Student Nurses’ Use of Mobile Devices for Decision Making within a Clinical Simulation Lab

Application to
International Nursing Association for Clinical Simulation and Learning

“Debra Spunt” Research Mini-Grant 2012

Heather D. Carter-Templeton, PhD, RN

Alice L. March, PhD, RN, FNP-C, CNE
Abstract

Nurses must be prepared to access evidence-based resources at the point-of-care to provide high quality, safe patient care. Simulated clinical experiences provide realistic opportunities for teaching problem identification and decision making in an environment that is controlled. Generic nursing students are a rich source of data because of their unique perspective on the use of technology and familiarity with the evidence-based applications required to support quality patient care. This qualitative study seeks to describe how generic baccalaureate nursing students use mobile devices within simulated clinical experiences, and to determine what additional pedagogical strategies support the use of mobile devices in the simulation lab. This study targets upper division nursing students in a baccalaureate nursing program (BSN) during the 4th semester of the curriculum (N=96). Qualitative studies reflecting student nurses’ perspectives on using information and evidence-based resources via mobile devices during simulated clinical experiences are, for the most part, non-existent. This study will address the current gap in literature. Understanding learners’ perceptions about the utility of mobile device technology helps reveal observations of end users accessing evidence-based information at the point-of-care.

Significance

It has been posited that handheld computer use may alter the way healthcare is taught and provided (Farrell & Rose, 2008). However, limited published research exists examining the impact of mobile device use by nursing students (Morris & Maynard, 2010). Findings from this study will illuminate how students use handheld computers within the simulated clinical experience. Student nurses can offer a rich description of the perceived benefits and barriers to actual use of handheld computers which offer access to evidence-based information at the point-of-care during simulation scenarios. In addition, students can offer insight into what educational strategies can assist learners to maximize the use of handheld computers.

Research Questions

The research questions are: 1) How are handheld computers used by nursing students during simulated clinical experiences? and 2) What educational strategies help maximize the use of handheld computers in the simulation environment?

Methods

Design

Because little is known about the use of handheld computers within simulated clinical experiences, a qualitative, interpretive description design (Thorne, 2008) will be used. This study will explore and describe nursing students’ use of required handheld computers within simulation scenarios at The University of Alabama Capstone College of Nursing’s Simulation Center for Clinical Excellence (SCCE). This study provides insights into nursing students’ experiences with handheld computers during simulation to support clinical decision making.

Two researchers will conduct this study. Dr. Carter-Templeton and Dr. March both have diverse clinical backgrounds and have published and presented nationally and internationally. Dr. Carter-Templeton’s research interest is in the areas of informatics, information literacy, and evidence-based practice, and she has experience conducting research in the area of information technology using qualitative research methods. Dr. March’s research interest is in the area of students’ perceptions of knowledge and confidence changes related to simulation. She has experience conducting quantitative and mixed methods research projects. Dr. March will provide the expertise related to the use of the SCCE, where she has trained undergraduate nursing students and is co-chair of the Simulation Research Committee.
Data Collection

Data collection will take place during one semester after institutional review board approval is obtained. Students will receive a link to the online survey after the second clinical simulation scenario during the 4th semester of upper division nursing. Students will receive written and verbal explanations of this study and an invitation to participate. No identifiers will be collected, and confidentiality will be maintained. The PIs will obtain informed consent from the participant prior to the student accessing the online questionnaire. The research team will be responsible for handling and storing all study data. Only de-identified data will be shared.

Data collection will occur in two phases. First, the research team will collect qualitative data employing the use of an online, investigator-developed, open-ended questionnaire informed by expert faculty opinion. The questionnaire is estimated to take about 10 to 15 minutes to complete. Questions will focus on students’ use of handheld devices during a simulated clinical experience. Student suggestions regarding how to teach the proficient use of handheld computers during a scenario, and student opinions about electronic information resources, will be elicited. In addition, demographic data will be collected from participants. Consistent with qualitative research practices, it is anticipated that the questionnaire will undergo minor revisions upon initial use with participants (Krueger, 1998).

Next, participants will be assigned to one of three follow-up member checking group meetings after preliminary data analysis to ensure validity of initial findings (Lincoln & Guba, 1985). Participants will receive a smart phone app that supports reference management (PubMed on Tap®) and refreshments as an incentive for attending this group meeting. To avoid perceived coercion, Dr. Carter-Templeton will be responsible for facilitating all follow-up member checking group meetings, since she is not assigned student instruction hours within the SCCE, whereas Dr. March is.

<table>
<thead>
<tr>
<th>Open-Ended Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Think back to your recent simulation experiences this semester when you used your handheld computer to find more information to care for your simulated patient. Describe this situation in the textbox below.</td>
</tr>
<tr>
<td>2. Describe how you located the additional information you needed. For example, what resources did you use?</td>
</tr>
<tr>
<td>3. What are your preferred electronic resources for a handheld computer?</td>
</tr>
<tr>
<td>4. What type of learning experience(s) would help you to maximize the use of your handheld computer?</td>
</tr>
</tbody>
</table>

Analysis

The researchers will examine the online questionnaire responses. The researchers will discuss initial impressions and identify emerging themes and appropriate codes (Patton, 2002). ATLAS.ti (qualitative research software) will assist in managing and organizing data. Demographic data will be analyzed using SPSS™ and descriptive statistics will summarize participant information.

Sample

A purposeful sample of 4th semester baccalaureate nursing students will be invited to participate (N=96). All students in the BSN program are mandated to purchase a handheld computer or smart phone with Skyscape® Nursing Constellation™ package downloaded for use in the clinical and simulation lab setting. Students are required to bring their handheld computers to all simulated clinical experiences. This student group was selected because of their previous experience (at least two semesters) with the simulation scenarios, as well as in-patient clinical experiences, and should therefore be more adept with the device and use of the software.
Additionally, these students are expected to have less performance anxiety associated with the experience. Inclusion criteria include 4th semester BSN student status, age over 19 years old, and ability to read English.

Limitations

This study has several potential limitations. First, data will be collected using an online questionnaire. Technical issues related to accessing the online questionnaire may be experienced by some participants. In addition, PIs will not be able to follow up on unclear statements at the time of data collection. This study is qualitative and has limited generalizability.

Outcomes

Findings from this study will be disseminated in the form of presentations and manuscripts in an effort to inform future research surrounding the use of handheld computers in simulated clinical experiences. Additionally, this study will provide insight regarding how nursing students use handheld devices. Furthermore, a list of helpful electronic resources to be used in actual and simulated clinical settings will be developed, and pedagogical strategies to assist in maximizing the use of handheld devices will be identified.

Evaluation

This descriptive research study is designed to help inform faculty using clinical simulation as a teaching method. Follow-up member checking group meetings after preliminary data analysis will ensure validity of preliminary findings (Lincoln & Guba, 1985). It is expected that findings from this study will assist in modifying teaching strategies surrounding the use of handheld devices in the clinical setting and simulation laboratory.

### Project Description and Timeline

<table>
<thead>
<tr>
<th>Calendar Months:</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study Planning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1. IRB Solicitation</td>
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<td></td>
<td></td>
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<tr>
<td><strong>Empirical Phase</strong></td>
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<tr>
<td>4. Data Collection</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>5. Data preparation</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td><strong>Analytic Phase</strong></td>
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<td>6. Data analysis</td>
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<td></td>
<td></td>
<td></td>
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<td>7. Final Interpretation</td>
<td></td>
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<td><strong>Dissemination Phase</strong></td>
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<tr>
<td>8. Presentations/reports</td>
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<td>&gt;</td>
</tr>
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</table>

### References


Budget

Total Amount Requested: $500

Supplies $287
Funds in the amount of $287 are requested to purchase the PubMed on Tap© app, for each of 96 students, at $2.99 each. PubMed on Tap© is a reference management application of value to nurses that can be loaded on their personal mobile devices.

Participant Incentives $213
Funds in the amount of $213 are requested to provide participant incentives in the form of refreshments for students attending a follow-up member checking discussion.
Qualifications and Contact Information of INACSL Member

Who is Submitting Mini-grant Proposal

Name___________________________ Credentials________________________
Place of Employment__________________________
Position__________________________
Work Email ________________________________ Work Phone __________________________
Home or Cell Phone ___________________________

Title of Grant Proposal

Student Nurses' Use of Mobile Devices for Decision Making with a Clinical Simulation Lab

Please answer these questions about yourself so that we may know a bit more about you and your background:

INACSL Membership Status:

x Individual Member  x Institutional Member  8/7/2012 Exp date
(ex 3/2012)

1. Please provide the following information regarding your previous research experience and/or experience in the area of your research interest.

<table>
<thead>
<tr>
<th>Research topic</th>
<th>Type: Qualitative/Quantitative</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses’ Information Appraisal</td>
<td>Qualitative</td>
<td>Nurses assess information need by way of an unspoken algorithm considering the urgency of the situation. Most nurses look to human resources for information in most situations.</td>
</tr>
<tr>
<td>Assessing Information Literacy, Information Technology, and Nursing Informatics Competencies</td>
<td>Quantitative</td>
<td>Objective measures collected (F2F &amp; online scenario) varied greatly within different competency categories &amp; among the specific learning outcomes</td>
</tr>
<tr>
<td>Perspectives of Nurse Managers and IT Staff about Nurses’ Information Literacy</td>
<td>Qualitative</td>
<td>All participants agreed that increased knowledge related to online information resources would improve patient care outcomes.</td>
</tr>
<tr>
<td>Nursing Faculty and Student Experiences with Information Literacy</td>
<td>Quantitative</td>
<td>Study participants recognized value in information literacy skills, indicating it was necessary to use online information resources for patient care. Predominantly, participants selected time &amp; no computer access as major barriers to using online databases.</td>
</tr>
</tbody>
</table>

2. Describe your experience in simulation and/or work in the simulation lab.

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Simulation type (SP vs. HPS)</th>
<th>Job Title</th>
<th>Briefly list duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Online Simulation Project Coordinator</td>
<td>Responsible for research and development of online simulation development to support teaching information literacy skills to nurses at all levels.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SP Nursing Instructor</td>
<td>Offered instruction and demonstration of nursing skills and procedures. Assisted in nursing student skills check-offs.</td>
<td></td>
</tr>
</tbody>
</table>

3. If you are participating with a team of researchers or with a research partner, please describe how your research will be supported by the other researchers or team. The Co-PI and I will work in tandem complementing each other’s research skills and expertise. I will provide expertise in qualitative research data collection and analysis and knowledge related to information technology issues (handheld computer use). The Co-PI will provide knowledge about the simulation lab, planned student experiences, and quantitative demographic analysis.

4. Please provide any additional information about your skills, knowledge base or overall experiences that you believe will be helpful to the mini-grant review team.

I have experience working with research teams collecting and analyzing quantitative and qualitative data from nurses at all levels regarding the use and implementation of technology and evidenced-based information at the point-of-care. This experience will aid the project team in data collection, data management, and data analysis and dissemination of findings.
Qualifications and Contact Information of INACSL Member
Who is Submitting Mini-grant Proposal

Name___________________________ Credentials________________________________
Place of Employment________________________________________________________
Position______________________________________________
Work Address______________________________________________________________
Work Email________________________________ Work Phone_________________________
Home Address______________________________________________________________
Preferred Email___________________________ Home or Cell Phone__________________

Title of Grant Proposal: Student Nurses’ Use of Mobile Devices for Decision Making within a Clinical Simulation Lab

Please answer these questions about yourself so that we may know a bit more about you and your background:

Please limit your responses to 2 pages only.

INACSL Membership Status:
[ ] Individual Member [x] Institutional Member 8/7/2012 Exp date

1. Please provide the following information regarding your previous research experience and/or experience in the area of your research interest.

<table>
<thead>
<tr>
<th>Research topic</th>
<th>Type:</th>
<th>Quantitative/Qualitative</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived effectiveness of human patient simulation training</td>
<td>Quantitative</td>
<td></td>
<td>Students perceived increases in learning and self-confidence as they</td>
</tr>
<tr>
<td>Mock trial as a strategy for teaching legal and ethical concepts</td>
<td>Mixed: Quantitative/Qualitative</td>
<td></td>
<td>progressed through a five-semester upper division nursing program</td>
</tr>
<tr>
<td>Religiosity and factors affecting health risk behaviors among adolescents; Secondary data analysis</td>
<td>Quantitative</td>
<td></td>
<td>Scores on the post-test increased from the pre-test; scores for the DVD</td>
</tr>
<tr>
<td>Factors affecting health risk behaviors among adolescents in Alabama; Secondary data analysis</td>
<td>Quantitative</td>
<td></td>
<td>viewing group were higher than the “live” viewing group; students reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>that the mock trial affected their views of the legal and ethical aspects of nursing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No significant findings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cluster analysis indicated that certain risk and protective factors were</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>associated with membership in a particular cluster or group of adolescents</td>
</tr>
</tbody>
</table>

2. Describe your experience in simulation and/or work in the simulation lab.

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Simulation type (SP vs. HPS)</th>
<th>Job Title</th>
<th>Briefly list duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five</td>
<td>HPS</td>
<td>Assistant Professor</td>
<td>Pre-brief and guide students during scenarios. Complete debriefing activities.</td>
</tr>
</tbody>
</table>

3. If you are participating with a team of researchers or with a research partner, please describe how your research will be supported by the other researchers or team.

My task in this project is to provide the simulation expertise and quantitative analysis of demographic data. My counterpart will support the team as the expert in qualitative analysis and information technology issues (the use of handheld computers).

4. Please provide any additional information about your skills, knowledge base or overall experiences that you believe will be helpful to the mini-grant review team.

I have the skills and experience to put students at ease during the scenario. This will optimize their learning and allow them to explore and reflect more deeply on how the handheld devices contribute to learning.
Dear Patricia Ravert,

I am very pleased to provide this letter supporting Dr. Heather Carter-Templeton and Dr. Alice March in their application to the International Nursing Association for Clinical Nursing Simulation and Learning for mini-grant funding for the project, “Student Nurses’ Use of Mobile Devices for Decision Making within a Clinical Simulation Lab.”

Studying students’ own perceptions about the use of mobile devices in simulation is an important step in determining best practices in education that will prepare new nurses to provide high quality, safe patient care. Currently, qualitative studies on student nurses’ views on using mobile devices during clinical simulation are almost nonexistent. I believe the proposed research will inform the literature on best practices, which will in turn impact end users accessing evidence-based information at the point-of-care.

The University of Alabama College of Nursing will provide space, secretarial, and computer support for Dr. Carter-Templeton and Dr. March to conduct their research. Therefore, they have my support and that of the Capstone College of Nursing in implementing the project.

Sincerely,

Sara E. Barger, DPA, RN, FAAN
Dean and Professor

Box 870358
Tuscaloosa, AL 35487-0358
(205) 348-6639
FAX (205) 348-5559
http://nursing.ua.edu/
Heather Carter-Templeton, PhD, RN

PRACTICE/PROFESSIONAL EXPERIENCE
Aug 2010–Present  Assistant Professor; University of Alabama, Tuscaloosa, AL
Aug 2007–Jun 2010  Project Coordinator: LISTEN Grant; University of Tennessee, Memphis, TN
Aug 2003–Aug 2007  Nursing Instructor; Mississippi University for Women, Columbus, MS
Jul 2002–July 2003  Research Nurse; Vanderbilt University Medical Center, Nashville, TN
May 1999–Jun 2002  House Supervisor & PACU Nurse; Crestwood Medical Center, Huntsville, AL
Aug 1998–Jan 1999  SICU Nurse; Huntsville Hospital, Huntsville, AL
Oct 1997–Jul 1998  SICU/Trauma Nurse; University Hospital, Syracuse, NY
Mar 1996–Sep 1997  Med-Surg Nurse; East Alabama Medical Center, Opelika, AL

EDUCATION

<table>
<thead>
<tr>
<th>Institution</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
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<tbody>
<tr>
<td>University of Tennessee Memphis</td>
<td>PhD</td>
<td>Nursing</td>
<td>2011</td>
</tr>
<tr>
<td>Indiana University</td>
<td></td>
<td>Teaching in Nursing Certification</td>
<td>2004</td>
</tr>
<tr>
<td>Vanderbilt University</td>
<td>M.S.N.</td>
<td>Nursing</td>
<td>2000</td>
</tr>
<tr>
<td>University of Alabama-Huntsville</td>
<td>B.S.N.</td>
<td>Nursing</td>
<td>1999</td>
</tr>
<tr>
<td>Southern Union State</td>
<td>A.D.N.</td>
<td>Nursing</td>
<td>1995</td>
</tr>
</tbody>
</table>

PUBLICATIONS


RESEARCH SUPPORT
Nurses’ Information Appraisal within the Clinical Setting, 3/2010-10/2011. Funded by Sigma Theta Tau, Epsilon Omega chapter for $500. Study Role: Primary Investigator (Completed)
Individualized Information Literacy Skills Improvement (LISTEN), 7/2007- 6/2010. Funded by the Health Resources and Services Administration (HRSA) for $974,294. Study Role: Project Coordinator (Completed)
Nursing Faculty and Student Experiences with Information Literacy: A Pilot, 5/2007- 8/2007. Funded by Mississippi University for Women Faculty Research Grant Award for $3000. Study Role: Primary Investigator (completed).

AWARDS AND HONORS
Sigma Theta Tau International Honor Society, Inducted Spring 2000, Vanderbilt University, Iota Chapter
Awarded Partial Nursing Scholarship, Vanderbilt University, Academic Year 1999-2000

CURRENT PROFESSIONAL MEMBERSHIPS
Member, American Nursing Informatics Association
Member, Healthcare Information and Management Systems Society
Member, International Nursing Association for Clinical Simulation and Learning
Member, Southern Nursing Research Society (State Liaison for Mississippi)
Member, Sigma Theta Tau

PRESENTATIONS


information literacy, information technology, and informatics competencies. Paper presented at the American Nursing Informatics Association, Las Vegas, NV.


Alice Louise March

**PROFESSIONAL EXPERIENCE**

<table>
<thead>
<tr>
<th>Years</th>
<th>Title/Institution</th>
<th>Functional Area</th>
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<tbody>
<tr>
<td>2007-2012</td>
<td>Assistant Professor, University of Alabama</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>2007</td>
<td>Lecturer, SUNY Binghamton</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>2006-2007</td>
<td>Instructor, Mansfield University</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>2004-2005</td>
<td>Adjunct Clinical, SUNY Binghamton</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>1995-2007</td>
<td>Family NP, United Medical Assoc.</td>
<td>Urgent Care, Family, Women’s Health, Geriatrics</td>
</tr>
<tr>
<td>2001</td>
<td>DON, Waters of Endicott</td>
<td>Director of Nursing geriatric facility</td>
</tr>
<tr>
<td>1997-1999</td>
<td>Family NP, Endwell Family Care</td>
<td>Urgent Care</td>
</tr>
<tr>
<td>1997-1998</td>
<td>Family NP, Veteran’s Adm.</td>
<td>Adult Care</td>
</tr>
<tr>
<td>1993-1997</td>
<td>Family NP, Chenango Memorial</td>
<td>Family Practice</td>
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<tr>
<td>1984-1989</td>
<td>Childbirth Educator, Chenango Memorial</td>
<td></td>
</tr>
<tr>
<td>1981-1992</td>
<td>BLS Instructor, Chenango Memorial</td>
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<td>1977-1993</td>
<td>Registered Nurse, Chenango Memorial</td>
<td>OB, OR, Home Care, ER</td>
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<tr>
<td>1977-1979</td>
<td>Consultant, Genesee Nsg Home</td>
<td>Utilization Review</td>
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<tr>
<td>1976-1977</td>
<td>Inservice Coordinator, Genesee Nsg Home</td>
<td>Geriatrics</td>
</tr>
<tr>
<td>1975-1976</td>
<td>Registered Nurse, Genesee Nsg Home</td>
<td>Geriatrics</td>
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<tr>
<td>1973-1975</td>
<td>Nurse Aide, Genesee Nsg Home</td>
<td>Geriatrics</td>
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**EDUCATION**

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<th>Major</th>
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<tr>
<td>State University of NY at Binghamton</td>
<td>PhD</td>
<td>Rural Nursing</td>
<td>2006</td>
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<tr>
<td>State University of NY at Binghamton</td>
<td>MS</td>
<td>Community Health Nursing</td>
<td>2002</td>
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<td></td>
<td>Functional Role: Administrator</td>
<td></td>
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<tr>
<td>State University of NY at Binghamton</td>
<td>BS</td>
<td>Nursing</td>
<td>1999</td>
</tr>
<tr>
<td>Community General Hospital, Syracuse</td>
<td>FNP</td>
<td>Family Nurse Practitioner</td>
<td>1993</td>
</tr>
<tr>
<td>Mohawk Valley Community College</td>
<td>AAS</td>
<td>Nursing</td>
<td>1975</td>
</tr>
</tbody>
</table>

**PUBLICATIONS**


**RESEARCH**

**Funded Research:**


**Unfunded Research:**

2012 March, A. L., Robinson, C., & Robinson, S. Examination of the Role of Hopeful Thinking and Goal Orientation in Nursing Education.


2000 March, A. L. & Dean, K. Tioga County Adolescent Driver Awareness Program.
**HONORS AND AWARDS**

2011  CCN External Research Mentorship Award. The University of Alabama.
2011  CCN Faculty Research Award. The University of Alabama
2008  Junior Investigator Training Program. The University of Alabama.
2005  Decker School of Nursing Dissertation Year Scholarship. State University of New York at Binghamton.
2002 - 2005  Graduate Tuition Scholarship - Binghamton University
2002  Teaching Assistantship - Binghamton University
2002  Decker Scholarship - Binghamton University
2000 - 2007  Clinical Associate - Decker School of Nursing
2000  Inducted - Sigma Theta Tau
1999  High Honors at Binghamton University

**PROFESSIONAL ACTIVITIES**

2010 - 2012 Sigma Theta Tau, Epsilon Omega Chapter: President Elect
2010 - 2012 Sigma Theta Tau, Epsilon Omega Chapter: Delegate
2008 - 2010 Sigma Theta Tau, Epsilon Omega Chapter- Leadership Succession Committee: chair
2011 - 2012 Consultant to Professional Nurse Writers, Inc. Developed entire obstetrical and pediatric specialty chapter content reviews for comprehensive NCLEX style exam review book being prepared for publication by F. A. Davis.
2011 - 2012 Consultant to Professional Nurse Writers, Inc. Item writer of 110 obstetric and 110 pediatric specialty chapter questions for comprehensive NCLEX style exam review book being prepared for publication by F. A. Davis.
2011 Consultant to Professional Nurse Writers, Inc. Developed obstetric and pediatric specialty chapter outlines for NCLEX style exam review book being prepared for publication by F. A. Davis.
2011 Consultant to Pearson Education. Data and item reviewer for statistical results of pharmacology and specialty predictive exit exam.
2011 Consultant to Pearson Education. Chapter reviewer for electronic pharmacology book
2009 - 2010 Consultant to Pearson Education. Subject matter expert item reviewer, bias reviewer, item writer, and item editor for content on specialty exams (pharmacology, maternal/child), and comprehensive exit exams.

**COMMUNITY SERVICE**

2009 - 2012 Volunteers of American, Board of Human Rights Protection: member
2008 - 2009 Holt Initiative: member
2003 Red Hot Mamas: facilitator, menopause support group
1995 - 1996 Oxford Academy Health Committee: member
1993 Sunrise Adult Day Care- member: Board of Directors
1992 Chenango County Lead Prevention Program: member

**SELECTED PRESENTATIONS, SPEECHES, AND PROGRAMS**


**Poster Sessions:**


