Educational Media and Technology Yearbook

For further volumes:
http://www.springer.com/series/8617

Michael Orey · Stephanie A. Jones ·
Robert Maribe Branch
Editors

Educational Media and Technology Yearbook

Volume 35, 2010

In cooperation with the AECT

Springer

Editors
Michael Orey
Department of Educational Psychology
and Instructional Technology
University of Georgia
604 Aderhold Hall
Athens GA 30602
USA
mikeorey@uga.edu

Stephanie A. Jones
Leadership, Technology, and Human
Development Department
Georgia Southern University
P.O. Box 8131
Statesboro GA 30460
USA
sjones@georgiasouthern.edu

Robert Maribe Branch
Department of Educational Psychology
and Instructional Technology
University of Georgia
604 Aderhold Hall
Athens GA 30602
USA
rbranch@uga.edu

ISSN 8755-2094
ISBN 978-1-4419-1502-3 e-ISBN 978-1-4419-1516-0
DOI 10.1007/978-1-4419-1516-0
Springer New York Dordrecht Heidelberg London

Library of Congress Control Number: PCN applied for

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

The audience for the *Yearbook* consists of media and technology professionals in schools, higher education, and business contexts. Topics of interest to professionals practicing in these areas are broad, as the Table of Contents demonstrates. The theme unifying each of the chapters in the book is the use of technology to enable or enhance education. Forms of technology represented in this volume vary from traditional tools such as the book to the latest advancements in digital technology, while areas of education encompass widely ranging situations involving learning and teaching, which are idea technologies.

As in prior volumes, the assumptions underlying the chapters presented here are as follows:

1. Technology represents tools that act as extensions of the educator.
2. Media serve as delivery systems for educational communications.
3. Technology is *not* restricted to machines and hardware, but includes techniques and procedures derived from scientific research about ways to promote change in human performance.
4. The fundamental tenet is that educational media and technology should be used to

    a. achieve authentic learning objectives,
    b. situate learning tasks,
    c. negotiate the complexities of guided learning,
    d. facilitate the construction of knowledge,
    e. aid in the assessment/documenting of learning,
    f. support skill acquisition, and
    g. manage diversity.

The *Educational Media and Technology Yearbook* has become a standard reference in many libraries and professional collections. Examined in relation to its companion volumes of the past, it provides a valuable historical record of current ideas and developments in the field. Part I, “Trends and Issues in Learning, Design, and Technology,” presents an array of chapters that develop some of the current themes listed above, in addition to others. Part II, “Trends and Issues in

Library and Information Science," concentrates on chapters of special relevance to K-12 education, library science education, school learning resources, and various types of library and media centers – school, public, and academic among others. In Part III, "Leadership Profiles," authors provide biographical sketches of the careers of instructional technology leaders. Part IV, "Organizations and Associations," and Part V, "Graduate Programs," are, respectively, directories of instructional technology-related organizations and institutions of higher learning offering degrees in related fields. Finally, Part VI, "Mediagraphy: Print and Nonprint Resources," presents an annotated listing of selected current publications related to the field.

The editors of the *Yearbook* invite media and technology professionals to submit manuscripts for consideration for publication. Contact Michael Orey (mikeorey@uga.edu) for submission guidelines.

For a number of years, we have worked together as editors, and this is the seventh year with Dr. Michael Orey as the senior editor. Within each volume of the *Educational Media and Technology Yearbook* (EMTY), we try to list all the graduate programs, journals, and organizations that are related to both Learning, Design, and Technology (LDT) and Information and Library Science (ILS). We also include a section on trends in LDT and trends in ILS, and we have a section profiling some of the leaders in the field. Beginning with the 2007 volume, we have attempted to generate a list of leading programs in the combined areas of LDT and ILS. Last year, we were able to compose an alphabetical list of 30 programs that people told us were among the best. However, this year we decided to be more systematic. Instead of following the *US News and World Report* model and have one top program list, we decided to use some of the same numbers that they use and generate a collection of top-20 lists, rather than attempt to generate a statistically significant rankings list. One thought was to rank programs according to the number of publications that were produced; however, deciding which journals to include was an issue. We decided to use 2007 and 2008 as the years to count (since at the time of writing, it is still 2009 and so we do not have a complete year). Furthermore, we decided to only count actual research reports that appeared in one of two journals, *Educational Technology Research and Development* and the *Journal of the Learning Sciences*. These two journals were primarily selected based on the general sense that they are the leading journals in the area of LDT. Noticeably absent is the area of information and library science. So, while these numbers are pretty absolute, choosing to only count these journals is somewhat arbitrary.

The other top-20 lists are based on self-report data collected as part of the program information in the *Educational Media and Technology Yearbook*. Every year, we collect general information about programs in LDT and ILS and publish this information in the *Yearbook*. This year we opted to collect some additional data. We asked the representatives of each of the institutions to enter the US dollar amount of grants and contracts, the number of PhD graduates, the number of master's graduates, and the number of other graduates from their programs. We also asked them for the number of full-time and part-time faculty. We then generated a top-20 list for some of these categories. The limitation in this case is that it is self-report data and there is no real way of verifying that the data is accurate. So, while the list of the 30 top programs last year lacked hard data, and the lists this year are based on numbers, those numbers may be just as unreliable. In the end, we have a collection of lists that we hope will be of use to our readers. Many of the universities that appeared in the top-30 list last year are here again, in addition to many others. More information about many of these universities can be found in Part V of this edition.

There are six top-20 lists in this preface. The first of these top-20 lists is based on a count of publications. We used every issue from the 2007 and 2008 volume years of the *Educational Technology Research and Development* journal and the *Journal of the Learning Sciences*. We eliminated all book reviews and letters to the editor and such others. We only used the primary academic articles of these journals. Each publication counted 1 point. If the article had two authors, then each author's institution received 0.5 points. If there were three authors, then 0.33 was spread across the institutions. Also, as an additional example, if there were three authors and two of them were from the same institution, then that institution received 0.66 points and the institution of the remaining author received 0.33. Finally, the unit receiving the points was the university. So, in the case of Indiana University where they have both a Learning Sciences and an Instructional Technology program, all of the points for IT and LS were aggregated into one variable called Indiana University. Table 1 shows our results. Nanyang Technological University came out as the top LDT program in the world. They were also in my list last year. Interestingly, the University of Wisconsin and the University of Colorado, numbers 3 and 4, were not even on last year's list. The list this year is much more international with universities from all over the world. An interesting result is that since there is not enough variance, we have a 5-way tie for sixth and a 28-way tie for twentieth. We would love to hear your feedback on this approach for the future. Are there other journals that ought to be included? Is it unfair that there are more publications in ETRD than IJLS? What about recent graduates publishing with their new institution when the work was done at their previous institution? I am certain there are many other issues, and we welcome constructive feedback.

The two primary measures of research achievement are publications and grants. While choosing ETRD and IJLS was somewhat arbitrary, the numbers are verifiable. In Table 2, we present the top-20 programs according to the dollar amount of grants and contracts for that program over the academic year 2008–2009. While Table 1 was constrained to LDT, Table 2 has both LDT and ILS programs, which resulted in UNC being number 2 in the grants and contracts list, but not appearing at all in the publication list. Next year, we will count publications in the ILS area. University of Calgary comes out as the top program in terms of grant and contracts. They nearly doubled the amount of the number 2 institution. Texas Tech, who did not show up on my list last year, comes in a strong third in the area of grants and contracts.

Tables 1 and 2 are measures of research productivity. The remaining four tables are more related to teaching than research. The first, Table 3, shows the top-20 programs in terms of the number of full-time faculty. You will notice that the list is correct under the FT category, but number 4, Université de Poitiers, has more total faculty than number 3, the University of North Carolina. We decided that full-time

Table 1 Top-20 graduate programs in the area of Learning, Design, and Technology as measured by the number of publications in *Educational Technology Research and Development* and the *Journal of the Learning Sciences*

Rank	University	Pubs	Rank	University	Pubs
1	Nanyang Technological University	4.33	20	Edith Cowan University	1
2	Arizona State University	3.66	20	Mandel Leadership Inst	1
3	University of Wisconsin	3.3	20	Miami University	1
4	University of Colorado	2.83	20	MIT	1
5	Indiana University	2.66	20	National Cheng Kung University	1
6	Sultan Qaboos University	2	20	Northern Illinois University, De Kalb	1
6	SUNY-Buffalo	2	20	Oklahoma State University	1
6	University of Georgia	2	20	Open University of the Netherlands	1
6	University of Hong Kong	2	20	Queensland University of Technology	1
6	University of New Mexico	2	20	Rutgers	1
11	UCLA	1.83	20	SUNY-Albany	1
12	Stanford	1.5	20	Tel-Aviv University	1
12	University of Illinois	1.5	20	University Central Florida	1
14	Purdue University	1.46	20	University of British Columbia	1
15	Brigham Young University	1.33	20	University of Cambridge	1
15	Florida State University	1.33	20	University of Gothenburg	1
15	Lehigh University	1.33	20	University of KwaZulu-Natal	1
18	University of Memphis	1.2	20	University of Mass-Dartmouth	1
19	Utrecht University	1.14	20	University of Michigan	1
			20	University of Missouri	1
			20	University of Nevada	1
			20	University of Pittsburgh	1
			20	University of Rochester	1
			20	University of Sydney	1
			20	University of Washington	1
			20	UC-Santa Cruz	1
			20	Universidad de La Sabana	1
			20	Wayne State University	1

faculty was more important than part time as a measure and so only generated one list for number of faculty. We just thought it would be interesting to see the total number of faculty as well. For example, it is very interesting that the number 1 university for full-time faculty, Drexel University, has a whopping total of 111 total faculty.

The next top-20 list is the number of PhD graduates. This list might be a good measure of research productivity as well as teaching productivity. It is interesting that Indiana University came out on top, yet I am unsure if this is the number of Instructional Technology or Learning Sciences or both? George Mason comes

Table 2 Top-20 LDT and ILS programs by the amount of grant and contract monies

Rank	University	Department/Program	Total in US$
1	University of Calgary	Graduate Division of Educational Research	$20,000,000
2	University of North Carolina, Chapel Hill	School of Information and Library Science	$11,502,614
3	Texas Tech University	Instructional Technology	$6,000,000
4	Harvard University	Graduate School of Education	$3,000,000
5	George Mason University	Instructional Technology Programs	$2,500,000
6	University of Houston	Curriculum and Instruction	$2,000,000
6	Utrecht University	Educational Sciences Learning in Interaction	$2,000,000
6	Arizona State University; Educational Technology program	Division of Psychology in Education	$2,000,000
6	Ewha Womans University	Educational Technology Department	$2,000,000
6	University of Bridgeport	Instructional Technology	$2,000,000
6	Drexel University	The iSchool at Drexel, College of Information Science and Technology	$2,000,000
12	Indiana University	School of Education	$1,450,000
13	The Ohio State University	Cultural Foundations, Technology, and Qualitative Inquiry	$1,200,000
14	University of Hawaii-Manoa	Department of Educational Technology	$1,097,246
15	University of Wisconsin-Madison	Curriculum and Instruction, School of Education	$1,000,000
15	California State University Monterey Bay (CSUMB)	Interdisciplinary Master in Instructional Science and Technology (MIST)	$1,000,000
15	University of Florida	School of Teaching and Learning	$1,000,000
15	University of Massachusetts, Amherst	Learning, Media and Technology Masters Program/Math Science and Learning Technology Doctoral Program	$1,000,000
15	Université de Poitiers	Ingénierie des médias pour léducation	$1,000,000
20	University of Missouri-Columbia	School of Information Science and Learning Technologies	$800,000

in second and Wayne state as number 3; some people I talked to last year mentioned these two schools as more practitioner oriented than other programs. These numbers, as research numbers, would suggest that this is not correct. Another measure that might be interesting to count is the number of graduates who have taken academic positions as opposed to practitioner-oriented positions.

Table 3 Top-20 LDT and ILS programs by the number of full-time faculty (also shown is the total faculty, which includes both full- and part-time faculty)

Rank	University	Department/Program	FT	Total
1	Drexel University	The iSchool at Drexel, College of Information Science and Technology	38	111
2	University of Missouri-Kansas City	Curriculum and Instructional Leadership	30	45
3	University of North Carolina	School of Information and Library Science	26	32
4	Université de Poitiers	Ingénierie des médias pour léducation	25	50
5	Middle East Technical University	Computer Education and Instructional Technology	20	60
5	Valdosta State University	Curriculum, Leadership, and Technology	20	30
7	Towson University	College of Education	17	22
8	Regis University	School of Education and Counseling	15	165
9	The University of Hong Kong	Faculty of Education	12	102
9	Valley City State University	School of Education and Graduate Studies	12	20
9	Utrecht University	Educational Sciences Learning in Interaction	12	19
9	Fordham University	MA Program in Public Communications in the Department of Communication and Media Studies	12	16
9	University of Georgia	Department of Educational Psychology and Instructional Technology, College of Education	12	14
14	Athabasca University	Centre for Distance Education	11	26
14	University of Bridgeport	Instructional Technology	11	25
14	Indiana University	School of Education	11	15
14	Louisiana State University	School of Library and Information Science	11	11
14	The University of Oklahoma	Instructional Psychology and Technology, Department of Educational Psychology	11	11
19	Penn State Great Valley School of Graduate Professional Studies	Education Division/Instructional Systems Program	10	25
19	California State University Monterey Bay (CSUMB)	Interdisciplinary Master in Instructional Science and Technology (MIST)	10	22
19	University of West Georgia	Department of Media and Instructional Technology	10	14

Table 3 (continued)

Rank	University	Department/Program	FT	Total
19	University of Missouri-Columbia	School of Information Science and Learning Technologies	10	12
19	Utah State University	Department of Instructional Technology and Learning Sciences, Emma Eccles Jones College of Education and Human Services	10	11

Table 4 Top-20 LDT and ILS programs by the number of PhD graduates

Rank	University	Department/Program	Grads
1	Indiana University	School of Education	16
2	George Mason University	Instructional Technology Programs	15
3	Wayne State University	Instructional Technology	11
4	Middle East Technical University	Computer Education and Instructional Technology	10
4	Texas Tech University	Instructional Technology	10
4	University of Houston	Curriculum and Instruction	10
4	Pennsylvania State University	Instructional Systems	10
4	University of Georgia	Department of Educational Psychology and Instructional Technology, College of Education	10
9	Drexel University	The iSchool at Drexel, College of Information Science and Technology	9
9	Utah State University	Department of Instructional Technology and Learning Sciences, Emma Eccles Jones College of Education and Human Services	9
11	University of Calgary	Graduate Division of Educational Research	8
12	University of Bridgeport	Instructional Technology	6
12	University of Missouri-Columbia	School of Information Science and Learning Technologies	6
12	Virginia Tech	College of Liberal Arts and Human Sciences	6
12	University of Balearic Islands	Sciences of Education	6
16	Utrecht University	Educational Sciences Learning in Interaction	5
16	The Ohio State University	Cultural Foundations, Technology, and Qualitative Inquiry	5
16	University of Louisville	College of Education and Human Development	5

Table 4 (continued)

Rank	University	Department/Program	Grads
16	Concordia University	Education – MA in Educational Technology, Diploma in Instructional Technology and PhD (Education), Specialization, Educational Technology	5
16	University of Florida	School of Teaching and Learning	5
16	Arizona State University; Educational Technology program	Division of Psychology in Education	5

Table 5 Top-20 LDT and ILS programs by the number of master's graduates

Rank	University	Department/Program	Grads
1	Drexel University	The iSchool at Drexel, College of Information Science and Technology	332
2	University of Bridgeport	Instructional Technology	294
3	University of Calgary	Graduate Division of Educational Research	235
4	Regis University	School of Education and Counseling	200
5	Towson University	College of Education	157
6	George Mason University	Instructional Technology Programs	130
7	University of North Carolina	School of Information and Library Science	115
8	Utrecht University	Educational Sciences Learning in Interaction	110
9	Nova Southeastern University – Fischler Graduate School of Education and Human Services	Programs in Instructional Technology and Distance Education (ITDE)	100
10	Azusa Pacific University	EDUCABS – Advanced Studies	90
11	Barry University	Department of Educational Computing and Technology, School of Education	75
11	University of Arizona	School of Information Resources and Library Science	75
11	University of Maryland Baltimore County (UMBC).	Department of Education	75
14	University of Missouri – Columbia	School of Information Science and Learning Technologies	72
15	The University of Rhode Island	Graduate School of Library and Information Studies	68
15	University of Colorado Denver	School of Education and Human Development	68
17	University of Central Florida	College of Education – ERTL	65
18	University of Missouri-Kansas City	Curriculum and Instructional Leadership	60
18	Louisiana State University	School of Library and Information Science	60

Table 5 (continued)

Rank	University	Department/Program	Grads
18	University of South Florida	Instructional Technology Program, Secondary Education Department, College of Education	60
18	Minot State University	Graduate School	60

Table 6 Top-20 LDT and ILS programs by the overall total number of graduates

Rank	University	Program	Num Grads
1	Drexel University	The iSchool at Drexel, College of Information Science and Technology	432
2	University of Bridgeport	Instructional Technology	417
3	University of Calgary	Graduate Division of Educational Research	254
4	Regis University	School of Education and Counseling	200
5	Valley City State University	School of Education and Graduate Studies	181
6	Towson University	College of Education	161
7	George Mason University	Instructional Technology Programs	145
8	University of North Carolina	School of Information and Library Science	140
9	Utrecht University	Educational Sciences Learning in Interaction	115
10	Nova Southeastern University – Fischler Graduate School of Education and Human Services	Programs in Instructional Technology and Distance Education (ITDE)	100
11	Azusa Pacific University	EDUCABS – Advanced Studies	90
12	University of West Georgia	Department of Media and Instructional Technology	89
13	California State University Monterey Bay (CSUMB)	Interdisciplinary Master in Instructional Science and Technology (MIST)	80
14	Barry University	Department of Educational Computing and Technology, School of Education	75
14	University of Maryland Baltimore County (UMBC)	Department of Education	75
16	University of Missouri – Columbia	School of Information Science and Learning Technologies	72
17	University of Colorado Denver	School of Education and Human Development	70
18	The University of Rhode Island	Graduate School of Library and Information Studies	68
19	Wayne State University	Instructional Technology	67
20	University of Central Arkansas	Teaching, Learning, and Technology	66

Our next top-20 list is based on the number of master's graduates. In our mind, we might consider this an indication of whether the program is more practitioner oriented than, say, the number of PhD graduates. Interestingly, George Mason comes in sixth here, whereas they were number 2 in PhD graduates. So, this differentiation may be meaningless. It is interesting to note that schools like Drexel University, University of Bridgeport, University of Calgary, and Regis University are producing 200 or more graduates per year. In Georgia (United States), Walden University and the University of Phoenix are very active; however, neither of these two schools chose to complete the form. We are not implying that the large numbers are necessarily because these programs are online, but online degree programs certainly allow many more people to further their education.

The final top-20 list is the combined degree graduate list. It is very similar to the master's list, but since the online form had entries only for PhD graduates, master's graduates, and other graduates, I thought it might be most useful to just show the total number of graduates from each of the programs who chose to update their information in our database.

We acknowledge that any kind of rankings of programs is problematic. We hope you find our lists useful. If you have suggestions, please let us know and we will try to accommodate those changes in future publications of the *Yearbook*.

Athens, GA Michael Orey
Statesboro, GA Stephanie A. Jones
Athens, GA Robert Maribe Branch

Contents

Contributors

Robert Maribe Branch Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA, rbranch@uga.edu

Curtis Jay Bonk Instructional Systems Technology, Indiana University, Bloomington, IN, USA, cjbonk@indiana.edu

Abbie Brown Department of Mathematics, Science and Instructional Technology Education, East Carolina University, Greenville, NC, USA, brownab@ecu.edu

John Burton Instructional Systems Development/Educational Psychology, Virginia Tech, Blacksburg, VA, USA, jburton@vt.edu

Rajat Chadha Department of Instructional Systems Technology, School of Education, Indiana University, Bloomington, IN, USA, rajatchadha@gmail.com

Kaye B. Dotson Department of Library Science, East Carolina University, Greenville, NC, USA, dotsonl@ecu.edu

Kylie P. Dotson-Blake Department of Counselor and Adult Education, East Carolina University, Greenville, NC, USA, blakek@ecu.edu

Lesley S.J. Farmer Librarianship Program, California State University, Long Beach, CA, USA, lfarmer@csulb.edu

Theodore Frick Department of Instructional Systems Technology, School of Education, Indiana University, Bloomington, IN, USA, frick@indiana.edu

Pamela Fortner Department of Educational Psychology and Instructional Technology, The University of Georgia, Athens, GA, USA, phales@uga.edu

Tim Green Department of Elementary and Bilingual Education, California State University, Fullerton, CA, USA, timdgreen@gmail.com

Sarah Hug ATLAS Institute, Assessment and Research Center, University of Colorado at Boulder, Boulder, CO, USA, hug@colorado.edu

Diane Igoche Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA, dai011@uga.edu

Stephanie A. Jones Leadership, Technology, and Human Development Department, Georgia Southern University, Statesboro, GA, USA, sjones@GeorgiaSouthern.edu

Susan Jurow School of Education, University of Colorado at Boulder, Boulder, CO, USA, susan.jurow@colorado.edu

Beaumie Kim Learning Sciences and Technologies, National Institute of Education, Nanyang Technological University, Singapore, beaumie.kim@nie.edu.sg

James D. Klein Educational Technology, Mary Lou Fulton Graduate School of Education, Arizona State University, Tempe, AZ, USA, james.klein@asu.edu.

Min Liu Instructional Technology Program, Department of Curriculum and Instruction, University of Texas, Austin, TX, USA, mliu@utexas.edu

Liz May Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA, lizmay3@hotmail.com

Ali S. Al Musawi Instructional Learning Technologies Department, College of Education, Sultan Qaboos University, Al Khodh, Oman, asmusawi@squ.edu.om

Michael Orey Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA, mikeorey@uga.edu

Seanean Shanahan Instructional Media Services for the Los Angeles Unified School District, Los Angeles, CA, USA, sshanaha@lausd.net

Gary Shattuck Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA, shattuck.gary@newton.k12.ga.us

Seng-Chee Tan Learning Sciences and Technologies, National Institute of Education, Nanyang Technological University, Singapore, sengchee.tan@nie.edu.sg

Jinn-Wei Tsao Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA, miketsao@uga.edu

Diane L. Velasquez Graduate School of Library and Information Science, Dominican University, River Forest, IL, USA, dvelasquez@dom.edu

Ying Wang Department of Education, Northwestern College, St. Paul, MN, USA, ywang@nwc.edu

Carol Watson Eppley Institute for Parks and Public Lands, Indiana University, Bloomington, IN, USA, watsonc@indiana.edu

Jennifer Yeo Natural Science and Science Education, National Institute of Education, Nanyang Technological University, Nanyang Walk, Singapore, jennifer.yeo@nie.edu.sg

Part I
Trends and Issues in Learning, Design, and Technology

Introduction

Liz May and Michael Orey

This is the ninth edition of this book where I have served as the editor of the "Trends" section and the first where I have enlisted a coauthor. I have used a variety of strategies for organizing this part. For this year, we sent an invitation to one or more individuals from our top 10 list that was created based on the number of publications in the *Educational Technology Research and Development Journal* and the *Journal for the Learning Sciences*. Unfortunately, we were unable to get chapters from the University of Wisconsin, the State University of New York-Buffalo, the University of New Mexico, and the University of Hong Kong. We did get a chapter from each of the other 6 top 10 schools. We did this in order to try and gain a snapshot of what is going on in the general field of learning, design, and technology. However, we also have been editing this part for many years, and we have included a chapter on "Trends and Issues" that has been written every year for at least 10 years, though the authorship has evolved. This year, Abbie Brown and Tim Green have taken on the task again. What follows is our attempt to weave the chapters in this part into a coherent whole.

While giving a nod to epistemological or pedagogical causes, Shattuck's chapter focuses on school leadership as the critical factor for teachers' technology integration (or lack thereof). Designed to investigate whether or not school leaders can influence technology integration (and if so how), the study centered on eight strategic factors for getting teacher buy-in. These include vision, expectations, modeling, encouragement, sufficient resources, hiring the right people, professional development opportunities, and building community in the organization. Conducted in four middle schools in the same suburban school district in the Southeastern United States, the research consisted of a pre-survey to identify who the teachers considered a technology leader in their school, followed by interviews of the four principals,

L. May (✉)
Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA
e-mail: lizmay3@hotmail.com

M. Orey (✉)
Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA
e-mail: mikeorey@uga.edu

M. Orey et al. (eds.), *Educational Media and Technology Yearbook*,
Educational Media and Technology Yearbook 35,
DOI 10.1007/978-1-4419-1516-0_1,

and concluded with a focus group that included the identified school leader as a way to cross-check data gathered from the interviews. The study concluded that in schools where all eight strategic factors were in place and where the origin was the school leadership rather than merely pioneering tech users on the faculty, the rest of the teachers were more inclined toward technology integration.

If Shattuck is correct in linking school leadership to technology resistance, then Brown and Green would urge school leaders to take a second look at the free web-based tools that students are already using outside of school. Furthermore, they make a case for the use of Web 2.0, online learning, and social networking sites as a way to save money and still maintain a growth model during these challenging economic times. The bulk of this chapter, however, is a synthesis of the findings of several major annual reports about technology use and growth in business, higher education, and the K-12 sector. Even without a robust economy, they predict that instruction via technology will continue to be a winning strategy for both business and education since it affords opportunities for growth and learning at a lower cost. They urge educators to reconsider resistance to using some of the tools, especially the social networking sites, and to consider new and innovative ways to overcome the current economic challenges.

Lack of confidence has often been cited as an impediment to technology integration and is addressed in Batane's chapter. While teaches are still content experts, their students, the digital natives, are the technology experts, and this can be intimidating to some teachers. Batane's study focused on the use of the Rapid Prototyping Model since it allows opportunities for feedback and revisions along the way rather than after an entire course has been developed and field tested. Based on Elaboration Theory, he contends that Rapid Prototyping affords a *one step at a time* approach to technology integration, which can then build confidence for future forays into the digital wilderness. He further contends that getting student feedback at each stage of the lesson development takes the participation of students beyond mere course work into course design, which is a win for all. Taking small steps and getting the students involved in the process could be an important component of technology integration as the digital immigrants continue to teach the digital natives, at least for a few more years.

The digital natives are tech savvy; however, some have expressed concern that the majority of US college graduates lack proficiency in desired academic skills, and this is a cause of concern to anyone in higher education. This concern led Frick to analyze course evaluation data and its correlation with student learning achievement. This led to a plan to connect course evaluations to instructional theory in order to provide data that could lead to improvements not only in instruction and course quality but in student learning achievement as well. A survey was therefore designed around Merrill's *First Principles of Instruction*, as well as the concept of *Academic Learning Time*. The thinking was that items that were rated low would have a clear connection to what needs to be revised or improved. The study results showed that there was a strong correlation between student ratings of the course and its instructor and student mastery when *First Principles* and *ALT* were in place.

Embedding instructional design theory in student evaluations is not a bad idea; but perhaps embedding one goal inside another does not always work, as evidenced by this study of a *girls only* technology program. The girls were encouraged to use tech tools as a way to create, tell stories, and express themselves in a "technology as paintbrush" 8-week learning experience at Silver Stream Clubhouse in the Western United States. The girls did pick up some computer skills, but the paintbrush metaphor may have limited acquisition of technology fluency according to Hug and Jurow. By focusing on the product of technology and getting things to "look pretty," the authors felt that the process of technology was underemphasized. Technology expertise was valued for its ability to help the girls become adept storytellers, for example, rather than video editors. Hoping for more female representation in technology fields, the authors suggest that a program that gets girls to learn about how the tools work as well as principles of design and development may be a better way to prepare them for jobs in the digital marketplace.

Sultan Qaboos University's Musawi has written about the history, present status, and future plans of the Instructional and Learning Technologies Department in the College of Education. Since its start in 2005 the program has established a B.A. degree with four cohorts currently in attendance and its first graduating class this year. This short chapter outlines the program, catalogs the resources for students and faculty, tracks research and faculty status, and concludes with an index of areas for improvement and challenges for the future. Three particular challenges that have been targeted for improvement are the large teaching load of its faculty, the need for accreditation level quality in all courses, and the need to foster more independent learning in students. With the strong administrative support that this young program has enjoyed since its inception, these goals are not only reasonable but quite attainable.

Nanyang Technological University of Singapore is likewise interested in improving learning and focusing on the future as they shift from longstanding instructional strategies to technology-enhanced education. Not satisfied with simply pasting technology into existing pedagogical structures, Tan, Kim, and Yeo write about the importance of students' agency in knowledge construction as well as in the development of content. They contend that the application of the social constructivist learning paradigm can make technology-assisted instruction more meaningful. Two case studies are included in their research, and these serve to illustrate the need for scaffolding to help learners move from passive to active participants, as well as the need for teachers to adapt to new roles as designers and facilitators rather than as traditional instructors.

Human performance technology (HPT) is a broader discipline than instructional design (ID); however, similar to ID, it includes a systemic analysis and design of some performance problem or need. Taking a course in HPT might be a hard sell for some graduate students in IT/ID programs; however, there are several factors that could justify its inclusion in one's program of study. For one, the critical analysis of a performance problem and its underlying causes is an important component in the skill set of all graduate students. Furthermore, the sorting of problems into instructional and noninstructional *piles* is a good prerequisite skill for the novice instructional designer. For an HPT course to be successfully implemented in a graduate education, however, a connection to a real-world problem or need is best, but these situations are not always easy to come by. This chapter reports on lessons learned by the faculty at Arizona State University as they employed a performance improvement project as part of the HPT course work. It also makes a case as to why such a course may be a good elective even for those outside of the HPT program.

Understanding School Leaders' Role in Teachers' Adoption of Technology Integration Classroom Practices

Gary Shattuck

Abstract The educational technology research community documents that technology is not integrated into teachers' classroom practices other than to reinforce or augment current practices (Becker, 2001; Cuban, 2001). Adopting technology at this level is called first-order change (Ertmer, 1999); the explanation the research community reaches is that teachers' belief structure is incompatible with high-level technology integration (Cuban, 2001; Ertmer, 2005). This study explores another explanation for teachers' reluctance to adopt technology integration – school leaders. Furthermore, this study outlines strategies a school leader must adopt to leverage his or her leadership position to increase technology utilization among the faculty.

Keywords Technology integration · School leadership · Educational change · Technology leaders · Organizational change

Introduction

The purpose of this research described in this chapter is to understand school leaders' roles in teachers' adoption of technology-integrated classroom practices. Although educational leadership researchers such as Fullan (2001) and Sergiovanni (2006) agree that school leaders play a significant, if not a vital, role in the success of any instructional initiative within their school, very little literature (Staples, Pugach, and Himes, 2005) targets the school leaders' role in teachers adopting technology-integrated classroom practices. This gap in the literature is glaring, because most educational technology researchers, such as Cuban (2001), Hernandez-Ramos (2005), and Windschitl and Sahl (2002), agree technology, for the most part, has not significantly impacted teachers' classroom practices nor has

G. Shattuck (✉)
Learning, Design, and Technology Program, The University of Georgia, Athens, GA, USA
e-mail: shattuck.gary@newton.k12.ga.us

M. Orey et al. (eds.), *Educational Media and Technology Yearbook*,
Educational Media and Technology Yearbook 35,
DOI 10.1007/978-1-4419-1516-0_2,

it significantly transformed teachers' classroom practices. Understanding causes of why technology is not being integrated into teachers' classroom practices is complex because this research finds causes that cross academic disciplines. Furthermore, this research finds that the lack of technology integration may be caused by a misalignment between the school leaders' vision of technology integration and the teachers' vision of technology integration. It identifies five academic disciplines that impact the ability of teachers to implement technology-integrated classroom practices. In addition, it identifies eight strategies that a school must employ in order for teachers to integrate technology into their classroom practices. These five academic disciplines identified are instructional technology, educational leadership, educational laws and policies, educational and organizational change, and diffusion of innovation. The eight strategies identified are establishing vision, setting expectations, modeling expected behavior, offering encouragement, supplying sufficient technology resources, employing the right people, providing ample professional learning opportunities, and building capacity within the building. Not surprisingly, then, this research finds that integrating technology is very difficult due, in large part, to the interaction between these five academic disciplines. More importantly, however, this research discovers eight strategic factors school leaders must adopt if school leaders hope to leverage their leadership roles in order to influence teachers into adopting technology-integrated classroom practices.

Research Questions

The purpose of this study was to determine if school leaders effect teachers' attitudes toward the integration of technology into their classroom practices. This research was designed to find answers to the following questions:

1. Can school leaders influence teachers' adoption of technology integration classroom practices?
2. How do school leaders influence teachers' adoption of technology integration classroom practices?

   2.1 Who are the technology leaders within each school?

   2.2 How can a leader assist teachers in overcoming barriers that prevent the integration of technology?
   2.3 In what ways do teachers feel encouraged and/or supported when they take risks concerning integrating technology into their classroom practices?
   2.4 How do the teachers' vision for why technology should be integrated within a classroom differ from the principal's vision for why technology should be integrated within a classroom?
   2.5 Does the principal's expectations for technology integration influence teachers' integration of technology into their classroom practices?

Review of Literature

In 2001, Larry Cuban wrote a stinging rebuke of the Instructional Technology Movement in *Oversold and Underused: Computers in the Classroom*. Cuban's basic premise was that billions of dollars were spent on instructional technology in the K-12 educational realm in the 1990s and that this influx of money failed to provide promised benefits claimed by proponents of instructional technology, such as by Seymour Papert (Cuban, 2001; 2004; Ferneding, 2003). Most instructional technology researchers agreed with Cuban's basic premise (Becker, 2001; Cuban, 2001; Ertmer, 1999; Ferneding, 2003; Hernandez-Ramos, 2005). Even though there were themes most researchers agreed were root causes for this situation, such as that teachers' belief structure about teaching and learning did not support a constructivist pedagogy (Becker, 2001; Cuban, 2001; Ertmer, 1999; Hernandez-Ramos, 2005), teachers were not being supported either technologically or instructionally in their efforts to integrate technology (Becker, 2001; Cuban, 2001) and they lacked effective and sufficient professional development (Becker, 2001; Brinkerhoff, 2006; Cuban, 2001; Dwyer, 1995; Mouza, 2003). There was also disagreement as to other root causes (Becker, 2001; Cuban, 2001; Ertmer, 1999; Ferneding, 2003; Hernandez-Ramos, 2005). Each researcher had additional reasons for this lack of progress, such as from Larry Cuban's claim that structural design of schools' organization was a cause, from Howard Becker's thesis that lack of computer density within classrooms was a cause to Peggy Ertmer's premise that barriers to the change process was a cause. Herein lies the conundrum that the instructional technology community faced. The world had dramatically changed economically, socially, and politically to some degree due to a technological revolution (Friedman, 2005; Postman, 1992; Toffler, 1970), whereas education had not changed to meet this changing global landscape (Cuban, Kirkpatrick, Peck, 2001). Whatever the reasons, it had become apparent to the research community that integration of technology was a complex issue involving multiple variables from multiple disciplines including instructional technology theories, educational leadership theories, educational laws and policy theories, educational and organizational change theories, and diffusion of innovation theories. Equally important as change theories, understanding the difficulties faced by classroom teachers in implementing technology integration practices was also important.

It was also important to understand the role of educational leadership in overcoming these difficulties faced by classroom teachers in technology integration practices. Michael Fullan (2001) described the role of school leader as being vital, not only to the health of any school, but also to the success of any educational change. Research showed that for educational change to become successful, it required the involvement of educational leaders; furthermore, research showed that successful educational leaders' change depended on inclusion of teachers in the planning and implementation of change (Fullan, 2001). It was this duality of involvement that provided the framework for understanding how integration of technology may become successful. Sergiovanni (2006), in his book on school principals, pointed out that the culture of a school is actually a negotiated product between school leadership and teachers within that school. As a result, school leadership's participation in and support for educational change, such as the integration of technology within teachers' classroom practices, were keys for this educational technology innovation to be adopted in the K-12 educational environment.

Another issue impacting teachers' willingness to adopt technology-integrated classroom practices was educational laws and policies. With the *No Child Left Behind Act of 2001*, the federal government had changed the educational landscape, which in turn impacted the integration of technology (Ferneding, 2003). This law stressed accountability and high stakes testing to the exclusion of other forms of assessment. Becker and Lovitt (2003) postulated that the type of learning that took place in technology-integrated, project-based learning settings could not easily be measured by objective, multiple-choice tests. As a result of the *No Child Left Behind Act of 2001* emphasis on standardized tests and on accountability in the form of Adequate Yearly Progress, school leaders and teachers had, to some degree, abandoned efforts to adopt technology-integrated classroom practices (Cuban, 2003). As a result, the efforts to integrate technology into the nation's classrooms had become infinitely more complex. In Fig. 1 these various issues that impact a teacher's willingness to adopt technology-integrated classroom practices are illustrated.

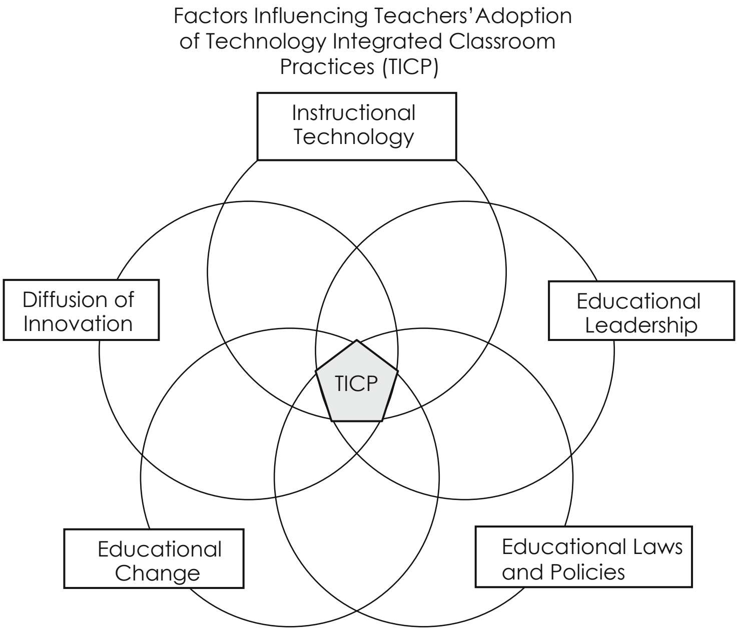

Fig. 1 Factors influencing teachers' adoption of technology-integrated classroom practices (TICP)

The final issues of educational change theories and of diffusion of innovation theories were inextricably interwoven together dealing with essentially the same phenomenon – the change process (Elmore, 2003; Fullan, 1993; Rogers, 2003). According to Michael Fullan, one of the driving forces in the educational environment was the need for continuous change. Fullan went so far as to say, "It is no exaggeration to say that dealing with change is endemic to post-modern society" (p. 3). In order to understand this changing landscape within which teachers were supposed to adopt new pedagogies, it was necessary to understand the change process and how that change process could be used with a conservative educational environment (Cuban, 2001) with a changing society (Toffler, 1970), and with a changing student (Healy, 1990; Prensky, 2006).

Theoretical Perspective

According to Crotty (1998), there were two approaches to research: "Verstehen" or understanding and "Erklären" or explaining. Understanding focused on the human or the social sciences; explaining focused on the natural sciences. Therefore, in an attempt to interpret the social nature of schooling and how this social nature encouraged or discouraged adoption of technology integration strategies by teachers, this study attempted to understand the relationship between school leaders and teachers and how this relationship impacted teachers' willingness to adopt technology-integrated classroom practices. Because this chapter deals with a study of the interaction between school leaders and teachers, Symbolic Interactionism was the theoretical perspective from which this study was conducted.

Interaction between cultural subgroups, such as between leaders within schools and teachers, was first postulated by George Herbert Mead (Blumer, 1969; Crotty, 1998) in the early part of the twentieth century and was based on the symbols of language, thus the name Symbolic Interactionism. In order to understand interaction between leaders within schools and teachers, it was best to first comprehend the theoretical perspective on which this study was based. Herbert Blumer outlined three basic premises that were the basis for the Symbolic Interactionism theoretical perspective: (1) human beings acted toward things on the basis of the meaning those things had for them; (2) the meaning of such things was derived from, or arose out of, the social interaction that one had with one's fellow humans; and (3) these meanings were handled in, and were modified through, an interpretive process used by the person in dealing with the things she or he encountered.

As a result of these three premises it became apparent that for most teachers in a K-12 school environment the meaning technology had for teachers was one of research and of administrative functions but not one of instruction. Research conducted by Becker (2001), Cuban (2001), Hernández-Ramos (2005), and Windschitl and Sahl (2002) indicated most teachers used technology only for administrative functions, for research in planning lessons, and for personal productivity, but not for instruction. Teachers did not use technology to transform their instructional practices into a constructivist framework because teachers' belief structure did not support this transformation.

Methodology

This research used a case study methodology by examining four middle schools within the same suburban school district in the Southeastern United States. The initial method used was a pre-survey to determine who the technology leaders within each school were and what were the principle issues affecting teachers' adoption of technology-integrated classroom practices. Using data collected from the pre-survey as the basis of questions, the principal at each of the four middle schools was interviewed using a semi-structured in-depth interview method. After in-depth interviews with the principals, teachers who were identified as technology leaders in the pre-survey were asked to participate in a focus group interview. By interviewing the principal and a focus group of teachers at each school, a cross-check was created to verify data from the principal and from the teachers. Focusing just on middle schools in a single school district was an attempt to minimize contextual variables extant in other settings. Even though each school was its own case study per se, the entirety of this research was a case study for that school district. Since there were four schools, each school acted as a comparison for the other three, thus allowing for triangulation of data.

Pre-survey

The pre-survey's primary purpose was to identify technology leaders within each school and specific issues concerning integration of technology within each school. In all four of the middle schools, the media specialist was selected as a technology leader for that school; in only two of the schools, however, was the principal selected as a technology leader. Reasons for this are discussed in detail later in the case studies. Furthermore, teachers were asked to identify any other school personnel considered to be technology leaders.

One of the most important findings of the pre-survey was the disparate views that teachers had concerning vision and expectations (see Tables 1 and 2). In the pre-survey I asked two questions dealing with why technology should be used within the classroom. These questions were vision questions. The first vision question asked what the teacher's vision was; the second vision question asked what the teacher thought was the principal's vision. Unexpectedly, the teachers' idea about their own vision did not necessarily align with the teachers' idea about the principals' vision. This misalignment became a significant factor

In addition to the two vision questions, another question in the pre-survey dealt with teachers' perception of what the expectations for technology utilization in the

Table 1 Comparison of percentage of teachers' perspectives concerning what their vision is and what they think the principal's vision is concerning the integration of technology

School	Perspective	Reward students	Basic skills	Prepare for future	Critical thinking	Motivation	Do not know
Adams	Personal	3	13	12	35	26	–
	Principal's	–	13	–	25	21	42
Jefferson	Personal	–	9	33	24	33	–
	Principal's	1	32	18	15	6	26
Madison	Personal	–	19	23	12	46	–
	Principal's	–	15	30	15	30	11
Washington	Personal	–	16	11	37	37	–
	Principal's	–	33	17	6	17	28

Table 2 Percentage of respondents to pre-survey when asked what their school's expectations concerning technology utilization were

School	To prepare for standardized tests	To take accelerated reader tests	To prepare for twenty-first century	No expectations
Adams	33	13	38	17
Jefferson	29	21	26	24
Madison	13	4	75	4
Washington	42	–	32	26

teachers' schools were (see Table 2). There were significant differences between schools in how teachers answered this question.

Principal Interviews

Each principal of these four middle schools was interviewed. The purpose of each interview was to understand the leadership style of each principal, to ascertain each principal's commitment to technology integration, to comprehend each principal's perception of technology, and to identify how that technology could be leveraged to better administer a school to improve student learning. All the principals' interviews lasted approximately an hour in length; all interviews were conducted during the working period after the school year was completed and the vacation period began.

Each principal professed a belief that the integration of technology was important in education, and each perceived herself or himself as supporting that endeavor. An analysis of principal interviews and of focus group interviews revealed that each principal's perception, with the exception of one, was skewed to present herself or himself and their schools in the best possible light. Each principal viewed herself or himself as being technology leaders in their school even though only two of the four principals were viewed by their faculty as being technology leaders.

Focus Group Interviews

Focus group interviews for each school were conducted after the principal was interviewed. The interviews lasted approximately 1 hour; data gathered during the interviews were instrumental in cross-checking data from principals' interviews and were instructional in understanding formal leadership's role in teachers' adoption of technology integration strategies. Out of these focus group interviews it became apparent that there were two technology leadership roles at work within a school: formal or administration's technology leadership role and informal or teachers' technology leadership role. Also apparent in the data was that each role was vitally important for a school's teachers to be willing to adopt technology-integrated classroom practices into their classroom practices. Each role served an important function in influencing teachers to adopt technology-integrated classroom practices, but the synergy that was created when both technology leadership roles were present raised the level of technology integration exponentially as will be evident when each school's case study is detailed.

Documentation Review

After principal and focus group interviews were analyzed, there were several areas of disagreement that needed further clarification. In order to resolve these areas of disagreement, a review of district-level documentation was undertaken to get a better understanding of underlying facts supporting or not supporting various perspectives. The bases for conflicts were the availability of funds to support the addition of technology resources and the willingness of school administrators to allow teachers to participate in district-level professional learning.

Case Studies

Washington Middle School

By any definition, the situation at Washington Middle School was challenging. According to the criterion of the *No Child Left Behind Act of 2001*, Washington Middle School had been in the Needs Improvement category for the past 5 years. Due to the Choice provisions of *No Child Left Behind*, Washington Middle School had to offer its students the choice to move to another middle school. In the 2006–2007 school year, 226 students chose to move, 130 to Jefferson Middle School and 96 to Adams Middle School, whereas in the 2007–2008 school year, 322 students chose to move, 160 to Adams Middle School and 162 to Madison Middle School. Demographics of Washington Middle School also represented a challenge for the school's administration. The school had a very high percentage of students