SITE

Society for Information Technology & Teacher Education

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Research Highlights in Technology and Teacher Education 2011

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Articles

BLENDED AND DISTANCE ENVIRONMENTS

ATTITUDES AND PERCEPTIONS

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GAMES

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Research Highlights in Technology and Teacher Education 2011

FOREWORD

In its third year of publication, SITE's Research Highlights in Technology and Teacher Education has become one of the "most viewed" journals in the extensive holdings in the AACE digital library (EdITLib). The evolution of Research Highlights reflects a careful nurturing by previous SITE presidents Gerald Knezek and Ian Gibson, along with the critical organizational support provided by AACE CEO Gary Marks.

Of course, an academic journal has little merit without critical and timely scholarship. SITE's Research Highlights is quite fortunate to have Cleb Maddux, University of Nevada Reno, serve as its Senior Editor since its inception. Dr. Maddux has provided steady and rigorous guidance to all those associated with publication of Research Highlights. I am happy to report that he believes that the quality of the publications "has been improving steadily," with a bumper crop of stellar articles in this year's edition.

Each year, SITE designates leaders from its membership to serve as co-editors for the Research Highlights to be published in conjunction with its annual conference. This year, Drs. Matthew Koehler and Punya Mishra worked closely with Dr. Maddux, and other SITE leaders, in producing the 2011 Research Highlights in Technology and Teacher Education. To be considered for publication in Research Highlights, a submission first has to be accepted as a "full paper" at the annual SITE conference. Subsequently, those full papers undergo additional rigorous review and editing (I have been told that no papers are published simply on the basis of their "full paper" status alone. Authors are always required to do additional edits and revisions to meet the high standards of Cleb and his team.) This year, a total of 1272 submissions, from the 351 accepted as conference "full papers were considered. Of those, only 31 were selected for publication in the 2011 Research Highlights in Technology and Teacher Education.

In the end, a successful journal succeeds only based on the quality and rigor of the work submitted for publication. SITE's Research Highlights is fortunate to have an outstanding cohort of international scholars and practitioners who have chosen to share their innovative work in this volume. I trust you will be as stimulated as I am by the high-level scholarship they have produced. AT SITE, we are honored to have their work published in the 2011 Research Highlights in Technology and Teacher Education.

Please enjoy this volume and consider using SITE, through its conferences and publications, to share your work with our growing international community.

Regards,

Michael Searson
President, Society for Information Technology & Teacher Education SITE
Executive Director, School for Global Education & Innovation, Kean University

PREFACE

The 2011 book of the Society for Information Technology and Teacher Education is the third in the series. Once again, the articles in this collection are clear evidence that the field and our society continue to advance and mature.

We have organized the chapters this year into seven main sections:

Rethinking Pedagogy
Technology, Pedagogy and Content Knowledge (TPACK)
Integrating Newer Technologies
Blended and Distance Environments
Attitudes and Perceptions
Sharing Resources in a Networked World
Games

Over 80 articles were considered for publication. Of those, two review processes involving detailed edits and feedback resulted in 31 selections, which were then further shaped by the editors. We think you will agree that the result is an interesting and valuable record of the diversity of interests of Society members.

Next, we briefly outline the contents.

RETHINKING PEDAGOGY

David Gibson of Arizona State University and Gerald Knezek of the University of North Texas authored Game Changers for Teacher Education. This chapter introduces ideas for a new framework for teacher education based on Complex Systems Knowledge, and Global Flatteners.

Developing a HEAT Framework for Assessing and Improving Instruction is co-authored by Marge Maxwell of Western Kentucky University and colleagues Matthew Constant, Rebecca Stokbaugh and Janet Tassell. HEAT stands for Higher-order thinking, Engaged Learning, Authentic Learning, and Technology integration. The authors have developed an instrument based on these ideas and intended for use assessing instruction and lesson plans of pre-service and advanced teacher education students.

Problem Upon Problem: Integrating PBL Throughout a Computing Curriculum is the work of Samuel B. Fee from Washington and Jefferson College. This chapter discusses the use of Problem Based Learning to engage students in deep problem solving and independent critical thinking.

TPACK

Developing Secondary Mathematics Preservice Teachers' Technological Pedagogical and Content Knowledge (TPACK): Influencing Positive Growth is by Jeremy Zelkowski from The University of Alabama. Zelkowski investigated the effectiveness of a secondary mathematics teacher education program in developing Technological Pedagogical Content Knowledge (TPACK) in preservice teachers who rarely used technology in their own K-14 mathematics coursework.

Testing a TPACK-Based Technology Integration Observation Instrument, by Mark Hofer from the College of William and Mary and colleagues Neal Grandgenett, Judi Harris, and Kathy Swan reports on successful efforts to construct a TPACK-based observation rubric. The instrument is available online.

Learning by Design: TPACK in Action. Technology Integration Preparation for Preservice Teachers is a chapter by Liangyue Lu and her colleagues at Syracuse University including Laurene Johnson, Leigh M. Tolley, Theresa Gilliard-Cook and Jing Lei. The authors present initial efforts to apply TPACK and Learning By Design in the design and development of a series of technology integration courses for elementary preservice teachers.

Keith Wetzel from Arizona State University and Summer Marshall from the Ecker Hill International School collaborated in this chapter entitled Using the TPACK Framework to Study a Sixth Grade Classroom with High Access to Technology. They report on their qualitative study investigating the ways an experienced middle school teacher uses the TPACK framework.

INTEGRATING NEWER TECHNOLOGIES

Integrating an Open Textbook into Undergraduate Teacher Education by Terence Cavanaugh from the University of North Florida presents a discussion of the use of open textbooks as a cost effective strategy as well as a preparatory activity for future classroom applications.

Denys Lupshenyuk from York University, Canada, Martha M. Hocutt, of the University of West Alabama, and Ron Owston, also from York University authored this chapter entitled Web Video Project as an Instructional Strategy in Teacher Education. The chapter presents a conceptual framework for the integration of user-generated web video into student learning, and shares practical experiences of web video application in the teacher education curriculum in a regional university in Alabama.

YouTube Annotations: Reflecting Interactive, Web based Hypervideos in Teacher Education is by Thomas Winkler, Martina Ide and Michael Herczeg from institutions in Germany. The authors present their experiences and conclusions related to using hypervideos.

Cesar C. Navarrete from the University of Texas at Austin authored Identifying Affordances and Barriers to Student-centered Collaborative Learning in the Integration of Interactive Whiteboard Technology. The study presented in the chapter made use of text analysis and identified four systematic barriers to transformative technology integration: (a) need of time for professional learning, (b) need for leadership involvement, (c) usability issues, and (d) lack of supplemental resources.

Poetry in Motion: Using VoiceThread to Prepare 21st Century English Teachers is a chapter by Leanna Archambault and David Lee Carlson from Arizona State University. The chapter explores how technology can be used to improve teaching within the content area of English/language by examining the artifacts and reflections of 21 pre- and in-service secondary English teachers at a large university in the southwestern part of the United States.

Scott Elliot and Kathy Mikulas from SEG Measurement collaborated on this chapter entitled Improving Student Science Knowledge and Skills: A Study of the Impact of Augmented-Reality Animated Content on Student Learning. These researchers asked if fourth grade students using both the books and augmented-reality animated content achieve greater increases in science knowledge and skills than a comparable group of students who use only the books or a comparable group of students using nothing at all?

BLENDED AND DISTANCE ENVIRONMENTS

Lessons Learned from Teaching in Hybrid Learning Environments for In-Service Mathematics Teachers is a collaborative effort by Heng-Yu Ku from the University of Northern Colorado and colleagues Chatchada Akarasriworn, Lisa A. Rice, David M. Glassmeyer, Bernadette Mendoza and Shandy Hauk. The authors used a mixed methods strategy to investigate middle and secondary in-service teachers' attitudes towards participation in a graduate level probability and statistics course in a hybrid learning environment.

Peter R Albion and Ronel Erwee from the University of Southern Queensland authored this chapter entitled Preparing for doctoral supervision at a distance: Lessons from experience. Motivation for the research they conducted came from the increasing shortage of professors in Australian universities. These authors explore the use of distance education in doctoral education.

Engaging Students through 21st Century Art Learning: Three-dimensional Virtual World Pedagogy is a chapter by Lilly Lu from Northern Illinois University. The chapter seeks to explain the characteristics of 3D Virtual Worlds and addresses how they can serve as virtual learning environments (VLE) for art education.

Lisbeth Amhag of Malmö University, Sweden is the author of Students' Argument Patterns in Asynchronous Dialogues for Learning. This research investigated how distance students can learn to use argumentation processes as a tool for learning. A dialogic model for argument analysis is also described.

Pamela Pollara and Jie Zhu from Louisiana State University collaborated on Social Networking and Education: Using Facebook as an Edusocial Space. This paper explores the use of Facebook within a high school science-mentoring program. The authors report of research indicating that the use of Facebook positively affected the relationships between mentors and mentees. In addition, students believed that they learned more by using Facebook and would like to use Facebook for other educational purposes.

ATTITUDES AND PERCEPTIONS

Andrzej Sokolowski and Elsa Gonzalez y Gonzalez from Texas A & M University jointly authored Teachers' Perspectives on Using Graphical Representations in Enhancing the Process of Mathematical Modeling. This qualitative study investigates the teacher's role in using modeling and visualization in the teaching of mathematics.

Christine Anderson from Western Illinois University collaborated with Marisa Beard and Lama Bergstrand Othman in Pre-Service Teacher Survey and Collaboration between the United States and Jordan. This project was aimed at increasing the awareness of the educational systems in both countries and uniting 34 pre-service special education and early childhood teachers from two countries through technology in an interactive assignment.

What Makes Preservice Teachers Trust Digital Technology?is a chapter by Andrea Francis from Albion College. She used exploratory regression analyses and found one of the most important factors in participants' decision to trust and use educational technology in future classes was the extent of a person's positive experience with technology in teacher education classes.

Thanh Truc Nguyen from The University of Hawaii is the author of Multimedia Juvenile Victimization: School Faculty Perspectives about Youth Behavior. More than 400 faculty members in three states were surveyed. Faculty identified online sexual predators and cyber bullies as their greatest concern, whereas misinformation and bias was the least concern.

Impediments to Technology Integration: Individual Factors, School-Based Factors, and System-Wide Factors Identified by High Technology-Using Teachers is a collaborative effort by Priscilla Norton and Dawn Hathaway from George Mason University. The authors investigated barriers to integrating technology. Results identified seven categories related to Individual Factors, ten related to School-Based Factors, and four related to System-Wide Practices and Policies Factors.

Sara Flanagan and Melanie Shoffner from Purdue University collaborated on this chapter entitled Two Teachers' Technology Use: Recommendations for English Teacher Preparation. This qualitative study explored two secondary English teachers' use of technologies for instruction. Both teachers – one novice, one experienced – took part in a series of 10 observations and 3 interviews.

Instructional Technology Adoption Strategies for College of Education Faculty is a chapter by Robert Bowe of National Louis University and National College of Education. Multi-year survey data, Q Methodology, and videotaped interviews were used to identify three distinct groups of IT-using faculty. Professional development activities are identified for each group.

Recruiting Appalachian Girls to STEM Educational and Career Paths: Implications for Teacher Education is a collaborative effort by Reagan Curtis of West Virginia University and colleagues Gary Winn, Robin Hensel, Philip Adu, and Neelam Kher. The research was undertaken because the authors believed traditional recruiting and retention methods are not efficacious for Appalachian girls. A survey of 107 high school sophomores and juniors suggested ways recruiting and retention efforts should be modified to attract more Appalachian girls to engineering.

SHARING RESOURCES IN A NETWORKED WORLD

Cleborne D. Maddux, Leping Liu, Wenzhen Li and Jenna Sexton collaborated on this chapter entitled The Semantic Web: Reviewing Its Potential in Teacher Education and a Concept Analysis of Related Educational Literature. This article clarifies the idea of the Semantic Web and uses a discourse analysis tool to analyze the content of 92 published articles on the Semantic Web in education.

Sharing Digital Resources among Teacher Educators is written by Lena Olsson of Stockholm University in collaboration with Eeva Koroma and Jennifer Monroe. This chapter reports on a 3-year project devoted to develop and cultivate a digital culture in Teacher Education.

GAMES

Karen Schrier of Columbia University and David Gibson of Arizona State University authored Using Games to Prepare Ethical Educators. The researchers set out to explore how to develop teachers who are reflective and critical thinkers of ethics. They suggest that one potential solution is to incorporate digital games and simulations into teacher education curricula.

Video Game Design Principles in Logo Impact Teacher Candidates' Technology Integration is by Aaron C. Bruewer and Kathryn G. Shafer, both of Ball State University. The researchers sought to determine which assignments in a math education course for middle school and high school teachers engaged the students' developing sense of technology integration. Conclusions include the importance of supporting teacher candidates at the Recognition Stage of technology integration as a pre-requisite to developing their Technological Pedagogical Content and Knowledge (TAPCK).

Marilyn Ault, Jana Craig Hare, Bruce Frey, and Gail Tiemann of the University of Kansas collaborated to writeUse of Targeted Games to Support Instruction. The use of targeted games in education was investigated. The results indicated that students have a strong preference for competitive games over single-player and collaborative games, and sustain play outside of the school day. An additional follow-up survey suggested that students have strong preferences for characteristics inherent to targeted games. These include autonomy, feedback, competition, and challenging levels of play.

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