Society for Information Technology & Teacher Education

2009

20TH INTERNATIONAL CONFERENCE

March 2 - 6, 2009 • Charleston, South Carolina, USA

UNIVERSITY OF IBADAN LIBRARY

AACE

Association for the Advancement of Computing in Education

Celebrating 25+ Years of Service to the IT in Education / E-Learning Community

A CONFERENCE OF AACE

www.aace.org

Program Chair & Editor
Jan Gibson
Associate Editors
Roberta Weber
Karen McFerrin
Roger Carlsen
Dee Anna Willis

SITE 2009 Conference Committee

Ian Gibson – Program Chair and Past President
Macquarie University, Australia

Peter Albion – Information Technology Council Chair
University of Southern Queensland, Australia

Glen Bull – Past President
University of Virginia, USA

Niki Davis – Past President
University of Canterbury, New Zealand

Sue Espinoza – Information Technology Council Chair Elect
Texas A&M University-Commerce, USA

Gerald Knezek – President
University of North Texas, USA

Cleb Maddux – Conference Book Editor
University of Nevada-Reno, USA

Gary Marks – Executive Director
SITE, USA

Maggie Niess – Teacher Education Council Co-Chair
Oregon State University, USA

John Park – Teacher Education Council Co-Chair
North Carolina State University, USA

Mike Searson – Consultative Council Chair
Kean University, USA

Debbie Sprague – JTATE Editor
George Mason University, USA

Ann Thompson – Past President
Iowa State University, USA

Roberta Weber – Membership Chair
Florida Atlantic University, USA

Dee Anna Willis – Co-Founder
Northwestern State University of Louisiana, USA

UNIVERSITY OF IBADAN LIBRARY

SITE Program Committee

Gertrude (Trudy) Abramson, Nova Southeastern Univ., USA
Peter Albion, Univ. of Southern Queensland, Australia
Curby Alexander, Univ. of Virginia, USA
Heejung An, William Paterson Univ., USA
Cindy Anderson, Roosevelt Univ., USA
Leonard Annetta, NC State, USA
Leanna Archambault, Arizona State Univ., USA
Leigh Ausband, UNC Charlotte, USA
Youngkyun Baek, Korea National Univ. of Education, Korea (South)
Savilla Banister, Bowling Green State Univ., USA
Evrim Baran, Iowa State Univ., USA
Michael Barbour, Wayne State Univ., Canada
Deborah Bauder, Utica City School District, USA
Sally R. Beisser, Drake Univ., USA
Randy Bell, Univ. of Virginia, USA
Lynnwood Belvin, Berry College, USA
Michael Berson, Univ. of South Florida, USA
Muhammad Betz, Southeastern Oklahoma State Univ., USA
Madhumita Bhattacharya, Athabasca Univ., Canada
Matthew Boggan, Mississippi State Univ. (Meridian), USA
Raj Boora, Univ. of Alberta, Canada
Bonnie Bracey Sutton, Thornburg Center for Professional Development, USA
Jody Britten, Butler Univ., USA
Marwin Britto, Central Washington Univ., USA
Vicki Brown, Florida Atlantic Univ., USA
Christine Browning, Western Michigan Univ., USA
Glen Bull, Univ. of Virginia, USA
Renee Cambiano, Northeastern State Univ., USA
Leanne Cameron, Macquarie Univ., Australia
Chris Campbell, La Trobe Univ., Australia
Roger Carlsen, Wright State Univ., USA
Rose Cavin, Chipola College, USA
Gregory Chamblee, Georgia Southern Univ., USA
Kan Kan Chan, Univ. of Macau, Macau
Oscar Chavez, Univ. of Missouri, USA
Irene Chen, Univ. of Houston Downtown, USA
Amelia Cheney, Appalachian State Univ., USA
Rhonda Christensen, Univ. of North Texas, USA
Hsueh-Hua Chuang, National Sun Yat-Sen Univ., Taiwan
Clara Coutinho, Univ. of Minho Braga Portugal, Portugal
Caroline M. Crawford, Univ. of Houston-Clear Lake, USA
Hugh Crumley, Duke Univ., USA
Theresa Cullen, USA
Rhonda Cummings, Univ. of Nevada Reno, USA
Craig Cunningham, National-Louis Univ., USA
Niki Davis, Univ. of Canterbury, New Zealand
Denise De Vito, Univ. of Arizona South, USA
Vanessa Domine, Montclair State Univ., USA
Joel Donna, Univ. of Minnesota, USA, USA
Judy Donovan, Indiana Univ. Northwest, USA
Mesut Duran, Univ. of Michigan-Dearborn, USA
Vanessa Earp, Kent Univ., USA
Linda Easley, LSUS, USA
Kellah Edens, Univ. of South Carolina, USA
Yoram Eshet, The Open Univ. of Israel, Israel
Sue Espinoza, Texas A&M Univ.-Commerce, USA
Tony Fetherston, Edith Cowan Univ., Australia
Candace Figg, Brock Univ., Canada
Ann FitzGibbon, Trinity College, Univ. of Dublin, Ireland
Teresa Franklin, Ohio Univ., USA
Virgil Fredenberg, Univ. of Alaska Southeast, USA
Adam Friedman, Wake Forest Univ., USA
Frank Fuller, Northwestern State Univ., USA
Paula Furr, Northwestern State Univ., USA
Penny Garcia, Univ. of Wisconsin Oshkosh, USA
David Gibson, Univ. of Vermont, USA
Ian Gibson, Macquarie Univ., Australia
Marsha Gladhart, Univ. of Alaska Southeast, USA
Tony Gonzalez, The Univ. of Georgia, USA
Lisa Grable, North Carolina State Univ., USA
Charles Graham, Brigham Young Univ., USA
Neal Grandgenett, Univ. of Nebraska-Omaha, USA
Christine Greenhow, Univ. of Minnesota, USA
Oakley Hadfield, New Mexico State Univ., USA
Randall Hansen, National Louis Univ., USA
Barry Harper, Univ. of Wollongong, Australia
Sallie Harper, Mississippi State Univ. (Meridian), USA
Judi Harris, College of William & Mary, USA
Richard Hartshorne, Univ. of North Carolina-Charlotte, USA
Walter Heinecke, Curry School of Education, Univ. of Virginia, USA
Karen Irving, The Ohio State Univ., USA
Kamini Jaipal, Brock Univ., Faculty of Education, Canada
Natalie Johnson-Leslie, , USA
Christopher Johnston, George Mason Univ., USA
Madeline Justice, Texas A&M Univ.-Commerce, USA
Sara Kajder, Virginia Polytechnic Institute and State Univ., USA
Mary Kayler, George Mason Univ., USA
Mario Kelly, Hunter College, City Univ. of New York, USA
Jeffrey Kenton, Towson Univ., USA
Bo-kyeong Kim, Univ. of Virginia, USA
Kioh Kim, Northwestern State Univ., USA
Beverly Klecker, Morehead State Univ., USA
Sherri Klein, Univ. of Wisconsin-Stout, USA
Gerald Knezek, Univ. of North Texas, USA
Matthew J. Koehler, Michigan State Univ., USA
Carol Koroghlanian, Univ. of Wisconsin-Eau Claire, USA
Norisuke Kozuki, Shiga Univ., Japan
Rebecca McNall Krall, Univ. of Kentucky, USA
Swapna Kumar, Boston Univ., USA, USA
Michel Labour, Univ. de Valenciennes (FRANCE), France
Therese Laferriere, Laval Univ., Canada
Judy Lambert, The Univ. of Toledo, USA
Michael Land, Midwestern State Univ., USA
Keith Leatham, Brigham Young Univ., USA
Rebecca LeDocq, Univ. of Wisconsin - La Crosse, USA
Chul-Hwan Lee, Pittsburgh Theological Seminary, USA
John Lee, North Carolina State Univ., USA
Lesia Lennex, Morehead State Univ., USA
Lan Li, Bowling Green State Univ., USA
Jung Lim, Northwestern State Univ., USA
Yuliang Liu, Southern Illinois Univ., USA
Margaret Lloyd, Queensland Univ. of Technology, Australia
Annette Lopez de Mendez, Univ. of Puerto Rico, USA
Cleborne Maddux, USA
Jane Carol Manner, East Carolina Univ., USA
Ken Martin, The Univ. of Cincinnati, USA
Kathryn Matthew, Univ. of Houston - Clear Lake, USA
Ron McBride, Northwestern State Univ., USA
Jeton McClinton, Jackson State Univ., USA
Ann McCoy, Alaska Pacific Univ., USA
Karen McFerrin, Northwestern State Univ., USA
Ewa McGrail, Georgia State Univ., USA
Peter McKenna, Manchester Metropolitan Univ.
Sara McNeil, Univ. of Houston, USA
James Meinke, Baldwin-Wallace College (retired), USA
Matthew Miller, Western Washington Univ., USA
Russell Miller, Wichita Public Schools, USA
Natalie Milman, George Washington Univ., USA
Punya Mishra, Michigan State Univ., USA
Mahnaz Moallemm, UNC Wilmington, USA
Elsa-Sofia Morote, Dowling College, USA
Jeff Morrison, Open Learning, Univ. of Guelph, Canada
Chrystalla Mouza, Univ. of Delaware, USA
Jacqueline Mumford, Walsh Univ., USA
Jamie Myers, Pennsylvania State Univ., USA
Vicki Napper, Weber State Univ., USA
Trang Nguyen, James Cook Univ., Australia
Margaret Niess, Oregon State Univ., USA
Priscilla Norton, George Mason Univ., USA
Kevin Oliver, North Carolina State Univ., USA
Daithi OMurchu, Gaelscoil Ó Doghair/Hibernia College, Ireland
Betul Ozkan, The Univ. of Arizona South, USA
Lisa Palmieri, Robert Morris Univ., USA
John Park, North Carolina State Univ., USA
Sanghoon Park, Northwestern State Univ. of Louisiana, USA
Becky Sue Parton, Southeastern Louisiana Univ., USA
Christian Penny, West Chester Univ. of Pennsylvania, USA
Denise Peterson, South Dakota State Univ., USA
Marvin Peyton, Middle Tennessee State Univ., USA
Carol Pope, North Carolina State Univ., USA
Kate Popejoy, Univ. of North Carolina at Charlotte, USA
Susan Powers, Indiana State Univ., USA
Robert Prickett, Centenary College of Louisiana, USA
Davina Pruitt-Mentle, Univ. of Maryland, USA
David Pugalee, Univ. of North Carolina at Charolette, USA
Christopher Rakes, Univ. of Louisville, USA
Glenda Rakes, The Univ. of Tennessee at Martin, USA
Angelia Reid-Griffin, UNC Wilmington, USA
Judi Repman, USA
Melissa Roberts Becker, Tarleton State Univ., USA
Bernard Robin, Univ. of Houston, USA
Kevin Rocap, Liu Brooklyn, USA
Mark A. Rodriguez, Sacramento State, USA
Robert Ronau, Univ. of Louisville, USA
Raymond Rose, Rose & Smith Associates, USA
Dina Rosen, Kean Univ., USA
Regina Royer, Salisbury Univ., USA
Robert Rozema, Grand Valley State Univ., USA
Anne Rudnicki, Univ. of Houston, USA
Venbi Sanalan, Erzincan Univ., Turkey
Ieda Santos, Emirates College for Advanced Education, United Arab Emirates
Ronald Sarner, SUNY Institute of Technology, USA
Denise Schmidt, Iowa State Univ., USA
Michael Searson, Kean Univ., USA
George Semich, Robert Morris Univ., USA
Yolanda Serrano, Inter American Univ., Bayamón, Puerto Rico
Kathryn Shafer, Ball State Univ., USA
Li-Jen Shannon, Sam Houston State Univ., USA
Melanie Shoffner, Purdue Univ., USA
Kari Lee Siko, Univ. of North Carolina Wilmington, USA
Scott Slough, Texas A&M Univ., USA
David Slykhuis, James Madison Univ., USA
Michael Spaulding, Univ. of Tennessee at Martin, USA
Debra Sprague, George Mason Univ., USA
Ruth Sylvester, Univ. of South Florida, USA
James Telese, Univ. of Texas, Brownsville, USA
David Thomas, Univ. of Nevada Reno, USA
Ann Thompson, Iowa State Univ., USA
Bonnie Thurber, Northwestern Univ., USA
Cheryl Torrez, The Univ. of New Mexico, USA
Merryellen Towey Schulz, College of Saint Mary, USA
Doris Tyler, North Carolina Central Univ., School of Education, USA
Tandra Tyler-Wood, Univ. of North Texas, USA
Kirk Vandersall, USA
Maggie Veres, Wright State Univ., USA
Stephane Villeneuve, Univ. of Montreal, Canada
Selma Vonderwell, Cleveland State Univ., USA
Chieu Vu Minh, Univ. of Michigan, School of Education, USA
Dina Vyortkina, Florida State Univ., USA
Janet Walker, Indiana Univ. of Pennsylvania, USA
Hong Wang, Fort Hays State Univ., USA
Rebecca Watts, Middle Tennessee State Univ., USA
Roberta Weber, Florida Atlantic Univ., USA
Hilary Wilder, William Paterson Univ., USA
Dee Anna Willis, Northwestern State Univ. of Louisiana, USA
Jana Willis, Univ. of Houston Clear Lake, USA
Thomas Winkler, IMIS/Univ. of Luebeck, Germany
Ruth Wood, Kingston Univ., UK
Geoff Wright, Brigham Young Univ., College of Engineering, USA
Joy Xin, Rowan Univ., USA
Harrison Yang, State Univ. of New York, Oswego, USA
Melda Yildiz, William Paterson Univ., USA
Nancy Yost, Indiana Univ. of Pennsylvania, USA
Carl Young, NC State Univ., USA
Chenfeng Zhang, Marygrove College, USA
Sara Zimmerman, Appalachian State Univ., USA

UNIVERSITY OF JORDAN LIBRARY

Copyright © 2009 by the Association for the Advancement of Computing in Education (AACE) Cover Photo: ©2009 Charleston Area CVB.

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior written permission of the publisher.

AACE is not responsible for papers accidentally omitted from the conference proceedings due to late or errant submission by the author or proxy, or technical electronic anomalies during the time of submission.

The publisher is not responsible for the use which might be made of the information contained in this book.

From AACE, the Conference organizer: This is to confirm that all Conference paper submissions are peer-reviewed by at least 2 referees prior to acceptance in the Final Program and prior to publication in the Proceedings book and CD.

See AACE Review Policy: http://www.aace.org/reviewpolicy.htm

Published by
Association for the Advancement of Computing in Education (AACE)
P.O. Box 1545
Chesapeake, VA 23327-1545
http://www.aace.org

Printed in the USA

ISBN: 1-880094-66-5

Special thanks to - AACE Technical Coordinators: David Drucker, University of Virginia and Michael Rapp; University of Houston

UNIVERSITY OF IBADAN LIBRARY

Coming of Age in the 21st Century: Leading the Profession Forward, One Small Step at a Time

or

Twenty More Years of Success in Technology and Teacher Education? Yes We Can!

IAN W. GIBSON
Program Chair, SITE 2009
SITE President, 2005-2008
Macquarie University, Australia
ian.gibson@mq.edu.au

UNIVERSITY OF IBADAN LIBRARY

2009 marks the year the Society for Information Technology and Teacher Education (SITE) celebrates its 20th year of operations. As is appropriate for such landmarks, the conference in Charleston will be the site of birthday celebrations to mark the event. There will be the opportunity to consider where we have come from as a Society, but more appropriately, the conference week will provide all who attend an opportunity to consider where we might go in our second twenty years.

Being the leading professional association focusing upon technology and teacher education across the globe brings with it certain responsibilities, and in the volatile political and economic context of this new millennium, a new set of organisational skills, attitudes, behaviours, and tools are necessary to ensure continued success as a learned professional organization.

In 'coming of age' in this challenging context, SITE is recognising the expanding global nature of its responsibilities and is making adjustments to accommodate these changing expectations within the organization and with its external partners and collaborators.

For those seeking signs of these changes, there are three major areas where progress towards achieving those new responsibilities is obvious:

- Increasing success in using a distributed leadership model within the Society
- Expanding global initiatives and outreach
- Creating a new publication for disseminating high quality research

SITE's distributed leadership model continues to expand and become more dependent upon the contributions of individual members. Most of you will have noticed an increased role for SIG members, SIG Chairs and Council Chairs in the annual process of reviewing papers for the conference. It is fair to say that the contents of this book of Proceedings is the direct result of that process of involving more and more SITE members in the review process, and moving the point of decision for acceptance of conference proposals closer to the location of the expertise that ensures the quality of the peer review process that SITE has been proud of throughout its twenty year history. SIG chairs now have the responsibility for ensuring that members of their Special Interest Group contribute their discipline knowledge to the analysis of conference proposals and that the papers meet the discipline standards appropriate for a 21st century SITE! The Vice Presidents of SITE who Chair each of the Councils support this process and coordinate the review of papers adding an additional layer of peer review and quality control to the process.

This sharing of responsibility across the society is also a fundamental part of the process of selecting Award Winning Papers each year. This year, all full paper submissions were considered for an Award through the review process begun by SIG members, and in some cases, other professional associations. Several review steps later, those papers exhibiting extraordinary creativity, having an average score from reviewers of 4.5 on a 5 point scale, and/or receiving a recommendation for consideration for an Award during the review process, and meeting the format

requirements were considered. There were almost 50 papers this year in the pool of potential award winners. Those papers making it through this multi-layered review process that began with SIG members, have been selected or confirmed by the President of the Society to receive one of a number of SITE awards and these awards will be presented during the week of the conference.

It is appropriate at this point to recognise the work that has been done in the past by a handful of dedicated SITE members who have shouldered the load for shepherding this process to a successful conclusion each year as the editorial board for the book of Conference proceedings. Dee Anna Willis has been doing this job for the entire life of the association, Roberta Weber for the last eight years, Roger Carlson for seven years, and Karen McFerrin for the last six!! No matter what way you look at it, these folk, need to be congratulated for their unswerving devotion to the cause of excellence and their dedication in positioning SITE as a learning society that maintains very high standards in its conference publications! This year represents a transition year for the review process, and these four long time SITE members have supported the transition process through sharing their editorial wisdom in a way that guarantees that SIGs will have a foundation of excellence to carry forward the proposal review and award winning paper selection process in future years.

As further evidence of a shift in responsibility appropriate for a new millennium, SITE has expanded its role in other areas of professional activity. Two of many upcoming examples define this shift well. Early this year, in association with Kean University in New Jersey, SITE will support a study tour of China that will provide an opportunity for members to meet educational leaders of that country and experience a fascinating culture that is playing an increasingly large role in global affairs and that is already playing a major part in defining educational initiatives and partnerships in education for this news century. Further, the tour of China <http://site.aace.org/chinatour.pdf> is an opportunity for SITE to take its long tradition of collaboration and developing partnerships with other associations and other organisations in new directions.

In 2010, another opportunity for SITE to model its leading international role in technology and teacher education presents itself on the international stage. The 2010 Symposium on the Future of Teacher Education and School Leader Education will take place at Macquarie University in Sydney, Australia in the last week of July. SITE leaders and members will play a central role in this international initiative, as will partner associations around the globe. The new millennium brings challenges for many organisations both in terms of mere survival and in terms of redefinition of purpose and approach. The process of preparing professional educators is no less in need of serious and unrestrained analysis. This symposium will present an international opportunity for the greatest minds in teacher education to gather together in one place and consider where the profession is going and where it should be going. SITE will play a leading role in this process of considering and redefining the future for a profession that is crucial to the success of nations and to the health and well being of the individuals who build nations. It is timely and appropriate to step back and take a look at the potential impact of changing times and changing capabilities on a profession that has a solid foundation of tradition related to learning, leading, and teaching. As a leader in the field, it is appropriate for SITE to figure prominently in this process! Watch the SITE website for further details in the coming months.

A final piece of evidence related to the changes SITE is fostering in order to respond to the challenges of the 21st century relates to the 'tools' that are being made available to SITE members. Many of you will be more than aware of the technology based 'tools' that have become available to SITE members during the last few years. Innovations in communications, knowledge building, sharing, and 'archiving' have been implemented in SITE keynotes, and on the website. The SITE Blog, and the Screening Room are two excellent examples of the innovations brought to life by the work of individuals or small groups of individuals within the Society. The latest tool is one designed to support the academic work of SITE members and expand the support provided by the Society to the academic standing of its members. The new publication, *Research Highlights in Technology and Teacher Education 2009*, provides another means by which SITE members are able to have their research published in a heavily refereed book. The review process is rigorous and in its first year 121 papers were submitted for consideration. Only 45 of those were accepted. This equates to an acceptance rate of 37%. Such a submission response from SITE members is indication enough of the need for this publication. The fact that it represents such high standards in its review and acceptance process is indicative of the quality of the work that SITE members contribute to the growth of the profession. Those involved in this new publication initiative are to be congratulated for their dedication to the ideals of support and excellence that have been the hallmarks of SITE since its inception. Keep your eyes open for the advent of this new publication!!

Responding to change is replete with challenge. To respond successfully to change requires a strong commitment to collaboration, cooperation, 'reasonable-ness', and intelligence. SITE demonstrates all of these capabilities through its members, its focus on partnering with other associations and organisations, and its growing awareness of the need to think globally, act locally, and lead initiatives designed to advance the profession. In supporting such changes and demonstrating a … *new set of organisational skills, attitudes, behaviours, and tools… necessary to ensure continued*

UNIVERSITY OF IBADAN LIBRARY

success as a learned professional organization ... SITE is positioning itself well for its second twenty years of success as a 'friendly society' and a learning community of some prominence! The content of this book of proceedings is evidence of that.

Herein, there are well researched explorations of issues and topics recognising the impact on learning of new ways of thinking and doing appropriate for the technology-rich, global, diverse learning environments of the 21st century. The content of these papers reflects the growing awareness of global trends and the pressing needs of local concerns. Topics represented here cover the full gamut of interests in educational circles and incorporates work supported by the SIGs of the SITE Information Technology Council:

- Assessment/E-Folios
- Development of Future Faculty
- Digital Video
- Distance/Flexible Education
- Equity & Social Justice
- Games & Simulations
- Information Technology Diffusion/Integration
- International Education
- New Possibilities
- Research & Evaluation
- Graduate Education and Faculty Development
- Technology Leadership

and the work supported by the SIGs of the SITE Teacher Education Council:

- Arts & Interdisciplinary Education
- Assistive Technologies
- Early Childhood Education
- English Education
- Human Languages Education
- Information Technology Education
- Information Literacy Education (Library & Media Science)
- Mathematics Education
- Science Education
- Social Studies Education
- Special Education
- Technology, Pedagogy and Content Knowledge (TPACK)

If you are interested in following up your interest in any of these topics, please go to <http://site.aace.org/sigs/> for further information and to meet the people involved in each area.

In addition, many papers contained within this volume cover more than one of these areas, and there are many papers that cannot be easily contained within these descriptors. The best way forward of course is for you to dive deeply into this extraordinary collection of papers and explore for yourself. This publication is designed to assist you in that process.

SITE is above all else a well developed learning community dependent upon individuals who are willing to contribute their work and their time unselfishly for the benefit of the larger community. All our efforts at SITE are aimed at supporting that process. This volume is the latest contribution to that global 'commons of knowledge' that is the research and development work of teacher educators from around the world.

UNIVERSITY OF IBADAN LIBRARY

TABLE OF CONTENTS

Unveiling the possibility of a bottom-up approach for implementing electronic portfolios in a teacher preparation program 2
Heejung An, Hilary Wilder, William Paterson University, USA

Twenty-first Century Standards Driven Formative and Summative Performance Assessment in a Reflective e-Folio 8
Lorraine Boyle, Bemidji State University, USA

Twenty-first Century Standards Driving Formative and Summative Performance Assessment in a Reflective e-Folio 14
Lorraine Boyle, Bemidji State University, USA; Lynne Groves, Paul Wasko, MN State Colleges and Universities, USA

Reflective Professional Development Practices through Formative Assessments to Encourage Classroom Implementation 20
Evelyn R Brown, LeTourneau University, USA

Electronic Portfolios in Teacher Education: Examples and Evidences of Student Understanding of Cultural Diversity 24
Chia-Jung Chung, Susan O'Hara, California State University, Sacramento, USA

'Is this thing on?' University Student Preferences Regarding Audio Feedback 32
Kristen Cuthrell, Elizabeth Fogarty, Patricia Anderson, East Carolina University, USA

The evolution of ARTI: An online tool to promote classroom-based technology outcomes via teacher inquiry 36
Kara Dawson, Cathy Cavanaugh, University of Florida, USA; Albert Ritzhaupt, University of North Carolina, Wilmington, USA

A Program Evaluation Proposal for Online Databases 42
Oktay Donmez, Linda B. Schrader, Florida State University, USA

Multi-dimensional Assessment for eLearning; Traditional and Social Assessment Models 47
Thomas Downey, Thomas Downey, Thomas Downey, Embanet ULC, Canada

Instructional Leadership Redesign: A Technology-Infused Program 48
Charlotte Eady, Charlotte Eady, Charlotte Eady, Mary Montgomery, Mary Montgomery, Mary Montgomery, William Kiser, William Kiser, William Kiser, Isreal Eady, Isreal Eady, Isreal Eady, Jacksonville State University, USA

Validity and Reliability of a Rubric for Assessing and Stimulating Quality in Effective Online Threaded Discussions 51
Jessica Hale, Jessica Hale, Jessica Hale, David Anderson, David Anderson, David Anderson, Eastern Michigan University, USA

The Evolution of a "Home Grown" E-Portfolio as an Assessment Tool 53
Jeanne Herman, Joyce Aarsvold, Gustavus Adolphus College, USA

Teachers' Knowledge, Beliefs, and Assessment Practices: Using Technology Tools for Assessing Elementary Students' Learning 55
Jane Howland, Jane Howland, University of Missouri, USA

Constructing E-folios using TINS – a case study 64
Yi-Feng Huang, Jhih-Syue Elementary School, Taiwan; Min-Jin Lin, National Dong-Hwa University, Taiwan

Assessing the Ability to Plan ICT Integrated Lessons with IAG to Respond to the Demand for Ensuring Pre-service Teachers' Quality 68
Natsuko Ishii, Shibaura Institute of Technology, Japan; Toshiki Matsuda, Tokyo Institute of Technology, Japan

Using Electronic Assessment Systems to Improve Teacher Education 74
Teresa Jayroe, Margaret Pope, Mississippi State University, USA; Matthew Boggan, Janet McCarra, Mississippi State University - Meridian, USA

FD Commons: e-Teaching Portfolio to Support Ubiquitous Peer Reviewing Process 78
Yukari Kato, Yukari Kato, Yukari Kato, Egi Hironori, Egi Hironori, Egi Hironori, Masaki Nakagawa, Masaki Nakagawa, Masaki Nakagawa, Tokyo University of Agriculture and Technology, Japan

Blogging as Reflective Practice: An Exploratory Study 84
Ilknur Kelceoglu, Ilknur Kelceoglu, Ilknur Kelceoglu, Indiana University - Purdue University Columbus (IUPUC), USA

The Benefits and Challenges of using Electronic Portfolios: A Case Study of Early Childhood Teacher Candidates 89
Esther Ntuli, Lydia Kyei-Blankson, Esther Ntuli, Lydia Kyei-Blankson, Illinois State University, USA

An Assessment of E-Portfolios as Applied to the Accounting Industry 95
Mark Law, Bloomsburg University, USA; Monica Law, Moravian College, USA

UNIVERSITY OF IBADAN LIBRARY

Initial and Professional Educator Certification - Learning Technology and More Together 1187
Sue Espinoza, Elaine Lin, Texas A&M University-Commerce, USA
Utilization of Instructional Technologies in a Nigerian University: Pedagogical Gaps and Policy Options 1191
Martins Fabunmi, University of Ibadan, Ibadan, Nigeria, Nigeria
Hybrid Degree Programs: Implications and Opportunities for Graduate Education Programs in the 21st Century 1197
Shawn Fitzgerald, Shawn Fitzgerald, Kent State University, USA
The Remote Observation of Graduate Interns: Sharing Lessons From the Field 1198
Tina Heafner, Teresa Petty, Richard Hartshorne, University of North Carolina at Charlotte, USA
Staff Development and Training Using Topic-Case Driven Methodology 1202
Leena Hiltunen, Tommi Kärkkäinen, University of Jyväskylä, Finland
Teaching From the Soul: One Essential Element in Building Community in an Online Graduate Course 1210
Dale Hoskisson, Valley City State University, USA
Examining the Relationship between Technology Usage in the Classroom and the Assessment of Online Professional Development Courses 1216
Marvin Howard, Heartland Area Education Agency, USA
Optimal Method for Rapid Development of Training Materials Covering Online Software 1221
James Janossy, James Janossy, James Janossy, Todd Hover, Todd Hover, Todd Hover, DePaul University, USA
Keep the Ball Rolling: Ways to Sustain the Positive Changes from an Innovative Faculty Technology Training Initiative 1227
Jane Kenney, West Chester University, USA; Padmini Banerjee, Delaware State University, USA; Ellen Newcombe, West Chester University, USA
Applying a model of Lesson Structure-Based Technology Integration (LSBTI) in Student Teaching 1233
Hee-Young Kim, Armstrong Atlantic State University, USA
Effects of Teacher Reflection with Highlighted Level Process Displays: Presenting Differences between Lesson Plan and Implemented Actions 1236
Fumiko Konno, Yuka Kanno, Takashi Mitsuishi, Tohoku University, Japan
Graduate Students' Perceptions of the Effectiveness of an Online Secondary Teaching Strategies Course 1243
Kathryn S. Lee, Texas State University-San Marcos, USA
A Blended Approach for Pre-service Teacher Education: Design and Implementation Considerations 1250
Hong Lin, Oklahoma State University, USA
Conflict Resolution in the Online Classroom 1254
Teresa Mason, Jutta Pegues, Lisa Bunkowski, Park University, USA
Collaborative Learning Using a Wiki 1260
Kathryn Matthew, University of Houston Clear Lake, USA; Emese Felvegi, University of Houston - Clear Lake, Hungary; Rebecca Callaway, Arkansas Tech University, USA
Learning Portals for Faculty Development 1266
Nancy McConnell, Florida State University/Student, USA
Primary Methodologies for Delivering Preservice Teacher Instruction in the Use of Technology 1269
Shelley McCoy, University of Tennessee - Knoxville, USA
The Nature of Students' Collaboration in the Creation of a Wiki 1275
Allison McCulloch, Allison McCulloch, Allison McCulloch, Ryan Smith, Ryan Smith, Ryan Smith, North Carolina State University, USA
Quality Matters: Designing, Implementing and Assessing Alternate Certification Programs 1281
Karen McFerrin, Barbara Duchardt, Paula F. Furr, Steven G. Horton, Vickie Gentry, Northwestern State University, USA
Best Practices for Developing an Online Master of Arts in Teaching Program 1290
Darrell Naylor-Johnson, Darrell Naylor-Johnson, Darrell Naylor-Johnson, SCAD, USA
One Faculty Member's Story - How to Learn to Do What You Don't Know How to Do? 1291
Susan Offutt, Kathy Smart, Donna Pearson, University of North Dakota, USA
Integrating Technologies into Education Courses: Faculty Changing Teaching Practices, Faculty Changing Teacher Candidates' Teaching Practices: Reporting of Phase II 1296
Margaret Pope, Margaret Pope, Teresa Jayroe, Teresa Jayroe, Dana Franz, Dana Franz, Mississippi State University, USA

UNIVERSITY OF IBADAN LIBRARY

Virtual Reality and Simulations in Adult and Career Education 1515
Kenneth Ott, Valdosta State University, USA
What do Secondary Teacher Education Students Think about Second Life? 1518
Betul Ozkan, Denise De Vito, University of Arizona South, USA
Game-Based Learning: Where Is Its Empirical Support? 1524
Cheng-Chang Pan, University of Texas at Brownsville, USA
The effect of learner and game variables on social problem-solving in simulation game 1527
Hyungsung Park, Youngkyun Baek, Jihyun Hwang, Korea National University of Education, Korea (South)
Itching to Engage Pre-Service Teachers and Students in Activities That Will Help Them to Learn Math? – Try Scratch! 1534
Tim Pelton, Leslee Francis Pelton, University of Victoria, Canada
A Case for Simulations 1541
Kevin Pyatt, Eastern Washington University, USA
Using Instructional Gaming in the Classroom 1545
Michael Ruffini, Bloomsburg University of Pennsylvania, USA
Avatars in Action: Developing a Pedagogy for Teaching in a Virtual World 1552
Robert Sanders, Robert Sanders, Robert Sanders, Shanna Melton, Shanna Melton, Shanna Melton, Appalachian State University, USA
How scientific inquiry emerges from game design 1555
Kimberly Sheridan, Kevin Clark Clark, Erin Peters, George Mason University, USA
Simulation: Gaming and Beyond 1568
Pamela Speelman, Pamela Speelman, David Gore, David Gore, Scott Hyde, Scott Hyde, Eastern Michigan University, USA
Narrative Centered Game-Based Learning: Creativity, Engagement, and Writing Achievement 1574
Hiller Spires, Lisa Hervey, Tanya Watson, Friday Institute for Educational Innovation, North Carolina State University, USA
Exploring Educational Experiences in Virtual Reality Worlds: A Review of Basic Terms, Literature, and Experiences 1579
Maria Earman Stetter, Maria Earman Stetter, Roosevelt University, USA
Unpredicted Educational Uses of Video Games 1582
Aaron Trevino, Carol Redfield, St. Mary's University, USA
Chalk House: Teacher and Student Usability Results 1587
Scott Warren, University of North Texas, USA
Globaloria Pilot Year One: New Directions for 21st Century Teacher Professional Development 1590
Pamela Whitehouse, West Virginia University, USA; Rebecca Reynolds, Syracuse University, USA; Idit Caperton, World Wide Workshop, USA
Cognitive Processing within Narrative-Centered Learning Environments 1598
Robert Wright, Debbie Blackwell, University of North Texas, USA
Basic Learning of the Programming with "SUDOKU" 1603
Michiyoshi Yamagami, Hyogo Prefectural KOBE KOHOKU High School, Japan
Using an Educational Computer Game as a Motivational Tool for Supplemental Instruction Delivery for Novice Programmers in Learning Computer Programming 1611
Kuo-Chuan Yeh, Penn State University, USA
Do Educators Need a Second Life? Exploring possibilities for technology-based distance learning in higher education 1617
Anita Zijdemans-Boudreau, Pacific University, USA; Scot Headley, Robin Ashford, George Fox University, USA
Cyberactivity Among At-Risk Youth: A Comparative Analysis 1623
Ilene Berson, Michael Berson, University of South Florida, USA
What can we learn from the information literacy levels of incoming teacher education majors? 1627
Vanessa Earp, Kent State University, USA
Gender and Level of Education as Determinants of Cataloguers' Computer Information Processing Skills 1633
Beatrice Ayodeji Fabunmi, University of Ibadan, Ibadan, Nigeria, Nigeria
New Avenues for Integrating Information Literacy into the Curriculum 1639
Abigail Hawkins Gonzales, Paula McMillen, Jennifer Fabbi, University of Nevada, Las Vegas, USA
African American Female College Students Use of Technology: A Closer Look at Information Literacy 1649
Toni Jones, Nancy Jones, Eastern Michigan University, USA
Promoting Media Literacy in Jamaican Schools: ICT and the Implementation Experiences 1655
Clement Lambert, University of the West Indies, Jamaica

UNIVERSITY OF IBADAN LIBRARY

NTLI Fellows Award Papers Symposium, Part 1 4192
Irene Plonczak, Hofstra University, USA; Dora Chen, Leslie Couse, University of New Hampshire, USA
International Student Media Festival 4201
Johanna Riddle, Johanna Riddle, Johanna Riddle, International Student Media Festival (AECT), USA
Predicting Technology Use in K-12 Classrooms 4204
Rebecca Watts, Middle Tennessee State University, USA
Exploring Freshmen Preservice Teachers' Situated Knowledge in Reflective Report during Case-based Activity 4212
Hyeonjin Kim, Korea National University of Education, Korea (South)
Enhancing Preservice Elementary Teachers' Field Placements in Math and Science through Videoconferencing 4218
Irene Plonczak, Robert Joseph, Blidi Stemn, Hofstra University, USA

UNIVERSITY OF IBADAN LIBRARY

Gender and Level of Education as Determinants of Cataloguers' Computer Information Processing Skills

By
Beatrice Ayodeji Fabunmi
Kenneth Dike Library
University of Ibadan
Ibadan, Nigeria
E-mail: beatricefabunmi@yahoo.com

Abstract

Cataloguing operations are being computerized all over the world. Most cataloguers are not able to use this technology effectively. Previous studies had identified gender and level of education as probable factors that could affect the use of computers. This study, therefore, investigated the extent to which gender and level of education determined cataloguers' computer information processing skills at the Kenneth Dike Library, University of Ibadan Nigeria. The survey research design was adopted for this study, using the availability sampling technique to select fifty respondents for the study. An instrument was designed for the purpose of collecting data for the study. Chi-Square and Multiple Regressions were used to analyze data at 0.05 level of significance. The study established that both gender and level of education determined cataloguers computer information processing skills. The findings of this study have serious implications for the management of university libraries and for teacher education and policy.

Introduction

Computer information processing technology is being applied worldwide to cataloguing operations in university libraries. The invention of computer and the internet facility seems to have posed new challenges to the practice of librarianship. The application of computer to librarianship tends to be gaining momentum all over the world. It has led to the development of a separate field of study, virtual library, which is now offered in some universities as a course of instruction, even up to doctoral degree level. Library digitization has a lot of influence on the librarianship profession. Library digitization has become part of the work of librarians. Most libraries are involved in digitization. The Institute of Museum and Library Services (IMLS) 2001 survey observed that one third of academic libraries and a quarter of public libraries were involved in digitization of library resources (Liu, 2004).

The Institute of Museum and Library Services (2001) contains a list of digitization programmes and a framework for building good digital collections. All these institutions had sufficient funding, staff, computer resources and expertise to embark on the digitization projects (Mathias,2003). According to Liu (2004), most of the libraries involved in digitization projects in the United States were academic libraries. Most of such libraries collaborated with better funded agencies, such as national libraries and museums. This was essential as most of these projects were larger than what the subvention of public and school libraries could cope with. The collaboration was necessary as academic libraries had access to greater resources, historical artifacts, documents and research projects than public libraries. Moreover, public libraries and museums receive regularly federal funds and foundation assistance to contribute to large scale preservation of materials. For instance, the University of Maryland is collaborating with the International Children's Library and the Internet Archive to create an extensive virtual children's library (ICDL, 2003). The project aims at making these books available online in different languages. This will enable access for individuals, schools and libraries that do not have the money to purchase these books.

Prior to 1997 digital projects were associated with large academic libraries, but an increasing number of public libraries are now joining in the endeavor. The Alexandria Library in Virginia, United States of America has an online exhibition devoted to local postcards from 1707 to the 1980s and as well as digitized information on historic town buildings and civil war correspondence (Liu,2004). Public libraries in other counties are also digitizing their counties' history with the view to preserving their historic local newspaper articles, photographs, essays, letters and contracts (Graham and Wroth, 2000). The Internet Archive is a non-profit making organization that aims at providing open, free and permanent access to digital collections, particularly of historical and cultural artifacts. The organization stresses the importance of saving records of cultures and civilizations. In other to achieve this, they develop their own digital collections and also encourage others to contribute to this endeavour. Their collections include text, audio and moving images. The main motive for this effort is preservation and granting of global access to such collections. The text collections comprise the "International Children's Digital Library, Project Gutenberg, Arpanet, Million Book Project and Open Source Books" (Liu, 2004). While the Internet Archive audio collection is being made for live musical recordings for posterity. However, the artiste has to agree to permit free public

UNIVERSITY OF IBADAN LIBRARY

distribution and downloading of his or her material.

Most school libraries in the United States concentrate on creating digital libraries that establish links with resources on the web, instead of digitizing such collections afresh. This is as a result of time factor and huge cost of digitization. The Louisa H. Bowen University Archives at Southern Illinois University Edwardsville collaborated with their Faculty Technology Center to create a series of online exhibits devoted to the Mississippi River Festival. The MRF originated as a partnership promoting regional cooperation in the realm of the performing arts. The festival presented 353 musical events over twelve summers from 1969 through 1980. These events showcased performers in a remarkable variety of musical genres at a unique outdoor concert venue. The online exhibits include: a narrated historical slideshow, two digitized versions of movies covering the 1969 and 1975 seasons, and an alphabetical name index of all MRF artists. In addition the website includes a virtual history museum consisting of a searchable database that includes information about all MRF performances and performers.

In Nigeria, the Kenneth Dike Library, at the University of Ibadan has established digital links with the digital collections of the following: Access to Global Online Research in Agriculture, AGORA; JSTOR; Health Inter Network Access to Research Initiative, HINARI; The Essential Electronic Agricultural Library, LANTEEAL; EBSCOHOST; E-Granary Digital Library; Highwire Archive; INASP Peri: Program for the Enhancement of Research Information; African Journals Online; Arab Social Science Research Virtual Library, ASSR; Biomed Central; BMJ Publishing Group; British Library for Development Studies E-Journals; Directory of Open Access Journals, DOAJ; E-Journal.org; Global Development Network-Journal Services; INASP Health Links; Population Information Online, POPLINE; and Pubmed Central Research Papers in Economics, PEPEC. Even though preservation of materials is the ultimate goal of all digitization efforts, provision of greater access is another noble reason for digitizing library collections. Cataloguers have a lot to do in the processing of these materials so to pave way for easy access by users. In most developing countries, computer information technology is just being adopted. Anecdotal observation shows that most cataloguers in such countries have low computer processing skills. In Nigeria, most cataloguers are not able to use the computer information processing technology for their operations. Previous studies had identified gender and level of education as probable factors that could affect the use of computers.

Gender and level of education are key factors that may affect cataloguers' computer information processing skils. Previous studies established that the difference in gender brings about difference in computer operation skills. Women are often under represented in computing in most countries (Galping, 2003). In the United States, parents give less computer-related support to girls than to boys (Kekelis, Ancheta,and Heber, 2005).Bayham and Sipal (2008), says that males or boys usually spend more hours with computer and have more experience in the use of computer than females or girls. In fact, most females find computer technology difficult and complicated. Shashaani, (1994) also argued that from the elementary stage parent's stereotypes favor males and they encourage their sons' computer involvement and discourage their daughters. Calvert, Watson, Brinkley, and Bordeaux (1989) and Lage (1991) discovered that educational qualification plays no significant role in the level of computer operation skills and that lack of interest and personal views are the factors that contribute to competence in the use of computers. However, a contrary position is held by Colley, Gale and Harris (1994) who in their study found that girls' and boys' computer attitude were equal.

The Problem

Cataloguers are expected to use the computer information technology for their operations. In most third world countries, university libraries are not able to provide the appropriate technology and training needed for this category of librarians. In Nigeria, most cataloguers are not able to use the computer information processing technology for their operations. Previous studies had identified gender and level of education as probable factors that could affect the use of computers. This study, therefore, investigated the extent to which gender and level of education determined cataloguers' computer information processing skills at the Kenneth Dike Library, University of Ibadan, Ibadan, Nigeria.

UNIVERSITY OF IBADAN LIBRARY

Research Hypotheses

The following research hypotheses guided the study:

1. There is no significant difference in the perception of the three categories (librarians, library officers and administrative staff) of respondents as regards the relationship among gender, level of education and cataloguer's information processing skills.
2. Gender and level of education do not make any significant contribution to cataloguers' computer operation skills.

Research Design and Methodology

The survey research design was adopted for this study, using the availability sampling technique to select ten librarians, ten library officers and thirty administrative staff, thus making a total of fifty respondents for the study. The small sample size is due to the limited number of such employees available in the library. An instrument tagged 'Gender, Educational Level and Computer Information Technology Questionnaire' was designed for the purpose of collecting data for the study. The Chi-Square and Multiple Regressions statistics were used to analyze data, using 0.05 as the level of significance.

Reports of Findings

This section is discussed under the two research hypotheses.

Hypothesis One: There is no significant difference in the perception of the three categories (librarians, library officers and administrative staff) of respondents as regards the relationship among gender, level of education and cataloguer's information processing skills.

Respondents	Options	SD	D	A	SA	Total	X^2 obs	X^2 cri	Df	P
Librarians	Fo	3.0	3.0	2.0	2.0	10.0				
	Fe	0.9	1.4	5.1	2.6	10.0				
Lib. Officers	Fo	2.0	4.0	3.0	1.0	10.0				
	Fe	0.9	1.4	5.1	2.6	10.0	23.57	12.59	6	0.00172
Admin. Staff	Fo	6.0	11.0	46.0	1.0	30.0				
	Fe	9.2	15.2	40.8	2.6	30.0				
Total	Fo	11	18	51	19.0	50.0				
	fe(%)	11.0	18.0	51.0	16.8	50.0				

Note: SD=Strongly Disagree, D=Disagree, A= Agree and SA=Strongly Agree

Table 1: Analysis of respondents' perception

Table I above shows the X^2obs to be 23.57, where as the critical value is 12.59. Since the calculated value exceeds the critical value, null hypothesis one is therefore rejected. This implies that there is a significant difference in the perception of Cataloguers' Computer Information Processing Skills by the three categories of respondents. The significant relationship established is in consonance with the findings of Bayham and Sipal (2008), who established that the difference in gender brings about difference in computer operation skills. They argued that males usually spend more hours with computer and have more experience in the use of computer than the females. In fact, most females find computer technology difficult and complicated. Shashaani (1994) also argued that from the elementary stage parent's stereotypes favor males and they encourage their sons' computer involvement and discourage their daughters.

UNIVERSITY OF IBADAN LIBRARY

Hypothesis Two: Gender and level of education do not make any significant contribution to cataloguers' computer operation skills.

Model	Sum of squares	Df	Mean Square	F	P	Remarks
1 Regression	1505.769	5	301.180	11.760	0.001	Sig.
Residual	742.863	45	25.600			
Total	2248.632	50				

Table 2: Test for joint contribution

Table 2 reveals that gender and level of education have significant impact on cataloguers's computer operation skills (F = 11.760, P<0.05). The F-value of 11.760 is greater than the P – value of 0.05. This result is in consonance with the findings of Bayham and Sipal (2008) who established that the difference in gender brings about difference in computer operation skills and that males usually spend more hours with computer and have more experience in the use of computer than the females. Calvert, Watson, Brinkley, and Bordeaux (1989) and Lage 1991) who discovered that educational qualification plays no significant role in the level of computer operation skills and that lack of interest and personal views are the factors that contribute to competence in the use of computers. It is also contrary to the position held by Colley, Gale and Harris (1994) who in their study found that girls' and boys' computer attitude were equal.

Discussion of Results

The results in Tables 1 and 2 show that bothe gender and level of education have significant impact on cataloguers' computer operation skills. Table I shows that X^2obs is 23.57, where as the critical value is 12.59. Since the calculated value exceeds the critical value, null hypothesis one is therefore rejected. This implies that there is a significant difference in the perception of Cataloguers' Computer Information Processing Skills by the three categories of respondents. The significant relationship established is in consonance with the findings of Bayham and Sipal (2008), who established that the difference in gender brings about difference in computer operation skills. They argued that males usually spend more hours with computer and have more experience in the use of computer than the females. In fact, most females find computer technology difficult and complicated. Shashaani (1994) also argued that from the elementary stage parent's stereotypes favor males and they encourage their sons' computer involvement and discourage their daughters.

Table 2 reveals that gender and level of education have significant impact on cataloguers' computer operation skills (F = 11.760, P<0.05). The F-value of 11.760 is greater than the P – value of 0.05. This result is in consonance with the findings of Bayham and Sipal (2008) who established that the difference in gender brings about difference in computer operation skills and that males usually spend more hours with computer and have more experience in the use of computer than the females. Calvert, Watson, Brinkley, and Bordeaux (1989) and Lage 1991) who discovered that educational qualification plays no significant role in the level of computer operation skills and that lack of interest and personal views are the factors that contribute to competence in the use of computers. It is also contrary to the position held by Colley, Gale and Harris (1994) who in their study found that girls' and boys' computer attitude were equal.

Gender and level of education are key factors that may affect cataloguers' computer information processing skils. Previous studies established that the difference in gender brings about difference in computer operation skills. Women are often under represented in computing in most countries (Galping, 2003). In the United States, parents give less computer-related support to girls than to boys (Kekelis, Ancheta,and Heber, 2005).Bayham and Sipal (2008), says that males or boys usually spend more hours with computer and have more experience in the use of computer than females or girls. In fact, most females find computer technology difficult and complicated. Shashaani, (1994) also argued that from the elementary stage parent's stereotypes favor males and they encourage their sons' computer involvement and discourage their daughters. Calvert, Watson, Brinkley, and Bordeaux (1989) and Lage (1991) discovered that educational qualification plays no significant role in the level of computer

UNIVERSITY OF IBADAN LIBRARY

operation skills and that lack of interest and personal views are the factors that contribute to competence in the use of computers. However, a contrary position is held by Colley, Gale and Harris (1994) who in their study found that girls' and boys' computer attitude were equal.

Conclusion and Recommendations

The study established that both gender and level of education determined cataloguers computer information processing skills at the Kenneth Dike Library, University of Ibadan, Nigeria. The perception of the respondents also vary significantly on the relationship among the three key variables, that is, gender, level of education and Cataloguers' Computer Information Processing Skills. The findings of this study have serious implications for the management of university libraries. There is an urgent need to take these factors into consideration in the policy making process.

Implications for teacher education and policy

Education authorities should emphasize the provision of appropriate computer information technology in university libraries. Training on the use of computers should be incorporated into the curriculum of library schools. This will enable the professional librarians to acquire the needed computer information processing skills while in school.

References

Bayham, P. and Sipal, F. (2008) "Gender Differences in Turkish Deaf Students' Attitude Toward Computers and Computer Use. Paper Read at the 19th International Conference of the Society for Information Technology and Teacher Education, Las Vegas, Nevada, United State of America.

Calvert, S.L., Watson, J.A., Brinkley, V.M. and Bordeaux, B. (1989) "Computer Presentation Features for Young Children's Preferential Selection and Recall of Information", Journal of Educational Computing Research, Vol. 5, No. 1, January, 35-49.

Colley, A.M., Gale, M.T. and Harris, T.A. (1994) "Effects of Gender Role Identity and Experience on Computer Attitude Components", Journal of Educational Computing Research, Vol. 10, No. 2, pp. 129-137.

Galpin, V., Sanders, I., Turner, H. and Venter, B. (2003) "Computer Self-efficacy, Gender, and Educational Background in South Africa" Unpublished Manuscript.

Graham, A. & Wroth, C. (2000) *The www.virtual library: library resources.* Retrieved Dec 9, 2006 from the Indiana University website: www.indiana.edu/~vlib/Digital_Libraries/

International Children's Digital Library (ICDL) expands access to its collection: new service launches to support summer reading programs. (2003). Retrieved December 20, 2006 from Market Wire website: http://www.marketwire.com

Institute of Museum and Library Services (2001) *A framework of guidance for building good digital collections.* Retrieved Janauary 11, 2007 from the Institute of Museum and Library Services website: www.imls.gov/pubs/forumframework.htm

Liu, Y.Q. (2004) Best practices, standards and techniques for digitizing library materials: a snapshot of library digitization practices in the USA, *Online Information Review, 28*, 338-345. Retrieved September 21, 2006 from www.emeraldinsight.com/1468-4527.htm

Mathias, E. C..(2003) Using a Web OPAC to deliver digital collections, *Online Information Review, 27*, 28-36. Retrieved October 15, 2006 from http://www.emeraldinsight.com/1468-4527.htm

Kekelis, L.S., Ancheta, R.W.; and Heber, E. (2005) "Hurdles in the Pipeline: Girls and Technology Careers". Frontiers: A Journal of Women Studies, Vol. 26, No. 1.

UNIVERSITY OF IBADAN LIBRARY

Lage, E. (1991) "Boys, Girls and Micro Computing", European Journal of Psychology of Women, Vol. 6, No. 1, January, pp. 29-44.

Shashaani, L. (1994) "Socioeconomic Status, Parents' Sex-role Stereotypes and the Gender Gap in Computing", Journal of Research on Computing in Education, Vol. 26, No., pp. 433-451.

Shashaani, L. (1997) "Gender Differences in Computer Attitudes and Use Among College Students", Journal of Educational Computing Research, Vol. 16, No. 1, pp. 37-51.

UNIVERSITY OF IBADAN LIBRARY