practice
   Peggy A. Ertmer, Cindy S. York, & Nuray Gedik

27 Transmergent Learning and the Creation of Extraordinary Educational Experiences
   Peter C. Honebein

34 Applications of Cognitive Load Theory to Multimedia-Based Foreign Language Learning: An Overview
   I-Jung Chen, Chi-Cheng Chang, & Yen-Chang Lee

Regular Features

40 Q & A with Ed Tech Leaders:
   Interview with Richard E. Clark
   Michael F. Shaughnessy & Susan M. Fulgham

44 Educational Technology Classics:
   The “Open” School: Education’s Runnymede?
   Charles A. Wedemeyer

46 Point of View: Education and Technology:
   Imagining Alternatives
   Lucien T. Winegar & David W. Kritt

49 Looking Ahead, Looking Back:
   The Culture of Educational Technology
   Denis Hlynka

51 Reader Comments:
   A Paradigm Change for 21st Century Education?
   Paul Hood
   Response to Columns by Hlynka and Romiszowski
   Michael Molenda & Alan Januszewski

55 Topics for Debate: Comments on Academic Myths, the Art of Listening, Reflection, and Influencing Others
   Alexander J. Romiszowski

59 Q & A with Ed Tech Leaders: Interview with Rita C. Richey
   James L. Mosely, Sacip Toker, Susan M. Fulgham, & Michael F. Shaughnessy

62 Learning Trails: Traversing the European Ed Tech Scene—Heading South
   Kevin Walker

64 New Issues, New Answers: Let’s Be “Digital Multipliers”:
   Eliminating the Digital Divide Is Something Educators Can Do
   Marc Prensky

educational technology®
Volume XLIX
Number 1
January–February 2009

About This Issue
A general issue covering varied aspects of educational technology
**CONTENTS**

**Articles**

3  The Transformation of Learning with Technology: Learner-Centricity, Content and Tool Malleability, and Network Effects  
*M. D. Bush & J. D. Mott*

21  Role-Based Design: A Contemporary Framework for Innovation and Creativity in Instructional Design  
*B. Hokanson & C. Miller*

29  Games and (Preparation for Future) Learning  
*J. Hammer & J. Black*

**Regular Features**

34  Conference Reports: Making Learning Mobile, *C. Hoch*

37  The Exponential Curve: Technology and Learning in 2019, *T. Zeller*

37  Educational Technology Classics: Assessing Educational Technology, *P. Komoski*

40  Q & A with Ed Tech Leaders: Interview with David H. Jonassen  
*S. M. Fulgham & M. F. Shaughnessy*

45  Interviews with Badrul Khan  
*E-Learning in Iran: Interview with V. Ghaffarian & S. Hamid Hosseini*

47  Point of View: The Curious Case of the Polio Virus Learn Node  
*J. Breck*

50  Looking Ahead, Looking Back: “Just do it”  
*D. Hlynka*

52  Q & A with Ed Tech Leaders: Interview with Diane Gayeski  
*M. F. Shaughnessy & S. M. Fulgham*

55  Book Reviews:  
"Web Style Guide," *P. J. Lynch & S. Horton*
Reviewed by *G. Kearsley*
"Managing Talent Retention: An ROI Approach"  
*J. Phillips & L. Edwards*
Reviewed by *D. R. Spitzer*

58  Reader Comments:  
Schools with Wireless Licenses Can Support Wi-Max Systems  
*J. W. Kuzin*
Educational Technology in Bad Financial Times: Can It Survive and Even Thrive?  
*R. Kaufman*

62  Learning Trails: Traversing the European Ed Tech Scene—Business in Barcelona, and Beyond  
*K. Walker*

64  New Issues, New Answers:  
Memo to President Obama  
*M. Prensky*
Volume XLIX
Number 3
May–June 2009

About This Issue
A general issue covering varied aspects of educational technology

CONTENTS

Articles
3 Towards an Integrated Approach for Research on Lifelong Learning
Jeroen J. G. van Merriënboer, Paul A. Kirschner, Fred Paas,
Peter B. Sloep & Marjolein C. J. Caniels

15 Finding e³ (effective, efficient, and engaging) Instruction
M. David Merrill

27 Educational Technology During Economic Downturns:
Sailing the Winds of “Creative Destruction”
Mariano Bernádez

Regular Features
33 Conference Reports:
The Virtual Worlds in Education Conference:
Lessons Learned from Conducting an International,
Peer-Reviewed Conference Within Second Life
Abbie Brown, Elizabeth Hodge, Eric Kisling & Sharon Collins

37 Q & A with Ed Tech Leaders:
Interview with Charles M. Reigeluth
Michael F. Shaughnessy & Susan M. Fulgham

43 Roger Kaufman: A Significant Contributor to the Field of Educational Technology
Suhwa Lee & Thomas C. Reeves

46 Educational Technology Classics:
Men, Machines, and the Control of Learning
Gordon Pask

47 Looking Ahead, Looking Back:
The Year Educational Technology Began?
Denis Hlynka

50 Book Reviews:
“iLearning: How to Create an Innovative Learning Organization,” Mark Salisbury
Reviewed by Zane L. Berge
“.edu: Technology and Learning Environments in Higher Education,” Tracey Wilen-Daugenti
Reviewed by William D. Milheim
“Designing Online Learning with Flash,”
David Richard Moore
Reviewed by Greg Kearsley

54 Reader Comments:
Transforming Learning with Technology Redux
Sigmund Tobias & J. D. Fletcher

59 Topics for Debate:
Can We Transform Learning with Technology?
Alexander J. Romiszowski

62 Learning Trails: Traversing the European Ed Tech Scene—Projecting the Future
Kevin Walker

64 New Issues, New Answers:
Bottoms Up! The Revolution Begins
Marc Prensky
About This Issue

A general issue covering varied aspects of educational technology

CONTENTS

Articles

3 What Do We Make of Design? Design as a Concept in Educational Technology
   Kennon M. Smith & Elizabeth Boling

18 The Artist and Architect: Creativity and Innovation Through Role-Based Design
   Charles Miller & Brad Hokanson

   Peter C. Honebein & Richard C. Goldsworthy

33 ICT in Schools: What Rationale? A Conceptual Frame for a Technological Policy
   Antonio Calvani

38 An Identity Shift at Utah State University: What's in a Name?
   USU Instructional Technology & Learning Sciences Faculty

Regular Features

42 Q & A with Ed Tech Leaders: Interview with Guglielmo Trentin
   Susan M. Fulgham & Michael F. Shaughnessy

47 Betty Collis: A Significant Contributor to the Field of Educational Technology
   Eunjung Oh & Thomas C. Reeves

51 Point of View: Access to World-Class Education?
   Susan Patrick

52 Looking Ahead, Looking Back: “This Will Kill That”
   Denis Hlynka

54 Reader Comments: Yes, And: Response to Hood, and Reigeluth and Associates, Roger Kaufman Richey’s Representation of the AECT Definition, Michael Molenda

   Charles M. Reigeluth & Alison A. Carr-Chellman, Editors
   Reviewed by Ellen Rose

   “Digital Technologies and the Museum Experience: Handheld Guides and Other Media,”
   Loic Tallon and Kevin Walker, Editors
   Reviewed by Hilary McLellan

   “Transforming Classroom Practice: Professional Development Strategies in Educational Technology,”
   Arlene Borthwick and Melissa Pierson, Editors
   Reviewed by Wallace Hannum

   “Embedded Thinking: Multimedia and the New Rationality,” Zsuzsanna Kondor
   Reviewed by David H. Jonassen

   “Remix: Making Art and Commerce Thrive in the Hybrid Economy,” Lawrence Lessig
   Reviewed by David Wiley

63 Educational Technology Classics:
   Human Values and Automation in Education
   Samuel B. Gould
Contents

Articles
3 Developing Critical and Creative Thinkers: Toward a Conceptual Model of Creative and Critical Thinking Processes Liesl Baum Combs, Katherine S. Cennamo & Phyllis Leary Newbill
14 Making 21st Century Schools: Creating Learner-Centered Schoolplaces/Workplaces for a New Culture of Students at Work Bob Pearlman
20 Using Gaming Technology to Teach Ethical Decision-Making Sharon Sloane & Elizabeth Holmes
23 Guiding Teachers in the Process of ICT Integration: Analysis of Three Conceptual Models Qiyun Wang
32 Language Learning in Multi-User Virtual Environments: Using the Enter-the-Story Teaching Method Yin-Mei Wong & Seng-Chee Tan
35 Web2Quests: Updating a Popular Web-Based Inquiry-Oriented Activity Serhat Kurt

Regular Features
38 Q & A with Ed Tech Leaders: Interview with Ellen D. Wagner Susan M. Fulgham & Michael F. Shaughnessy
42 Interviews with Badrul Khan: Educational Technology in Europe – Interview with Richard Straub
44 Q & A with Ed Tech Leaders: Interview with David Dockterman Michael F. Shaughnessy & Susan M. Fulgham
48 Point of View: At War with Change: The Tension Between Technology and Tradition – M. D. Roblyer
53 Topics for Debate: Sustainable Development and Online Learning – Alexander J. Romiszowski
56 Learning Trails: Traversing the European Ed Tech Scene: Icelandic Characters – Kevin Walker
58 Educational Technology Classics: Educational Technology as Instructional Design – Robert Glaser
59 Book Reviews:
"Viral Spiral: How the Commoners Built a Digital Republic of Their Own," David Bollier. Reviewed by C. Sidney Burrus
"The Public Domain: Enclosing the Commons of the Mind," James Boyle. Reviewed by Paul Jones

## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Introduction to Special Issue</td>
<td>Roberto Joseph &amp; Kevin Clark</td>
</tr>
<tr>
<td>4</td>
<td>Incorporating Cultural Values into the ADDIE Approach to Instructional Design</td>
<td>Diane Anoyi Igoche &amp; Robert Maribe Branch</td>
</tr>
<tr>
<td>9</td>
<td>Culturally Responsive Applications of Computer Technologies in Education: Examples of Best Practice</td>
<td>Rona Frederick, Jamel K. Donnor, &amp; Leshell Hatley</td>
</tr>
<tr>
<td>14</td>
<td>Understanding Minority Learners’ Complex Relationships with Education and Technology</td>
<td>Deepak Prem Subramony</td>
</tr>
<tr>
<td>20</td>
<td>United Sugpiaq Alutiq (USA) Video Game: Preserving Traditional Knowledge, Culture, and Language</td>
<td>Leslie D. Hall &amp; James Mountain Chief Sanderville</td>
</tr>
<tr>
<td>24</td>
<td>Understanding Online Non-Native English Speakers: An Acculturation Approach</td>
<td>Pao-Nan Chou &amp; Wei-Fan Chen</td>
</tr>
<tr>
<td>28</td>
<td>Four Strategies for Designing Instruction for Diverse Cultures: Context and Localization of Learning Objects</td>
<td>Tel Amiel, Josh Squires, &amp; Michael Orey</td>
</tr>
<tr>
<td>34</td>
<td>CompuGirls: Designing a Culturally Relevant Technology Program</td>
<td>Kimberly A. Scott, Gregory Aist, &amp; Denice Ward Hood</td>
</tr>
<tr>
<td>40</td>
<td>Making Games After School: Participatory Game Design in Non-Formal Learning Environments</td>
<td>Kevin Clark, Jami Brandt, Rhonda Hopkins, &amp; Jason Wilhelm</td>
</tr>
<tr>
<td>45</td>
<td>Closing the Achievement Gap with Culturally Relevant Technology-Based Learning Environments</td>
<td>Roberto Joseph</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Katy Campbell</td>
<td>Michael F. Shaughnessy &amp; Susan M. Fulgham</td>
</tr>
<tr>
<td></td>
<td>“Integrating Educational Technology into Teaching,” M. D. Roblyer and Aaron H. Doering. Reviewed by Steven Hackbarth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Rapid Training Development,” George M. Piskurich. Reviewed by Allison Rossett</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Denis Hlynka: Writing History with Lightning</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Kevin Walker: Leaving Traces with Technology</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Reader Comments: Alison A. Carr-Chellman &amp; Charles M. Reigeluth; M. David Merrill</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>In Memoriam: Robert M. Morgan, Robert K. Branson &amp; Robert A. Reiser</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>Marc Prensky: Education as Rocket Science</td>
<td></td>
</tr>
</tbody>
</table>
## CONTENTS

### Special Issue Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Video, Video Everywhere: Issues and Evidence of Video Analysis in Teacher Education—Introduction to Special Issue</td>
<td>Peter Rich &amp; Brendan Calandra</td>
</tr>
<tr>
<td>4</td>
<td>Guerrilla Video: A New Protocol for Producing Classroom Video</td>
<td>Peter Fadde &amp; Peter Rich</td>
</tr>
<tr>
<td>8</td>
<td>A Framework for Facilitating Productive Discussions in Video Clubs</td>
<td>Elizabeth A. van Es</td>
</tr>
<tr>
<td>13</td>
<td>Using Digital Video Editing to Shape Novice Teachers: A Generative Process for Nurturing Professional Growth</td>
<td>Brendan Calandra &amp; Laurie Brantley-Dias</td>
</tr>
<tr>
<td>18</td>
<td>The Case for Constructing Video Cases: Promoting Complex, Specific, Learner-Centered Analysis of Discussion</td>
<td>Cheryl Rosaen, Mary Lundeberg &amp; Marjorie Terpstra</td>
</tr>
<tr>
<td>23</td>
<td>Examining Student Thinking Through Video Analysis</td>
<td>Michael D. Preston</td>
</tr>
<tr>
<td>28</td>
<td>Building a Conversation: Preservice Teachers’ Use of Video as Data for Making Evidence-Based Arguments About Practice</td>
<td>Scott McDonald</td>
</tr>
<tr>
<td>32</td>
<td>Video Assessment of Classroom Teaching Practices: Lessons Learned, Problems and Issues</td>
<td>Michael J. Hannafin, Craig E. Shepherd &amp; Drew Polly</td>
</tr>
</tbody>
</table>

### Regular Features and Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with James Paul Gee</td>
<td>Michael F. Shaughnessy &amp; Susan M. Fulgham</td>
</tr>
<tr>
<td>43</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Greg Kearsley</td>
<td>Susan M. Fulgham &amp; Michael F. Shaughnessy</td>
</tr>
<tr>
<td>46</td>
<td>Educational Technology Classics: Why CAI Must Fail!</td>
<td>Felix F. Kopstein</td>
</tr>
<tr>
<td>48</td>
<td>The Engineer and Craftsperson: Scientific Realization and Experienced Evolution Through Role-Based Design</td>
<td>Brad Hokanson &amp; Charles Miller</td>
</tr>
<tr>
<td>56</td>
<td>From Conventional Wisdom to Higher Education Transformation: Does It Take a Crisis to Make Fundamental Change?</td>
<td>Roger Kaufman</td>
</tr>
</tbody>
</table>
Volume L
Number 2
March–April 2010

About This Issue
A general issue covering varied aspects of educational technology

CONTENTS

Articles

3
A Special Report: Ubiquitous Mobile Technologies and the Transformation of Schooling
Marie Bjerede, Kristin Atkins, & Chris Dede

8
Resisting Technological Gravity: Using Guiding Principles for Instructional Design
Jason K. McDonald

13
The Emerging Technology of Avatars: Some Educational Considerations
Anne M. Blake & James L. Moseley

20
Applying Merrill’s First Principles of Instruction: Practical Methods Based on a Review of the Literature
Joel Gardner

25
The Design Considerations for Game-Based Learning
Chaoyun Liang, Yuan-Zone Lee, & Wen-Shou Chou

Regular Features

28
Q & A with Ed Tech Leaders: Interview with Marc Prensky
Michael F. Shaughnessy & Susan M. Fulgham

34
Q & A with Ed Tech Leaders: Interview with Richard E. Mayer
Michael F. Shaughnessy & Susan M. Fulgham

37
Jerrold E. Kemp: A Significant Contributor to the Field of Educational Technology
Anita F. Zgambo & Thomas C. Reeves

40
Educational Technology Classics: Communications: Mass Without Meaning
Arthur R. Murphy, Jr.

42
Topics for Debate: Online Teaching Competencies: Peeling the Onion
Alexander J. Romiszowski

47
Looking Ahead, Looking Back: What the Walrus Said...
Denis Hlynka

48
Book Reviews:
“The Management Myth”: Reviewed by Roger Kaufman
“Constructivist Instruction”: Reviewed by Thomas C. Reeves
“Rethinking Education in the Age of Technology”: Reviewed by Chris Dede
“Performance Architecture”: Reviewed by Barbara L. Martin
“Electronic Portfolios 2.0”: Reviewed by Paul Hood
“Global Education”: Reviewed by Cleborne D. Maddux
“Educating the First Digital Generation”: Reviewed by Steven Hackbart

61
50 Years On... We Thank You for Everything
Elwyn Rees

64
New Issues, New Answers: Technology Turns Disposable
Marc Prensky
# CONTENTS

## Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Introduction to Special Issue on ICT and E-learning in the Middle East</td>
</tr>
<tr>
<td>4</td>
<td>Making E-learning Invisible: Experience at King Khalid University, Saudi Arabia</td>
</tr>
<tr>
<td>8</td>
<td>Female Students' Experience in E-learning: A Study from Qatar</td>
</tr>
<tr>
<td>13</td>
<td>Active Learning Through Online Instruction</td>
</tr>
<tr>
<td>15</td>
<td>British Council, Work-Based Learning Research Centre and Islamic University Gaza E-learning Workshop: Five Years On</td>
</tr>
<tr>
<td>18</td>
<td>Accounting for Cultural Preferences in the Design of Online Learning in the Arab World</td>
</tr>
<tr>
<td>21</td>
<td>The Impact of Assistive Technologies on the Reading Outcomes of College Students with Dyslexia</td>
</tr>
<tr>
<td>25</td>
<td>Meeting Diverse Learner Needs with Blended Learning</td>
</tr>
<tr>
<td>29</td>
<td>An Integrated Learning Management System for Islamic Studies: An Innovation from Jordan</td>
</tr>
<tr>
<td>32</td>
<td>Increasing Interoperability of E-learning Content in Moodle Within a Franco-Arabo Educative Context</td>
</tr>
<tr>
<td>34</td>
<td>Dynamic Learning Objects to Teach Java Programming Language</td>
</tr>
<tr>
<td>37</td>
<td>Performance Appraisal of College-Level Learners Using Smart Boards</td>
</tr>
<tr>
<td>38</td>
<td>Digital Muslimas: ICT Skills of Females in Middle Eastern Countries</td>
</tr>
<tr>
<td>42</td>
<td>What Is the Headteacher's Role in ICT Progress in Schools?</td>
</tr>
<tr>
<td>47</td>
<td>A Model for Implementing E-learning in Iranian Organizations</td>
</tr>
<tr>
<td>53</td>
<td>Students' Perceptions of Online Learning</td>
</tr>
<tr>
<td>54</td>
<td>Epilogue to Special Issue</td>
</tr>
</tbody>
</table>

## Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>John M. Keller: A Significant Contributor to the Field of Educational Technology</td>
</tr>
<tr>
<td>58</td>
<td>Greg Francom &amp; Thomas C. Reeves</td>
</tr>
<tr>
<td>60</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Penny de Byl</td>
</tr>
<tr>
<td>60</td>
<td>Michael F. Shaughnessy</td>
</tr>
<tr>
<td>62</td>
<td>Educational Technology Classics: Teacher Education and Educational Technology</td>
</tr>
<tr>
<td>62</td>
<td>Carl J. Lange</td>
</tr>
<tr>
<td>63</td>
<td>Looking Ahead, Looking Back: Technomongering</td>
</tr>
<tr>
<td>63</td>
<td>Denis Hlynka</td>
</tr>
<tr>
<td>63</td>
<td>Book Review: &quot;Instructional Design: The ADDIE Approach&quot;</td>
</tr>
<tr>
<td>63</td>
<td>Reviewed by James D. Russell</td>
</tr>
<tr>
<td>64</td>
<td>New Issues, New Answers: What a School District CTO Should Know</td>
</tr>
<tr>
<td>64</td>
<td>Marc Prensky</td>
</tr>
</tbody>
</table>
CONTENTS

Articles

3
A Practical Guide and a Constructivist Rationale for Inquiry Based Learning
Thomas M. Duffy & Pamela L. Raymer

16
An Alternative View of the Instructional Design Process: A Response to Smith and Boling
Andrew S. Gibbons & Stephen C. Yanchar

27
Learner Stories and the Design of Authentic Instruction
Richard Goldsworthy & Peter C. Honebein

34
Using Agile Project Management to Enhance the Performance of Instructional Design Teams
David S. Sweeney & Lauren Cifuentes

41
Continuous Partial Attention: Reconsidering the Role of Online Learning in the Age of Interruption
Ellen Rose

Regular Features

47
Q & A with Ed Tech Leaders: Interview with Paul Kirschner
Michael F. Shaughnessy & Susan M. Fulgham

52
Q & A with Ed Tech Leaders: Interview with Heikki Kynäslahti, Seppo Tella, Olli Vesterinen, and Lasse Lipponen
Susan M. Fulgham & Michael F. Shaughnessy

56
Educational Technology Classics: Man, Ritual, the Establishment, and Instructional Technology
Charles F. Hoban

58
Book Reviews:
“Total Engagement: Using Games and Virtual Worlds to Change the Way People Work and Businesses Compete”
Byron Reeves & J. Leighton Read
Reviewed by Kurt D. Squire

“Demystify Math, Science, and Technology: Creativity, Innovation, and Problem Solving”
Dennis Adams & Mary Hamm
Reviewed by Steven Hackbart

Curtis J. Bonk
Reviewed by Karly C. Good

62
Looking Ahead, Looking Back: Don Quixote and the Beginnings of Technology Addiction
Denis Hlynka

64
New Issues, New Answers: The iPad Is Coming! (Or Is It?)
Marc Prensky
About This Issue
A special issue from Singapore examines the learning sciences as sciences of becoming; plus regular features
## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Role-Based Design: Design Experiences</td>
<td>Charles Miller, Brad Hokanson, Aaron Doering, &amp; Tom Brandt</td>
</tr>
<tr>
<td>11</td>
<td>A Computer for Every Student and Teacher: Lessons Learned About Planning and Implementing a Successful 1:1 Learning Initiative in Schools</td>
<td>Jenifer O. Corn et al.</td>
</tr>
<tr>
<td>23</td>
<td>Contextualized Interdisciplinary Learning in Mainstream Schools Using Augmented Reality-Based Technology: A Dream or Reality?</td>
<td>Alex Ong</td>
</tr>
<tr>
<td>27</td>
<td>Dynamics of the Cogwheel Instructional Design Model: Integrating a Central Training Center with Subordinate Training Branches</td>
<td>Min Kyu Kim</td>
</tr>
<tr>
<td>32</td>
<td>The Global Classroom and the Educational Challenge of Global Diversity</td>
<td>Sonja S. Moyer</td>
</tr>
<tr>
<td>37</td>
<td>Food for Thought: What Education Could Learn from Agriculture</td>
<td>Wim Westera</td>
</tr>
<tr>
<td>40</td>
<td>Teacher Perceptions of Their Roles and Adoption of Educational Technology: Challenges in the Chinese Context</td>
<td>Chang Zhu</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with J. D. (Dexter) Fletcher</td>
<td>Michael F. Shaughnessy &amp; Susan M. Fulgham</td>
</tr>
<tr>
<td>50</td>
<td>Conference Reports: Expanding Access Through Technology: The Drexel Virtual Symposium</td>
<td>Rebecca A. Clothey</td>
</tr>
<tr>
<td>50</td>
<td>Educational Technology Classics: The Computer Versus the Clock</td>
<td>Charles W. Slack</td>
</tr>
<tr>
<td>54</td>
<td>Book Reviews:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Education Unbound: The Promise and Practice of Greenfield Schooling,” by Frederick M. Hess</td>
<td>Reviewed by Charles M. Reigeluth</td>
</tr>
<tr>
<td></td>
<td>“Learning by Wandering: An Ancient Irish Perspective for a Digital World,” by Marie Martin</td>
<td>Reviewed by Ellen Rose</td>
</tr>
<tr>
<td>62</td>
<td>Looking Ahead, Looking Back: Deconstructing “Digital”</td>
<td>Denis Hlynka</td>
</tr>
<tr>
<td>63</td>
<td>Reader Comments: ICT Progress in MENA</td>
<td>Clifton Chadwick</td>
</tr>
<tr>
<td>64</td>
<td>Editor Honored for Lifetime Achievement</td>
<td></td>
</tr>
</tbody>
</table>
CONTENTS

Articles
3 The Cultures of Contemporary Instructional Design Scholarship, Part One: Developments Based on Behavioral and Cognitive Science Foundations
Jerry Willis
21 From Many-to-One to One-to-Many: The Evolution of Ubiquitous Computing in Education
Wenli Chen, Carolyn Lim, & Ashley Tan
25 Technology Integration in Science Classrooms: Framework, Principles, and Examples
Minchi C. Kim & Sarah Freemyer

Regular Features
30 Q & A with Ed Tech Leaders: Interview with Roger Schank
Michael F. Shaughnessy & Susan M. Fulgham
39 Q & A with Ed Tech Leaders: Interview with Slava Kalyuga
Michael F. Shaughnessy & Susan M. Fulgham

Book Reviews:
Reviewed by Cleborne D. Maddux
“Teaching Digital Natives: Partnering for Real Learning,” Marc Prensky
Reviewed by Greg Kearsley
“Instructional Systems Design: Today and in the Future,” ASTD Research
Reviewed by Dean R. Spitzer
“Social Media for Trainers: Techniques for Enhancing and Extending Learning,” Jane Bozarth
Reviewed by Diane Gayeski
“You Are Not a Gadget: A Manifesto,” Jaron Lanier
Reviewed by David Wiley
“Instructional Design for Teachers: Improving Classroom Practice,” Alison A. Carr-Chellman
Reviewed by Peggy A. Ertmer
“The Instructional Design Knowledge Base: Theory, Research, and Practice,” Rita C. Richey, James D. Klein, & Monica W. Tracey
Reviewed by J. Michael Spector

56 Michael J. Hannafin: A Significant Contributor to the Field of Educational Technology
Eunbae Lee & Thomas C. Reeves

59 Topics for Debate: Open Content: Has It / When Will It Hit the Jackpot?
Alexander J. Romiszowski

61 Looking Ahead, Looking Back: Technological Obesity
Denis Hlynka

62 Interviews with Badrul Khan: Interview with J. Goodlett McDaniel

63 Reader Comments: Response to Book Review

64 New Issues, New Answers: Where’s Your Continuous Improvement Plan?
Marc Prensky
CONTENTS

Articles

3 Introduction to Special Issue: Emerging Technologies and Transformative Learning
Brendan Calandra & George Veletsianos

4 Teaching in an Age of Transformation: Understanding Unique Instructional Technology Choices Which Transformative Learning Affords
Kathleen P. King

10 Transformative Learning Experience: Aim Higher, Gain More
Brent G. Wilson & Patrick E. Parrish

15 Learning Experience as Transaction: A Framework for Instructional Design
Patrick E. Parrish, Brent G. Wilson, & Joanna C. Dunlap

22 The Seven Trans-Disciplinary Habits of Mind: Extending the TPACK Framework Towards 21st Century Learning
Punya Mishra, Matthew J. Koehler, & Danah Henriksen

28 Virtual Worlds as a Trigger for Transformative Learning
Stephen W. Harmon

33 Using Digital Video to Promote Teachers' Transformative Learning
Brendan Calandra & Anton Puvirajah

36 Opportunities for and Barriers to Powerful and Transformative Learning Experiences in Online Learning Environments
Benjamin B. Bolger, Gordon Rowland, Carrie Reuning-Hummel, & Stephen Codner

41 Designing Opportunities for Transformation with Emerging Technologies
George Veletsianos

47 Shaping Global Citizens: Technology Enhanced Intercultural Collaboration and Transformation
P. Clint Rogers

53 A Framework for Action: Intervening to Increase Adoption of Transformative Web 2.0 Learning Resources
Joan E. Hughes, James M. Guion, Kama A. Bruce, Lucas R. Horton, & Amy Prescott

Book Reviews

61 "Web 2.0: How-to for Educators"
Gwen Solomon & Lynne Schrum
Reviewed by Steven Hackbarth

"A Guide to Authentic E-Learning"
Jan Herrington, Thomas C. Reeves, & Ron Oliver
Reviewed by Greg Kearsley

"Playing Games in School: Video Games and Simulations for Primary and Secondary Education"
Edited by Atsusi "zc" Hirumi
Reviewed by Thomas C. Hammond and Lauren Draper
### CONTENTS

#### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The Cultures of Contemporary Instructional Design Scholarship, Part Two: Developments Based on Constructivist and Critical Theory Foundations</td>
</tr>
<tr>
<td></td>
<td>Jerry Willis</td>
</tr>
<tr>
<td>18</td>
<td>Using Smartphones as Essential Tools for Learning: A Call to Place Schools on the Right Side of the 21st Century</td>
</tr>
<tr>
<td></td>
<td>Cathleen Norris, Akhlq Hossain, &amp; Elliot Soloway</td>
</tr>
<tr>
<td>26</td>
<td>Toward a Concept of Facilitative Theorizing: An Alternative to Prescriptive and Descriptive Theory in Educational Technology</td>
</tr>
<tr>
<td></td>
<td>Stephen C. Yanchar &amp; James E. Faulconer</td>
</tr>
<tr>
<td>32</td>
<td>Use of ICT in Chinese Schools: Striving for Educational Quality and Equality</td>
</tr>
<tr>
<td></td>
<td>Zhiting Zhu, Xiaoqing Gu, Betty Collis, &amp; Jef Moonen</td>
</tr>
<tr>
<td>37</td>
<td>A Conceptual Model for Teaching Critical Thinking in a Knowledge Economy</td>
</tr>
<tr>
<td></td>
<td>Clifton Chadwick</td>
</tr>
<tr>
<td>43</td>
<td>Turning Up the H.E.A.T. on Student Learning: Assessing 21st Century Skills in Classrooms Today</td>
</tr>
<tr>
<td></td>
<td>Christopher Moersch</td>
</tr>
</tbody>
</table>

#### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Kurt D. Squire</td>
</tr>
<tr>
<td></td>
<td>Michael F. Shaughnessy &amp; Susan M. Fulgham</td>
</tr>
<tr>
<td>50</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Curtis J. Bonk</td>
</tr>
<tr>
<td></td>
<td>Michael F. Shaughnessy &amp; Susan M. Fulgham</td>
</tr>
<tr>
<td>53</td>
<td>Book Reviews:</td>
</tr>
<tr>
<td></td>
<td>“Cognitive Load Theory,” Jan L. Plass, Roxana Moreno, &amp; Roland Brünken, Editors</td>
</tr>
<tr>
<td></td>
<td>Reviewed by Martin Valcke</td>
</tr>
<tr>
<td></td>
<td>Reviewed by David F. Feldon &amp; Christopher Craft</td>
</tr>
<tr>
<td></td>
<td>“Cutting Through the Hype: The Essential Guide to School Reform,” Jane L. David &amp; Larry Cuban</td>
</tr>
<tr>
<td></td>
<td>Reviewed by Paul D. Hood</td>
</tr>
<tr>
<td></td>
<td>“Social Network Theory and Educational Change,” Alan J. Daly, Editor</td>
</tr>
<tr>
<td></td>
<td>Reviewed by Steve Zlotolow</td>
</tr>
</tbody>
</table>

#### Topics for Debate

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>Topics for Debate: Andragogy Revisited: A Critical and Multicultural Perspective</td>
</tr>
<tr>
<td></td>
<td>Alexander J. Romiszowski</td>
</tr>
<tr>
<td>63</td>
<td>Looking Ahead, Looking Back: The Teacher and...the Pencil</td>
</tr>
<tr>
<td></td>
<td>Denis Hlynka</td>
</tr>
<tr>
<td>64</td>
<td>New Issues, New Answers: Needed in Our Schools:</td>
</tr>
<tr>
<td></td>
<td>21st Century Pedagogy and Curriculum</td>
</tr>
<tr>
<td></td>
<td>Marc Prensky</td>
</tr>
</tbody>
</table>

---

**About This Issue**

A general issue covering varied aspects of educational technology
CONTENTS

Articles
3 The Impact of Non-Conscious Knowledge on Educational Technology Research and Design
Richard E. Clark
12 A Model for Teaching Information Design
Rune Pettersson
20 Developing Students' Higher-Order Thinking Skills (HOTS) Through Technology-Rich Tasks: The Influence of Technological Pedagogical and Content Knowledge (TPACK)
Drew Polly
26 Migrations of the Mind: The Emergence of Open Source Education
Michael Glassman, Mitchell Barholomew, & Travis Jones
32 Critical Evaluation by Students of Websites in Web 2.0 Landscapes
J. Gregory McVerry
36 Facilitating Student-Generated Content Using Web 2.0 Technologies
Eunbae Lee
40 Teaching Language Arts in Second Life
Li-Ling Chen

Regular Features
43 Q & A with Ed Tech Leaders: Interview with Andrew S. Gibbons
Michael F. Shaughnessy & Susan M. Fulgham
47 Q & A with Ed Tech Leaders: Interview with Atsusi Hirumi
Michael F. Shaughnessy & Susan M. Fulgham
53 Book Reviews:
"Schools and Schooling in the Digital Age: A Critical Analysis,"
Neil Selwyn
Reviewed by Larry Cuban
"Instructional Technology and Media for Learning (Tenth Edition)," Sharon E. Smaldino, Deborah L. Lowther, & James D. Russell
Reviewed by Steven Hackbarth
Tony Bingham and Marcia Conner
Reviewed by Ellen D. Wagner
"Designing mLearning: Tapping into the Mobile Revolution for Organizational Performance," Clark N. Quinn
Reviewed by James D. Klein

Reader Comments:
Transformative Learning: Not the Awaited Superman
Steven Hackbarth
Will We See Follow-Through on Technology in Education?
Charles L. Blaschke
Interview with Mansoor Al Awar, Badrul Khan

58 Educational Technology Research Journals:
"The American Journal of Distance Education," 2001 – 2010
Lisa R. Halverson, Jay A. Bostwick, Shawn R. Cates, & Richard E. West
## CONTENTS

### Articles

3  
Conducting Scientific Research on Learning and Health Behavior Change with Computer-Based Health Games  
*Richard E. Mayer & Debra A. Lieberman*

14  
Turning the Corner in Educational Technology: Reflections on a Half-Century of Research  
*J. D. Fletcher & Sigmund Tobias*

20  
E-learning Standards: SCORM and the Future of Interoperability  
*Michael D. Bush, Edward C. T. Walker, & Alexander N. Sorensen*

25  
An Instructional Theory for the Post-Industrial Age  
*Charles M. Reigeluth*

29  
ePortfolio Pedagogy, Technology, and Scholarship: Now and in the Future  
*C. Edward Watson & Peter E. Doolittle*

34  
ADDIE: Perspectives in Transition  
*Elizabeth Boling, Wylie V. Easterling, Patricia L. Hardré, Craig D. Howard, & Tiffany Anne Roman*

39  
Bridging the Social Gap Through Educational Technology: Using the Time To Know Digital Teaching Platform  
*Yigal Rosen & Iris Wolf*

### Regular Features

43  
*Holt Zaugg, Mayavel Amado, Tyler R. Small, & Richard E. West*

47  
John D. Bransford: A Significant Contributor to the Field of Educational Technology  
*So Mi Kim & Thomas C. Reeves*

51  
Q & A with Ed Tech Leaders: Interview with Joan Hughes  
*Michael F. Shaughnessy*

52  
Q & A with Ed Tech Leaders: Interview with Neil MacGregor  
*Susan M. Fulgham & Michael F. Shaughnessy*

54  
Point of View: Education and Digital Technology: The Need for Social Realism?  
*Neil Selwyn*

57  
Reader Comments: Smartphones Vs. iPads  
*Cathleen Norris & Elliot Soloway*

59  
Book Reviews:  
“Leading the Technology-Powered School,” Marilyn Grady  
Reviewed by Christopher Moersch

“Pedagogical Models: The Discipline of Online Teaching,”  
Michael F. Shaughnessy and Susan Fulgham, Editors  
Reviewed by Greg Kearsley

61  
Looking Ahead, Looking Back:  
Thomas Edison Focuses on Educational Technology: 1919  
*Denis Hlynka*

62  
The New Gutenberg Revolution  
*Rand J. Spiro*

64  
New Issues, New Answers: Khan Academy  
*Marc Prensky*
CONTENTS

Articles
3 Learning and Schooling in the Age of Mobilism
   Cathleen A. Norris & Elliot Soloway
11 Distance Education in the United States: Past, Present, Future
   Farhad Saba
19 New Learning Models: The Evolution of Online Learning into Innovative K–12 Blended Programs
   Susan Patrick
26 Revised Design-Based Research Methodology for College Course Improvement and Application to Education Courses in Japan
   Kanji Akahori
34 Games for Participatory Science: A Paradigm for Game-Based Learning for Promoting Science Literacy
   R. Benjamin Shapiro, Kurt D. Squire, & The Educational Research Integration Area
43 Thirty Years of Evolution in Instructional Technology, as Reflected in a Textbook
   Sharon E. Smaldino, Deborah L. Lowther, & James D. Russell

Regular Features
   Daniel L. Randall, Michael A. Bishop, Jennifer A. Alexander, & Richard E. West
51 Q & A with Ed Tech Leaders: Interview with Allison Bailey
   Michael F. Shaughnessy
53 Q & A with Ed Tech Leaders: Interview with David Marcovitz
   Susan M. Fulgham & Michael F. Shaughnessy
   Reviewed by Wallace H. Hannum
   “Spotlight on Technology in Education,” Nancy Walser, Editor
   Reviewed by Bob Pearlman
59 Conference Reports: Using Technology to Personalize Learning and Assess Students in Real-Time
   Darrell M. West
61 Educational Technology Classics: Accounting for Our Stewardship of Public Education
   Leon M. Lessinger
63 New Issues, New Answers: A Huge Leap Ahead for the Classroom
   Marc Prensky

 educational technology
Volume L1
Number 6
November–December 2011

About This Issue
A general issue covering varied aspects of educational technology
## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Introduction to Special Issue: Technology Neutrality, Ethics, Values, and Human Social Systems</td>
<td>Alison A. Carr-Chellman &amp; Davin J. Carr-Chellman</td>
</tr>
<tr>
<td>6</td>
<td>If It's Neutral, It's Not Technology</td>
<td>Lance Strate</td>
</tr>
<tr>
<td>10</td>
<td>Technology and Moral or Ethical Values: Three Questions; Many More Answers</td>
<td>Alexander J. Romiszowski</td>
</tr>
<tr>
<td>17</td>
<td>Not “Just a Tool”: A Triadic Model of Technological Non-Neutrality</td>
<td>Ellen Rose</td>
</tr>
<tr>
<td>21</td>
<td>Demonizing Educational Technology Thwarts Its Greatest Gift for Learning</td>
<td>Judy Breck</td>
</tr>
<tr>
<td>25</td>
<td>Moving Beyond Technological Determinism and Autonomy to Face Our Responsibilities</td>
<td>Willem H. Vanderburg</td>
</tr>
<tr>
<td>32</td>
<td>McLuhan at 100: Exploring the Legacy</td>
<td>Denis Hlynka</td>
</tr>
<tr>
<td>37</td>
<td>Is Technology Neutral? Some Personal Reflections</td>
<td>David Wiley</td>
</tr>
<tr>
<td>40</td>
<td>The Collision of Plausibility with Reality: Lifting the Veil of the Ethical Neutrality of Technology</td>
<td>Albert Borgmann</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>Educational Technology Research Journals: “Distance Education,” 2000–2010</td>
<td>Darin Oviatt, Jacob Burdis, &amp; Richard E. West</td>
</tr>
<tr>
<td>49</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Jeroen J. G. van Merriënboer</td>
<td>Michael F. Shaughnessy &amp; Susan M. Fulgham</td>
</tr>
<tr>
<td></td>
<td>Technology and Educational Structure</td>
<td>Sarane S. Boocock</td>
</tr>
<tr>
<td>57</td>
<td>Reader Comments: Mobilism: The Inevitable Revolution?</td>
<td>Steven Hackbarth</td>
</tr>
<tr>
<td>58</td>
<td>Book Reviews: “Distance Education: A Systems View of Online Learning,”</td>
<td>Michael G. Moore and Greg Kearsley</td>
</tr>
<tr>
<td></td>
<td>Reviewed by Zane Berge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Breakthrough Teaching and Learning: How Educational and Assistive Technologies Are Driving Innovation,”</td>
<td>Tracy Gray and Heidi Silver-Pacuilla, Editors</td>
</tr>
<tr>
<td></td>
<td>Reviewed by Cleborne D. Maddux</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Applying the Science of Learning,” Richard E. Mayer</td>
<td>Reviewed by M. David Merrill</td>
</tr>
<tr>
<td></td>
<td>Reviewed by Dean Spitzer</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>New Issues, New Answers: Eliminating the “App Gap”</td>
<td>Marc Prensky</td>
</tr>
</tbody>
</table>
## CONTENTS

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Introduction to Special Issue: Educational Technology in Europe</td>
<td>Guglielmo Trentin</td>
</tr>
<tr>
<td>6</td>
<td>Enhancing Creativity and Innovation at All Levels of Education and Training to Face New Economic and Social Challenges</td>
<td>Luigi Berlinguer</td>
</tr>
<tr>
<td>10</td>
<td>Educational Technology: Does Pedagogy Still Matter?</td>
<td>Mary Thorpe</td>
</tr>
<tr>
<td>14</td>
<td>Educational Technology in Europe: Current Issues from the Learning Sciences Perspectives</td>
<td>Ulrike Cress</td>
</tr>
<tr>
<td>18</td>
<td>e-Reading: Socio-Cultural Dimensions of Resiliency and Low Achievement Among Disadvantaged Students in Europe</td>
<td>Kathy Kikis-Papadakis &amp; Andreas Kollias</td>
</tr>
<tr>
<td>25</td>
<td>Beyond Digital Natives: European Research on Media Education; Challenges of Technology and Pedagogical Issues</td>
<td>Pier Cesare Rivoltella</td>
</tr>
<tr>
<td>30</td>
<td>Aiming for e-Learning Sustainability: Transforming Conceptions of Teachers’ Professional e-Learning</td>
<td>Brian Hudson</td>
</tr>
<tr>
<td>34</td>
<td>Sustaining a Professional Dimension in the Use of Educational Technology in European Higher Educational Practices</td>
<td>J. Ola Lindberg &amp; Anders D. Olofsson</td>
</tr>
<tr>
<td>44</td>
<td>The Content Dimension of Educational Technology: How Does It Work for Education in Europe?</td>
<td>Miroslava Černochová</td>
</tr>
<tr>
<td>50</td>
<td>The Technological Dimension of Educational Technology in Europe</td>
<td>Yannis Dimitriadis</td>
</tr>
<tr>
<td>54</td>
<td>Educational Technology Diffusion in Organizations: A Call for Systemic Vision and Organizational Development</td>
<td>Guglielmo Trentin</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>About This Issue</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Point of View: The Opportunity to Change Education Is, Literally, At Hand</td>
<td>Cathleen A. Norris &amp; Elliot Soloway</td>
</tr>
<tr>
<td>63</td>
<td>Educational Technology Classics: The Educational Technology Myth</td>
<td>David Stansfield</td>
</tr>
</tbody>
</table>
CONTENTS

Articles

3
Deeening Content Knowledge, Finding Meaning in Complex Text, and Using Games to Engage 21st Century High School Learners: Is It Possible to Kill Three Birds with One Design Model? Priscilla Norton & Dawn Hathaway

14
But Why Is Everything So Hard to Do? Exploring Learning and the Complexity Factor in Social Virtual Reality Peter C. Honebein & Richard Goldsworthy

20
Flexible Instructional Design: The Opposite of Doing Everything Isn’t Doing Nothing Wallace H. Hannum

29
Training Educators to Design Lessons Incorporating Virtual Worlds Steve Downey

34
Instructional Design Cases and Why We Need Them Craig D. Howard, Elizabeth Boling, Gordon Rowland, & Kennon M. Smith

38
Using Citation Network Analysis in Educational Technology Yonjoo Cho & Sunyoung Park

Regular Features

42

47
Q & A with Ed Tech Leaders: Interview with Lee Rainie Michael F. Shaughnessy & Susan M. Fulgham

50
Point of View: Concepts of Programming Languages for Kids Ajit Jaokar

52
Looking Ahead, Looking Back: Vintage Educational Technology Films on YouTube Denis Hlynka

54

55
Book Reviews:
“Flexible Pedagogy, Flexible Practice: Notes from the Trenches of Distance Education,” Elizabeth Burge, Chère Campbell Gibson, and Terry Gibson, Editors Reviewed by Ellen Rose

Conference Report: The Intersection of Educational Technology and Exemplary Teaching C. Edward Watson & Cortney V. Martin

61
New Issues, New Answers: Teaching the Right Stuff: Not Yesterday’s Stuff—but Tomorrow’s Marc Prensky

About This Issue

A general issue covering varied aspects of educational technology

educational technology®

Volume LII
Number 3

May–June 2012
Volume 57
Number 4
July–August 2012

About This Issue
A general issue covering varied aspects of educational technology

CONTENTS

Articles

3
Is Mobile Learning the Future of 21st Century Education?
Educational Considerations from Various Perspectives
Minakshi Lahiri & James L. Moseley

14
Revisiting Cognitive Tools: Shifting the Focus to Tools-in-Use
Minchi C. Kim

25
Textbooks Used in Graduate Programs:
In Instructional Design and Technology:
Comparisons Across Time and Countries
Tristan E. Johnson, Xinrong Xue, Melissa MacKay,
& Robert A. Reiser

33
Sustaining Research Innovations in Educational Technology
Through Communities of Practice
David Hung, Shu-Shing Lee, & Kenneth Y T Lim

Regular Features

37
Educational Technology Research Journals:
Christopher Billings, P Lynne Nielsen, Aaron Snyder,
Alec Sorensen, & Richard E. West

42
Point of View: Reviving Papert's Dream
Mitchel Resnick

46
Q & A with Ed Tech Leaders:
Interview with Ann D. Thompson
Susan M. Fulgham & Michael F. Shaughnessy

48
Educational Technology Classics:
Human Factors Engineering of Educational Systems
Gustave J. Rath

49
Book Reviews:
"Harmonizing Global Education: From Genghis Khan to Facebook," Jon Baggaley
Reviewed by Denis Hlynka
"Carrots, Sticks, and the Bully Pulpit: Lessons from a
Half-Century of Federal Efforts to Improve America's Schools;"
Frederick M. Hess & Andrew P. Kelly, Editors
Reviewed by Paul D. Hood
"Computer Games and Instruction;"
Sigmund Tobias & J. D. Fletcher, Editors
Reviewed by William D. Milheim
"Foundations of Educational Technology:
Integrative Approaches and Interdisciplinary Perspectives;"
J. Michael Spector
Reviewed by Andrew S. Gibbons
"From Digital Natives to Digital Wisdom:
Hopeful Essays for 21st Century Learning;" Marc Prensky
Reviewed by Michael F. Shaughnessy
"Quality Assurance and Accreditation in Distance
Education and e-Learning: Models, Policies, and Research;"
Insung Jung & Colin Latchem, Editors
Reviewed by Farhad Saba

58
Q & A with Ed Tech Leaders:
Interview with Cathleen A. Norris and Elliot Soloway
Michael F. Shaughnessy & Susan M. Fulgham

64
New Issues, New Answers:
Trivial or Powerful? Let's be clear on exactly how
we are using technology in education
Marc Prensky
Contents

Articles

3 Agency and Learning: Some Implications for Educational Technology Theory and Research
Stephen C. Yanchar & Jonathan S. Spackman

14 Implementing Technological Solutions Within K–12 Contexts: A Comprehensive Route Guide
Deepak Prem Subramony

20 The “Active Ingredients” Approach to the Development and Testing of Evidence-Based Instruction by Instructional Designers
Richard E. Clark & Bror Saxberg

25 A Systemic Integration of Technology for New-Paradigm Education
William R. Watson, Sunnie Lee Watson, & Charles M. Reigeluth

30 Vision and Reality in Electronic Textbooks: What Publishers Need to Do to Survive
Byron W. Brown

Regular Features

Alisha Rasmussen Mayer, Jennifer Francis, J. Buckley Harrison, Ammon S. McPhillen, & Richard E. West

39 Q & A with Ed Tech Leaders: Interview with Ruth V. Small
Susan M. Fulgham & Michael F. Shaughnessy

42 Topics for Debate: Distance Learning and Cloud Computing
Alexander J. Romiszowski

45 Conference Reports: PIDT: The “Unconference” for Discussion of Ideas and Professional Networking
Richard E. West

48 Point of View: Educational Technology and Human Performance Technology: The End of an Era, or Opportunity to Grow?
Roger Kaufman

50 Q & A with Ed Tech Leaders: Interview with Darrell M. West
Michael F. Shaughnessy & Susan M. Fulgham

52 Educational Technology Classics:
And Now, Class, Here’s a Word from Our Sponsor
P. Kevin O’Sullivan

Book Reviews:

53 “Digital Teaching Platforms: Customizing Classroom Learning for Each Student,” Chris Dede and John Richards, Editors
Reviewed by Jerry Willis

54 “Adaptive Technologies for Training and Education,”
P. J. Durlach and A. M. Lesgold, Editors
Reviewed by J. D. Fletcher

55 “Fundamentals of Performance Improvement: Optimizing Results Through People, Processes, and Organizations,” Darlene M. Van Tiem, James L. Moseley, & Joan C. Dessinger
Reviewed by Barbara L. Martin

56 “Brain Gain: Technology and the Quest for Digital Wisdom,”
Marc Prensky
Reviewed by Cleborne D. Maddux

59 Looking Ahead, Looking Back: Return of the Blackboard?
Denis Hlynka

62 New Issues, New Answers:
What ISN’T Technology Good At? Empathy, for One Thing!
Marc Prensky
Contents

Special Issue Articles
3 Scholarly Communications in a New Key: Introduction to Special Issue, Lucy Appert
8 Promoting Diversity and Sustainability in the Scholarly Publishing Ecosystem: The University of Michigan's MPublishing Redefines the Role of Libraries in Publishing, Kevin S. Hawkins
14 Towards Networked Knowledge: The Learning Registry, an Infrastructure for Sharing Online Learning Resources, Ashley Lee et al.
19 A New Key to Scholarly Collaboration?, Jack Fitzmier
22 The Risks of Open Scholarship: Avoiding Irony in the Promotion of Technology for Scholarly Communications, Martin Oliver
26 Educational Technology as a Means for Connecting Improved Learning Outcomes and Scholarly Communications, Michael D. Bush

Regular Features
36 Q & A with Ed Tech Leaders: Interview with Robert Tinker, Susan M. Fulgham & Michael F. Shaughnessy
38 Q & A with Ed Tech Leaders: Interview with Jan Elen, Michael F. Shaughnessy & Susan M. Fulgham
44 Book Reviews:
   "Learning the Virtual Life: Public Pedagogy in a Digital World," Peter Pericles Trifonas, Editor
   Reviewed by Ellen Rose
   "Teaching as a Design Science: Building Pedagogical Patterns for Learning and Technology," Diana Laurillard
   Reviewed by Greg Kearsley

Articles
47 Where Should Educational Technologists Publish Their Research? An Examination of Peer-Reviewed Journals Within the Field of Educational Technology and Factors Influencing Publication Choice, Albert D. Ritzhaupt, Christopher D. Sessums, & Margeaux C. Johnson
57 Which Conferences Do You Attend? A Look at the Conference Attendance of Educational Technology Professionals, Patrick R. Lowenthal

Columns
62 Interviews with Badrul Khan: Yasser Dakrouy, EELU
64 New Issues, New Answers: What Technology ISN'T Good At, Part II: Passion, Marc Prensky
About This Issue

A general issue covering varied aspects of educational technology

Contents

Articles

3 Design, Research, and Design Research: Synergies and Contradictions
Wayne A. Nelson

12 Preparing College Students for Real-World 2.0: Towards a Recipe for the "Secret Sauce"
Steven Gordon & Diane Gayeski

20 Migrating Educational Data and Services to Cloud Computing: Exploring Benefits and Challenges
Minakshi Lahiri & James L. Moseley

31 The Heart of Implementation Fidelity: Instructional Design and Intent
Violet A. Kulo & Ward Mitchell Cates

36 Mobile Learning: New Tools Flying in the Face of the Same Old Schooling
Zane L. Berge

Regular Features

Jeffery S. Drysdale, Michael Matthews, Vera Terekhova-Nan, Wendy Woodfield, & Richard E. West

45 Q & A with Ed Tech Leaders: Interview with Alan C. K. Cheung and Robert E. Slavin
Michael F. Shaughnessy

49 Point of View: Reflections on the Growth of a Career Field and a Career
John M. Keller

Denis Hlynka

54 Educational Technology Classics: Educational Technology Doesn’t Really Exist
Leonard C. Silvern

55 Book Reviews:
Reviewed by Ward Mitchell Cates, Paige Hawkins Mattke, and Mary Fran Daley

“Revolutionizing Education Through Technology: The Project RED Roadmap for Transformation,”
Thomas W. Greaves, Jeanne Hayes, Leslie Wilson, Michael Gielniak, and Eric L. Peterson, foreword by Angus King
Reviewed by Cathleen Norris and Elliot Soloway

“Networked: The New Social Operating System,”
Lee Rainie and Barry Wellman
Reviewed by Vanessa P. Dennen

59 Educational Technology Points of Inflection: Getting to Where We Are and Need to Be with Educational Technology
Michael D. Bush

61 New Issues, New Answers: Time-Travel as Punishment: What Our Kids REALLY Hate
Marc Prensky
Contents

Articles

3 Designing an Online Course Content Structure Using a Design Patterns Approach
   Dawn Hathaway & Priscilla Norton

16 Toward a 21st-Century High School: An Iterative Quest
   David C. Dwyer

21 Building Software Development Capacity to Advance the State of Educational Technology
   Kenneth J. Luterbach

28 Labeling What Some Researchers Are Already Doing: Design Research Updated
   Cathie Norris, Elliot Soloway, Chun Ming Tan, Chee-Kit Looi, & Lung Hsiang Wong

33 Web Consulting for Non-Academic Educational Missions: How Instructional Design Offers a Competitive Advantage
   Ward Mitchell Cates & Paige Hawkins Mattek

37 Using Raspberry Pi to Teach Computing 'Inside Out'
   Ajit Jaokar

Regular Features

   Janeel Juncker, Isaac Calvert, Geri Clements, Jeongwoon Kim, & Richard E. West

46 Q & A with Ed Tech Leaders:
   Interview with Stephen C. Ehrmann
   Susan M. Fulgham & Michael F. Shaughnessy

49 Book Reviews:
   “First Principles of Instruction: Identifying and Designing Effective, Efficient, and Engaging Instruction,”
   M. David Merrill
   Reviewed by J. Michael Spector
   “Video Games and Learning: Teaching and Participatory Culture in the Digital Age,” Kurt Squire
   Reviewed by Sigmund Tobias
   Reviewed by Thomas C. Reeves
   “The Futures of School Reform,” Jal Mehta, Robert B. Schwartz, & Frederick M. Hess, Editors
   Reviewed by Deepak Prem Subramony

55 Educational Technology Classics: Planning Tomorrow's Schools
   Hugh J. Vallery

57 Looking Ahead, Looking Back: What's a Standard Anyway?
   Denis Hlynka

59 David H. Jonassen: A Significant Contributor to the Field of Educational Technology
   Ikseon Choi & Thomas C. Reeves

64 New Issues, New Answers:
   Things Won't Stop Speeding Up!
   Marc Prensky
Contents

Articles

3 The Smart Classroom: Combining Smart Technologies with Advanced Pedagogies
   Jungwoo Lee, Hyejung Lee, & Yongki Park

12 Addressing STEM Education Needs: The Case for Adopting a PBL Approach
   Christopher J. Mong & Peggy A. Ertmer

21 Professional Development for Personalized Learning (PD4PL) Guidelines
   Yu-Ju Lin & ChanMin Kim

28 Developing Designer Identity Through Reflection
   Monica W. Tracey & Alisa Hutchinson

33 How Task-Centered Learning Differs from Problem-Based Learning: Epistemological Influences, Goals, and Prescriptions
   Gregory M. Francom & Joel L. Gardner

38 Massive Open Online Courses (MOOCs): Current Applications and Future Potential
   William D. Milheim

Regular Features

   Curtis R. Henrie, Greg S. Williams, & Richard E. West

47 Q & A with Ed Tech Leaders: Interview with Stavros Demetriadis
   Susan M. Fulgham & Michael F. Shaughnessy

52 Educational Technology Classics: The Future for Education and Educational Technology: What Is the Question?
   Robert J. Seidel

54 Book Reviews:
   "Learning to Change the World: The Social Impact of One Laptop Per Child," Walter Bender, Charles Kane, Jody Cornish, and Neal Donahue
   Reviewed by Curtis J. Bonk
   "Cage-Busting Leadership," Frederick M. Hess
   Reviewed by Steven Hackbart
   "New Directions in Social Education Research: The Influence of Technology and Globalization on the Lives of Students," Brad M. Maguth, Editor
   Reviewed by Mimi Miyoung Lee

59 Looking Ahead, Looking Back: New New and Old Old: Towards a Taxonomy of Educational Media
   Denis Hlynka

61 Educational Technology Points of Inflection: Individualization in Learning: A Key Point of Inflection
   Michael D. Bush

63 New Issues, New Answers:
   Want the Best Network? Use the Students to Build It!
   Marc Prensky
Contents

Articles

3  Digital Disturbances, Disorders, and Pathologies: A Discussion of Some Unintended Consequences of Technology in Higher Education
Noelia A. Haughton, Kuo-Chuan (Martin) Yeh, John Nworie, & Liz Romero

17  Design Heuristics in Academic, Corporate, and Military Instruction: More Similar than Different
Cindy S. York & Peggy A. Ertmer

25  Teacher Support Is Just a Click Away! Creating an Interactive Resource Site for Today’s Teachers
Dina Brulles & Karen L. Brown

33  Inquiry Pedagogy and Smartphones: Enabling a Change in School Culture
Cathleen A. Norris, Elliot Soloway, Chun Ming Tan, & Chee-Kit Looi

40  Data-Mining and Predicting Academic Success: A Recommendation System for College Students
Leah Whitten & Anthony Sanders

Regular Features

43  Educational Technology Research Journals: International Review of Research in Open and Distance Learning, 2002–2011
Aaron Olsen, Kristian J. Spring, Jay Young, & Richard E. West

48  Topics for Debate: What’s Really New About MOOCs?
Alexander J. Romiszowski

52  Book Reviews:
Reviewed by Jerry Willis
"Conducting Educational Design Research,"
Susan McKenney & Thomas C. Reeves
Reviewed by Wayne A. Nelson
"Inside the Black Box of Classroom Practice: Change Without Reform in American Education," Larry Cuban
Reviewed by Zane L. Berge
"Needs Assessment for Organizational Success,"
Roger Kaufman & Ingrid Guerra-Lopez
Reviewed by Wallace Hannum
"The Digital Turn: How the Internet Transforms Our Existence," Wim Westera
Reviewed by Greg Kearsley

60  Q & A with Ed Tech Leaders:
Interview with Brian Lewis
Michael F. Shaughnessy & Susan M. Fulgham

62  Reader Comments:
Milheim Article Evokes MOOC Research Questions
Farhad Saba

64  New Issues, New Answers:
My [2013] Take on MOOCs
Marc Prensky
Contents

Articles

3 Innovation Over the Edge: Introduction to Special Issue
Gordon Rowland

8 Communications
Jeremy Bailenson, Patrice Buzzanell, Stanley Deetz, David Tewksbury, Robert J. Thompson, & Joseph Turow; Barbara Bichelmeyer, MJ Bishop, & Diane Gayeski

16 Computer/Information Science
Ken Birman, Jennifer Rexford, Tim Roughgarden, Margo Seltzer, Jim Spohrer, & Erik Stolterman; Greg Kearsley, Tiffany Koszalka, & Ton de Jong

25 Design
Richard Buchanan, Nigel Cross, David Durling, Harold Nelson, Charles Owen, & Anna Valtonen; Elizabeth Boling, Andrew Gibbons, & Irene Visscher-Voerman

32 Organizational Science
Madhu Beriwal, Stewart Clegg, Fred Collopy, Reuben McDaniel, Jr., Gareth Morgan, & Kathleen Sutcliffe; Roger Kaufman, Anthony Marker, & Neil Selwyn

53 Psychology
Susan Blackmore, Nadya Fouad, Jerome Kagan, Stephen Kosslyn, Michael Posner, & Robert Sternberg; Marcy Driscoll, Xun Ge, & Patrick Parrish

64 Systems Science
Alexander Christakis, Debora Hammond, Michael Jackson, Alexander Laszlo, Ian Mitroff, Dave Snowden, & Len Troncale; Alison Carr-Chellman, J. Michael Spector, & Brent Wilson

About This Issue
A special issue exploring innovation in educational technology via connections with related disciplines

78 Comments
Peggy Ertmer, Denis Hlynka, David Hung, Thomas Reeves, Alexander Romiszowski, & Ellen Rose
## Contents

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Working Examples (WEx): A Vehicle for Building Radical Innovations to Change Education</td>
<td>Jolene Zywica, Anna Roberts, &amp; Drew Davidson</td>
</tr>
<tr>
<td>18</td>
<td>CrowdTeaching: Supporting Teacher Collective Intelligence Communities</td>
<td>Mimi M. Recker, Min Yuan, &amp; Lei Ye</td>
</tr>
<tr>
<td>29</td>
<td>Questioning Needs Assessment: Some Limitations and Positive Alternatives</td>
<td>Wallace Hannum</td>
</tr>
<tr>
<td>34</td>
<td>The Design of Online Learning Environments from the Perspective of Interaction</td>
<td>Huay Lit Woo</td>
</tr>
<tr>
<td>39</td>
<td>The Quantified Self (QS) Movement and Some Emerging Opportunities for the Educational Technology Field</td>
<td>Victor R. Lee</td>
</tr>
<tr>
<td>42</td>
<td>The Little eLearn Centre with a Big Impact</td>
<td>Terry Anderson</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Susan McKenney</td>
<td>Susan M. Fulgham &amp; Michael F. Shaughnessy</td>
</tr>
<tr>
<td>53</td>
<td>Educational Technology Classics: The Blooming of Platonic Computing</td>
<td>Elwyn Rees</td>
</tr>
<tr>
<td>55</td>
<td>Book Reviews:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Designing Problem-Driven Instruction with Online Social Media,” Kay Kyeong-Ju Seo, Debra A. Pellegrino, &amp; Chalee Engelhard, Editors</td>
<td>Reviewed by Peggy A. Ertmer</td>
</tr>
<tr>
<td></td>
<td>“Anytime Anywhere: Student-Centered Learning for Schools and Teachers,” Rebecca E. Wolfe, Adria Steinberg, &amp; Nancy Hoffman, Editors</td>
<td>Reviewed by Cleborne D. Maddux</td>
</tr>
<tr>
<td>60</td>
<td>Educational Technology Points of Inflection: What MOOCs, Flipped Classrooms, and OLPC Teach Us About Individualization of Learning</td>
<td>Michael D. Bush</td>
</tr>
<tr>
<td>64</td>
<td>New Issues, New Answers: Future-cation: A new way to describe our goal</td>
<td>Marc Prensky</td>
</tr>
</tbody>
</table>

---

**About This Issue**

A general issue covering varied aspects of educational technology.
Contents

Articles

3  MOOCs: Let’s Get REAL
   Thomas C. Reeves & John G. Hedberg

8  Research on Education in the Knowledge Creation Paradigm
   Seng Chee Tan, John Ow, ChingSing Chai, Chew-Lee Teo, & Jennifer Yeo

14 Imagineering in Education: A Framework to Enhance Students’ Learning Performance and Creativity in Thinking
   Prachyanun Nilsook, Nattakant Utakrit, & Judy Clayden

20 Teaching Problem-Solving and Critical-Thinking Skills
   Online Using Problem-Based Learning
   Liz Romero, Agnes Orzechowski, & Ola Rahatka

26 Approaching Hospital-Bound/Home-Bound Special Education as an Opportunity for Innovation in Teaching
   Guglielmo Trentin

30 Thinking Tools in Computer-Based Assessment: Technology Enhancements in Assessments for Learning
   Yigal Rosen

35 E-Learning and the Use of New Technologies in the ‘Kolumbus-Kids’ Project in Germany
   Claas Wegner, Wiebke Homann, Frederike Strehlke, & Annika Borgmann

37 Characteristics of Useful and Practical Organizational Strategic Plans
   Roger Kaufman

Regular Features

   Kyle R. Welch, Grant D. Zabriskie, Scott M. Ashton, Jered Borup, & Richard E. West

46 Q & A with Ed Tech Leaders:
   Interview with Michael W. Allen
   Michael F. Shaughnessy

52 Valerie J. Shute: A Significant Contributor to the Field of Educational Technology
   Larry McCalla & Thomas C. Reeves

55 Interviews with Badrul Khan:
   Interview with Nobel Laureate Prof. Muhammad Yunus

57 Looking Ahead, Looking Back:
   What’s the ‘Big Idea’? A View of Technology
   Denis Hlynka

59 Book Review: “Reinventing Schools: It’s Time to Break the Mold,”
   Charles M. Reigeluth & Jennifer R. Karnopp
   Reviewed by Michael F. Shaughnessy

60 Educational Technology Classics:
   The Generalist: Vanishing Instructional Developer
   J. Warren Anderson

61 Point of View: Education for Innovation: Beyond ‘21st Century Skills’
   Marlene Scardamalia & Carl Bereiter

64 New Issues, New Answers: Innovation, Experimentation, and Courage in the Education of Students for the Future
   Marc Prensky
## Contents

### Articles

3  
Revisiting the Digital Divide in the Context of a ‘Flattening’ World  
*Deepak Prem Subramony*

10  
The Business Meeting as a Model for the Classroom  
*George L. Gropper*

20  
Designing Creative User Interactions for Learning  
*Yi-Chung Hong, Gregory Clinton, & Lloyd P. Rieber*

### Regular Features

26  
Educational Technology Research Journals: *Cognition and Instruction, 2003–2012*  
*Melissa C. Warr, Kari Ross Nelson, & Richard E. West*

32  
Q & A with Ed Tech Leaders: Interview with Marcia C. Linn  
*Susan M. Fulgham & Michael F. Shaughnessy*

39  
Point of View: When Good Bosses Ask for Bad Things  
*Roger Kaufman*

42  
Looking Ahead, Looking Back: ‘Déjà vu...all over again’: Proto-podcasts and Pseudo-podcasts  
*Denis Hlynka*

44  
Book Reviews:  
  Reviewed by Andrew S. Gibbons  
- "Handbook of Mobile Learning," Zane L. Berge and Lin Y. Muienburg, Editors  
  Reviewed by Alexander J. Romiszowski  
- "The Design of Future Educational Interfaces," Sharon Oviatt  
  Reviewed by Ward Mitchell Gates  
- "The U.S. Technology Skills Gap: What Every Technology Executive Must Know to Save America’s Future," Gary J. Beach  
  Reviewed by Paul D. Hood

54  
Educational Technology Classics:  
What Should Mass Communications Be Doing in Adult Education?  
*George N. Gordon*

57  
Educational Technology Points of Inflection: Educational Video on the S-Curve of Video Technology Development  
*Michael D. Bush*

61  
Q & A with Ed Tech Leaders: Interview with David M. Monetti  
*Susan M. Fulgham & Michael F. Shaughnessy*

64  
New Issues, New Answers:  
VUCA: Variability, Uncertainty, Complexity, Ambiguity  
*Marc Prensky*
Contents

Articles
3 Paradigm Change in Education: Introduction to Special Issue
   Charles M. Reigeluth & Francis M. Duffy
7 A Paradigm for Learning in a World of Continuous Change
   Scott Thompson
12 How to Personalize Learning in K–12 Schools:
   Five Essential Design Features
   Dabae Lee
18 The Learner-Centered Paradigm of Education:
   Roles for Technology
   Charles M. Reigeluth
22 Transformational Dialogue for Public Education:
   Moving from Tweaking to Transforming at the State Level
   Daniel H. Kim
29 Paradigms, Mental Models, and Mind-Set:
   Triple Barriers to Transformational Change in School Systems
   Francis M. Duffy
34 Engaging At-Risk Populations in the Systemic Educational
   Transformation Process
   Sunnie Lee Watson & William R. Watson
39 Transforming Education with Self-Directed Project-Based
   Learning: The Minnesota New Country School
   Sinem Aslan, Charles M. Reigeluth, & Dee Thomas
43 Implementing Learner-Centered Educational Strategies:
   The Bloomington Project School
   Pratima Dutta
47 Redesigning Higher Education: Embracing a New Paradigm
   William R. Watson & Sunnie Lee Watson
52 Paradigm Change in Military Education and Training
   Herbert H. Bell & Charles M. Reigeluth

Regular Features
57 Book Reviews:
   "An Architectural Approach to Instructional Design,"
   Andrew S. Gibbons
   Reviewed by Brad Hokanson
   "Improving Achievement with Digital Age Best Practices,"
   Christopher M. Moersch
   Reviewed by Steven Hackbarth
   "The Innovator's Path: How Individuals, Teams, and
   Organizations Can Make Innovation Business-as-Usual,"
   Madge M. Meyer
   Reviewed by Gordon Rowland
62 Q & A with Ed Tech Leaders:
   Interview with David Dockterman
   Michael F. Shaughnessy
64 Doing What We Believe:
   When We Don't, Our Students Pay the Price
   Marc Prensky
## Contents

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The World Needs a New Curriculum</td>
<td>Marc Prensky</td>
</tr>
<tr>
<td>15</td>
<td>Design-Driven Innovation as Seen in a Worldwide Values-Based Curriculum</td>
<td>Camey Andersen Hadlock &amp; Jason K. McDonald</td>
</tr>
<tr>
<td>22</td>
<td>My Hopes for the Future of Instructional Technology</td>
<td>M. David Merrill</td>
</tr>
<tr>
<td>27</td>
<td>Chasing Woozles? A Personal Reflection on a Quarter-Century in Ed Tech, and an Attempt to Peer Ahead Through the Fog</td>
<td>Corrie Bergeron</td>
</tr>
<tr>
<td>32</td>
<td>Emerging Technologies in Autism Diagnosis, Therapy, Treatment, and Teaching</td>
<td>Angela C. Nelson</td>
</tr>
<tr>
<td>38</td>
<td>Professionalizing the Self-Reflection of Student Teachers by Using a Wiki</td>
<td>Claas Wegner, Kathrin Remmert, &amp; Friederike Strehlke</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with John R. Savery</td>
<td>Susan M. Fulgham &amp; Michael F. Shaughnessy</td>
</tr>
<tr>
<td>52</td>
<td>Educational Technology Classics: Programmed Instruction: Fundamentals, Semantics, Promise, and Problems</td>
<td>Robert F. Mager</td>
</tr>
<tr>
<td>56</td>
<td>Reader Comments: Toward Proactive Professional Practice in Educational Technology/Performance Improvement</td>
<td>Roger Kaufman</td>
</tr>
<tr>
<td>57</td>
<td>Book Reviews:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;Learning Platforms and Learning Outcomes,&quot;</td>
<td>Don Passey and Steve Higgins Reviewed by Jerry Willis</td>
</tr>
<tr>
<td></td>
<td>&quot;Making Schools Work: For Parents of School-Age Kids,&quot;</td>
<td>Robert F. Mager Reviewed by James D. Russell</td>
</tr>
<tr>
<td>61</td>
<td>Looking Ahead, Looking Back: The Beginnings of Social Media?</td>
<td>Denis Hlynka</td>
</tr>
<tr>
<td>62</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Scott McLeod</td>
<td>Michael F. Shaughnessy</td>
</tr>
<tr>
<td>64</td>
<td>New Issues, New Answers: The Real Importance of Facebook</td>
<td>Marc Prensky</td>
</tr>
</tbody>
</table>
Contents

Articles

3 Has the Education Paradigm Begun to Shift?  
Clifton B. Chadwick

12 The Effectiveness of Hybrid Solutions in Higher Education:  
A Call for Hybrid-Teaching Instructional Design  
Guglielmo Trentin & Stefania Bocconi

22 Creativity and a Massive Course: Experience and Observations with Teaching a MOOC  
Brad Hokanson & Marit McCluske

29 PowerPoint: An Overused Technology Deserving of Criticism, but Indispensable  
Keith B. Hopper & Jonathan B. Waugh

35 Hong Kong Perspectives on Educational Technology Research and Practice  

42 The AECT HistoryMakers Project:  
Conversations with Leaders in Educational Technology  
Barbara B. Locke, Kibong Song, & Wei Li

Regular Features

45 Educational Technology Research Journals: Journal of Distance Education, 2003–2012  
Eric H. Young, Ty Griffiths, Brandon Luke, & Richard E. West

50 Q & A with Ed Tech Leaders: Interview with Bror Saxberg  
Michael F. Shaughnessy

53 Educational Technology Classics:  
The Classroom as a System  
Martin R. Wong & Joyce M. Wong

56 Book Reviews:  
"The Systematic Design of Instruction (eighth edition),"  
Walter Dick, Lou Carey, & James O. Carey  
Reviewed by William D. Milheim  
"TechnoTeaching: Taking Practice to the Next Level in a Digital World,"  
Julie M. Wood & Nicole Ponsford  
Reviewed by Steven Hackbart

58 Educational Technology Classics:  
The Open University: A New Phenomenon  
Walter James

60 Point of View: An Insider’s Look at the Growth of the Computer Technology Industry Serving K–12 Schools  
Karen Billings

64 New Issues, New Answers: Automating Repetition  
Marc Prensky

About This Issue

A general issue covering varied aspects of educational technology
Contents

Articles

3 The Mythical Retention Chart and the Corruption of Dale's Cone of Experience: Introduction to Special Issue
   Deepak Prem Subramony & Michael Molenda

6 The Mythical Retention Chart and the Corruption of Dale's Cone of Experience
   Deepak Prem Subramony, Michael Molenda, Anthony K. Betrus, & Will Thalheimer

17 Previous Attempts to Debunk the Mythical Retention Chart and Corrupted Dale's Cone
   Deepak Prem Subramony, Michael Molenda, Anthony K. Betrus, & Will Thalheimer

22 The Good, the Bad, and the Ugly: A Bibliographic Essay on the Corrupted Cone
   Deepak Prem Subramony, Michael Molenda, Anthony K. Betrus, & Will Thalheimer

31 Timeline of the Mythical Retention Chart and Corrupted Dale's Cone
   Deepak Prem Subramony, Michael Molenda, Anthony K. Betrus, & Will Thalheimer

35 Figures for Special Issue

39 Exhibits for Special Issue

Regular Features

50 Q & A with Ed Tech Leaders: Interview with Jan Herrington
   Susan M. Fulgham & Michael F. Shaughnessy

53 Point of View: When Less Is More— and When It's Not
   Barbara L. Martin

56 On Reflection: Disrupting "Disruptive Technology" in Higher Education
   Ellen Rose

58 Educational Technology Classics: Success or Failure for Computers in Schools?
   Some Lessons from Instructional Television
   Saul Rockman

60 Book Reviews:
   "Instructional Technology and Media for Learning (11th edition),"
   Sharon E. Smaldino, Deborah L. Lowther, James D. Russell, and Clif Mims
   Reviewed by Robert Maribe Branch

   "Handbook of Research on Educational Communications and Technology (4th edition)," J. Michael Spector,
   M. David Merrill, Jan Elen, and M. J. Bishop, Editors
   Reviewed by Brent G. Wilson

63 Looking Ahead, Looking Back: Uncle Wiggily and the Internet
   Denis Hlynka

64 New Issues, New Answers: Feeling Like a Beginner
   Marc Prensky
Contents

Articles

3  Whither Instructional Design and Teacher Training? The Need for Experimental Research
    George L. Gropper

12 Mobile Technology in 2020: Predictions and Implications for K-12 Education
    Cathleen A. Norris & Elliot Soloway

19 Towards a SIM-less Existence: The Evolution of Smart Learning Networks
    Ali M. Al-Khour

27 Proposing an Educational Scaling-and-Diffusion Model for Inquiry-Based Learning Designs
    David Hung & Shu-Shing Lee

33 Lessons from the Past for the Next Generation of Educational Video
    Michael D. Bush

39 To Point or Click, That Is the Question!
    Evan Golub

Regular Features

    Matthew Langton, Kristine Manwaring, Leanna Fry, & Richard E. West

48 Q & A with Ed Tech Leaders: Interview with Peter Brusilovsky
    Susan M. Fulgham & Michael F. Shaughnessy

52 Book Reviews:
    "Amazing Ourselves to Death: Neil Postman's Brave New World Revisited," Lance Strate
    Reviewed by Diane Gayeski
    "Curious: The Desire to Know and Why Your Future Depends on It," Ian Leslie
    Reviewed by Cleborne D. Maddux

55 Educational Technology Classics: Components of a Cybernetic Instructional System
    M. David Merrill

58 Conference Report: 30th Annual Conference on Distance Teaching & Learning
    Les Howles & Bridget Powell

60 Interviews with Badrul Khan: Interview with Paul Thurkettle, NATO Education & Training

62 In Memoriam: Donald P. Ely
    Thomas C. Reeves

64 New Issues, New Answers: Interacting and Innovating with Future Technologies
    Marc Prensky
Contents

Articles

3 Are Individual Differences Undertreated in Instructional Design? George L. Gropper


19 The Changing Nature of Educational Technology Programs J. Michael Spector

26 Educational Technology Research in a VUCA World Thomas C. Reeves & Patricia M. Reeves

31 STEMEdhub: Supporting STEM Education Initiatives via the HUBzero Platform James D. Lehman, Peggy A. Ertmer, & Ann M. Bessenbacher

35 Learning by Doing: Creating Engaging Online Learning Liz Romero & Maria Glass

40 Overcoming Barriers to Classroom Technology Integration Daniel P. Kelly

Regular Features


48 Q & A with Ed Tech Leaders: Interview with Punya Mishra Susan M. Fulgham & Michael F. Shaughnessy

52 Educational Technology Classics: Behavioral Factors in the Design of High School Buildings Richard Myrick

54 Book Review: "Teachers Talking Tech: Creating Exceptional Classrooms with Technology," Dave Saltman Reviewed by Steven Hackbarth

56 TransformED: Trends Powering Personalized Learning Susan Patrick

60 Topics for Debate: Reflections on a Century of Anniversaries, or the Information Society: ‘1984’ or ‘Brave New World’? Alexander J. Romiszowski

64 New Issues, New Answers: Do Schools Disappear, or Do Classrooms? Marc Prensky
Contents

Articles

3
3
Inclusive Instructional Design: Creating a "Learner" Version of Instructional Design That Fosters Active Learner Engagement
George L. Gropper

14
Are We Ready for the Bachelor's Degree in Educational Technology? Perceptions from the Field and a Proposal
Albert D. Ritzhaupt & YoungJu Kang

22
Evaluating Vocational Educators' Training Programs: A Kirkpatrick-Inspired Evaluation Model
Fabrizio Ravicchio & Guglielmo Trentin

28
Makerspaces: The Next Iteration for Educational Technology in K-12 Schools
Josso Strycker

32
Using Appropriate Digital Tools to Overcome Barriers to Collaborative Learning in Classrooms
Liane Wardlow & Eian Harm

Regular Features

36
James M. Christensen, Brian Jones, Jessica Rose Cooper, Laura McAllister, Mark B. Ware, & Richard E. West

42
Q & A with Ed Tech Leaders: Interview with Bryant Griffith
Michael F. Shaughnessy

49
Book Reviews:
"The Cambridge Handbook of Multimedia Learning (2nd Ed.)," Richard E. Mayer
Reviewed by M. David Merrill
"Blueprint for Tomorrow: Redesigning Schools for Student-Centered Learning," Prakash Nair
Reviewed by Angela C. Nelson
"The Best American Infographics 2014," Gareth Cook
Reviewed by Richard E. Mayer
"Online Distance Education: Towards a Research Agenda," Olaf Zawacki-Richter and Terry Anderson
Reviewed by Zane Berge

Educational Technology Classics:
The Hourglass Instead of the Funnel in Educational Technology
E. E. Zajac

58
Looking Ahead, Looking Back: The Magna Carta
Denis Hlynka

60
Q & A with Ed Tech Leaders: Interview with J. Michael Spector
Michael F. Shaughnessy & Susan M. Fulgham

64
New Issues, New Answers: Technology As Mask?
Marc Prensky

About This Issue
A general issue covering varied aspects of educational technology
About This Issue
A general issue covering varied aspects of educational technology

Contents

Articles
3 Attributes of Open Pedagogy: A Model for Using Open Educational Resources
Bronwyn Hegarty

13 Romancing the Cone: Is an Aesthetic Reading Possible?
Denis Hlynka

20 Apprenticeship, Epistemic Learning, and Diffusion of Innovations in Education
David Hung, Azilawati Jamaludin, & Yancy Toh

26 How Do We Train Instructional Designers? Instructional Design as Negotiation
So Mi Kim

30 The Raspberry Pi: Not a Poor Man's Computer, but an Interesting Possibility
Jesse Strycker

Regular Features
Casey D. Wright, Christina R. Catron, Jackson I. Isiko, Esther E. Marshall, Ben D. Nielsen, & Richard E. West

39 Q & A with Ed Tech Leaders: Interview with William Huitt
Susan M. Fulgham & Michael F. Shaughnessy

45 Looking Ahead, Looking Back: Shakespeare on Media Literacy
Denis Hlynka

46 Educational Technology Classics: Humanizing Education Through Technology: The View from An Ivory Foxhole
Leo E. Persselin

48 On Reflection: Can Online Teaching and Learning Support Mindfulness?
Ellen Rose

51 Book Reviews:
Reviewed by Steven Hackbart
“Words Onscreen: The Fate of Reading in a Digital World,” Naomi S. Baron
Reviewed by Lance Strate
Reviewed by Cathleen Norris & Elliot Soloway
“Teaching the iStudent: A Quick Guide to Using Mobile Devices and Social Media in the K–12 Classroom,” Mark Barnes
Reviewed by Daniel L. Randall

57 Topics for Debate: USA Participation in eLearning Africa 2015: Who Is Helping Whom?
Alexander J. Romiszowski

60 Educational Technology Points of Inflection: Fads and Prejudices Hide Potential Points of Inflection
Michael D. Bush

64 New Issues, New Answers: Our Global-Empowered Kids
Marc Prensky
About This Issue
A general issue covering varied aspects of educational technology
## Contents

### Articles

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>In Search of a Teacher Education Curriculum: Appropriating a Design Lens to Solve Problems of Practice</td>
<td>Priscilla Norton &amp; Dawn Hathaway</td>
</tr>
<tr>
<td>14</td>
<td>The Technology of the Question: Structure and Use of Questions in Educational Technology</td>
<td>Brad Hokanson</td>
</tr>
<tr>
<td>24</td>
<td>Wanting to Learn: A Necessary Condition for the Effectiveness of Instructional Design</td>
<td>George L. Gropper</td>
</tr>
<tr>
<td>33</td>
<td>Individual Training, Performance Improvement, and the Future for Organizations</td>
<td>Roger Kaufman</td>
</tr>
<tr>
<td>38</td>
<td>Holography: A Transformative Technology for Learning and Human Performance Improvement</td>
<td>Gary W. Frazer &amp; George H. Stevens</td>
</tr>
</tbody>
</table>

### Regular Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>Educational Technology Classics: The Science Teacher and Educational Technology</td>
</tr>
<tr>
<td>49</td>
<td>Q &amp; A with Ed Tech Leaders: Interview with Yong Zhao</td>
</tr>
<tr>
<td>52</td>
<td>A Film Review: Words and Pictures: The story continues?</td>
</tr>
<tr>
<td>54</td>
<td>Book Reviews: “MOOCs and Open Education Around the World,” Curtis J. Bonk, Mimi M. Lee, Thomas C. Reeves, &amp; Thomas H. Reynolds, Editors</td>
</tr>
<tr>
<td>57</td>
<td>Topics for Debate: The Five “A” Grades for an Online Degree Program: Accessibility, Applicability, Affordability, Acceptance, and Accreditation</td>
</tr>
<tr>
<td>62</td>
<td>Educational Technology Points of Inflection: Learning Analytics and Educational Research</td>
</tr>
<tr>
<td>64</td>
<td>New Issues, New Answers: Perspectives on Assessment</td>
</tr>
</tbody>
</table>