Proposal to Establish a Ph.D. in Mathematics and Science Education
Middle Tennessee State University

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>1</td>
</tr>
<tr>
<td>Summary</td>
<td>2</td>
</tr>
<tr>
<td>Program Structure</td>
<td>4</td>
</tr>
<tr>
<td>Program Performance and Justification</td>
<td>12</td>
</tr>
<tr>
<td>Projected Enrollment</td>
<td>20</td>
</tr>
<tr>
<td>Financial Projection</td>
<td>21</td>
</tr>
</tbody>
</table>

Appendices

1. Structure of the MSE Curriculum            | 24   |
2. Typical Course Schedule for Students in this Program | 26   |
3. Architect’s Drawings of new MTSU Sciences Building | 28   |
4. Summary of Faculty Expertise               | 36   |
5. Faculty Vitae                              | 39   |
Sponsoring Institution(s): Middle Tennessee State University

Proposal: Doctor of Philosophy in Mathematics and Science Education

Degree Designation [or] Type of Certificate: Doctor of Philosophy

Concentrations: Biological Education
Chemical Education
Mathematics Education
Interdisciplinary Science Education

Delivery Site(s): Middle Tennessee State University

Proposed CIP Code:

Proposed Implementation Date: Fall 2009

Cooperative Partners: N/A

For more information contact: Dr. Michael Allen / 615-898-2840

Institutional Approval: / Signature of President Date
INSTITUTION: Middle Tennessee State University

PROPOSAL: Doctor of Philosophy in Mathematics and Science Education

EFFECTIVE DATE: Fall 2009

PURPOSE (Goals and Objectives):

The purpose of the Ph.D. in Mathematics and Science Education (MSE) is to prepare graduates for positions in colleges and universities where they will conduct discipline-based research and prepare America’s next generation of K-12 mathematics and science teachers, as well as for leadership positions in a variety of educational settings. The goals of this program are to prepare students to:

- Understand the fields of mathematics and science education in terms of theory and practice, research, curriculum design, and student learning;
- Conduct original research that generates new knowledge about the teaching and learning of mathematics and science; and,
- Assume leadership roles in mathematics and science education, including teacher education, discipline-based research, and curriculum and instruction.

The MSE program requires its graduates to: (1) develop substantial content mastery of mathematics and/or science; (2) demonstrate an understanding of educational theories, research methodologies, and best practices; and (3) conduct discipline-based educational research (DBER) at the interface between the fields of mathematics or science and education. This program aims to produce college-level professors and researchers in mathematics and science education but will also prepare leaders in K-12 mathematics and science education whose jobs require them to perform, evaluate, and integrate the results of research in mathematics and science education into K-12 classrooms. This program will also improve the way K-16 science, technology, engineering, and mathematics (STEM) courses are taught.

This Ph.D. program is consistent with the philosophy of the nationally-recognized “Preparing Future Faculty” program, and supports the development of the 21st century scientists envisioned in Project Kaleidoscope. To insure that MSE graduates are adequately prepared, they will be mentored by faculty members with research expertise in mathematics or science, faculty members with expertise in educational theories and research methods, and DBER faculty with expertise in a specific area of mathematics or science education.

CURRICULUM:

The proposed program requires completion of 75 semester credit hours distributed as follows:

<table>
<thead>
<tr>
<th>Curriculum Component</th>
<th>Hours Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Core</td>
<td>30</td>
</tr>
<tr>
<td>Concentration Core</td>
<td>18-19</td>
</tr>
<tr>
<td>Electives</td>
<td>14-15</td>
</tr>
<tr>
<td>Dissertation</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>75</td>
</tr>
</tbody>
</table>

No. of new courses: 9 with 26 credit hours
NEED:

The groundbreaking report, “Rising above the Gathering Storm: Energizing and Employing America for a Brighter Future,” highlighted the critical need to improve K-16 students’ competence in mathematics and science. President Bush also noted this need in his 2006 and 2007 State-of-the-Union Addresses, and wide-ranging legislative initiatives such as the America COMPETES Act have recently been passed by Congress. All point to the increasing shortage of qualified K-12 mathematics and science teachers in our nation’s schools while also calling for transformation of STEM instruction. Preparing additional teachers without addressing the underlying issues of instruction will not solve the problems associated with mathematics and science education in America. Many of the issues in STEM instruction can only be solved by individuals performing DBER with substantial expertise in a field of mathematics or science and in education and pedagogy. As a first step to solve these content-specific problems, colleges and universities are creating faculty positions for DBER experts. The result is that at present, there are more positions advertised for DBER experts than current doctoral programs in mathematics and science education can fill. This proposed new degree has been developed in response to this widespread need nationwide, and particularly in middle Tennessee and the surrounding region.

IMPACT:

MTSU is uniquely positioned to assume a leadership role in the preparation of the mathematics and science education professors needed to prepare the next generation of scientists and engineers. Recognized as the pre-eminent teacher preparation institution in the state, MTSU is also home to the Tennessee Mathematics, Science, and Technology Education Center (TMSTEC); one of only three recognized STEM centers in Tennessee. Murfreesboro is the home and MTSU the alma mater of Congressman Bart Gordon (D-TN), who is author of the America COMPETES Act. This law authorizes Federal funding to support revision in the teaching of K-16 mathematics and science. Graduates of this program will be positioned to impact K-16 mathematics and science education, not only as college teachers, but also as educational researchers, curriculum developers, mathematics and science coordinators for school districts, and as policy advisors to national boards. This program is consistent with one of MTSU’s strategic niches—preparing university faculty who can prepare K-16 teachers. This program also supports the MTSU Academic Master Plan (AMP) since the new doctoral degree is “in an area where the need is critical,” is a “new program that addresses needs consistent with the mission of MTSU”, and shows MTSU’s commitment to “adapt to the changing nature of society, the workplace, and the needs of industry and the professions they serve.” (MTSU Academic Master Plan).

PLANS FOR ACCREDITATION: N/A

ATTACHMENTS: N/A
FORMAT - PS (Program Structure)

A. Total credits required for graduation: 75 hours (post-baccalaureate)*

* Students entering with a master’s degree in mathematics, education, or a science discipline may have up to 15 graduate hours applied after determination (based on the recommendation of the program coordination committee and with the approval of the graduate dean) that the courses are directly equivalent to existing courses in the program curriculum.

B. Residency requirements (if any):

A minimum of two consecutive semesters of full-time study are required.

C. Program Core: Total credits: 30 hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 7800</td>
<td>Teaching Internship</td>
<td>3</td>
</tr>
<tr>
<td>MSE 7820</td>
<td>Seminar in Mathematics and Science Education*</td>
<td>1</td>
</tr>
<tr>
<td>MSE 7840</td>
<td>Special Topics in Mathematics and Science Education*</td>
<td>2</td>
</tr>
<tr>
<td>PSY 7190</td>
<td>Advanced Cognitive Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 7280</td>
<td>Psychological Statistics: Regression</td>
<td>3</td>
</tr>
<tr>
<td>PSY 7290</td>
<td>Psychological Statistics: Anova</td>
<td>3</td>
</tr>
<tr>
<td>SPSE 7010</td>
<td>Educational Research Methodology</td>
<td>3</td>
</tr>
<tr>
<td>SPSE 7170</td>
<td>Learning Theories and the Educational Process</td>
<td>3</td>
</tr>
<tr>
<td>SPSE 7180</td>
<td>Qualitative Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>SPSE 7220</td>
<td>Advanced Educational Technology</td>
<td>3</td>
</tr>
</tbody>
</table>

*Students are required to enroll a minimum of twice prior to candidacy.

D. Concentration Core: Total credits: 18-19 hours

CONCENTRATION CORE COURSES

**Biological Education Concentration Core – 19 credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 6200</td>
<td>Speciation</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 6330</td>
<td>Principles of Physiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 6450</td>
<td>Advancements in Molecular Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 6460</td>
<td>Conservation Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 6740</td>
<td>Brain Development and Learning Disabilities</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 7900</td>
<td>Teaching and Learning Biology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Chemical Education Concentration Core – 19 credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 6100</td>
<td>Intermediate Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 6230</td>
<td>Intermediate Analytical Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 6300</td>
<td>Intermediate Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 6400</td>
<td>Intermediate Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 6500</td>
<td>Intermediate Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 7900</td>
<td>Teaching and Learning in Chemistry</td>
<td>3</td>
</tr>
</tbody>
</table>
### Mathematics Education Concentration Core – 18 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 6120</td>
<td>Advanced Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 6170</td>
<td>Sets and Logic</td>
<td>3</td>
</tr>
<tr>
<td>MATH 6190</td>
<td>Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 6320</td>
<td>Mathematical Problem Solving</td>
<td>3</td>
</tr>
<tr>
<td>MATH 7900</td>
<td>Teaching and Learning Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>STAT 6602</td>
<td>Regression Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STAT 6603</td>
<td>Nonparametric Statistics</td>
<td>3</td>
</tr>
<tr>
<td>STAT 6604</td>
<td>Experimental Design</td>
<td>3</td>
</tr>
</tbody>
</table>

### Interdisciplinary Science Education Concentration Core – 18 credits

*Students who choose this concentration must select at least 18 hours (in consultation with their major advisor and dissertation committee) from the courses listed in the three concentrations above or from the courses listed below. Students must take one of the following courses: BIOL 7900, CHEM 7900, MATH 7900, or MSE 7900*

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 6800</td>
<td>Intermediate Life Science</td>
<td>3</td>
</tr>
<tr>
<td>MATH 6100</td>
<td>Mathematics for Teachers</td>
<td>3</td>
</tr>
<tr>
<td>MATH 6330</td>
<td>Algebra for Teachers</td>
<td>3</td>
</tr>
<tr>
<td>MATH 6340</td>
<td>Geometry for Teachers</td>
<td>3</td>
</tr>
<tr>
<td>MATH 6350</td>
<td>Probability and Statistics for Teachers</td>
<td>3</td>
</tr>
<tr>
<td>MSE 7900</td>
<td>Teaching and Learning Mathematics and Science</td>
<td>3</td>
</tr>
<tr>
<td>PSCI 6020</td>
<td>Investigations in Physical Science</td>
<td>1-3</td>
</tr>
<tr>
<td>PSCI 6800</td>
<td>Intermediate Physical Science</td>
<td>3</td>
</tr>
<tr>
<td>PSY 7210</td>
<td>Advanced Psychometrics</td>
<td>3</td>
</tr>
<tr>
<td>PSY 6480</td>
<td>Advanced Topics in Quantitative Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 6550</td>
<td>Structural Equation Modeling</td>
<td>3</td>
</tr>
<tr>
<td>PSY 7580</td>
<td>Multivariate Data Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

### E. Electives: Total Credits

14-15 Hours

| Advised Electives | 14-15 credits |

*In consultation with his or her major advisor and dissertation committee, each student will choose 14-15 credit hours from courses in the College of Basic and Applied Sciences and the College of Education and Behavioral Science at the 6000 or 7000 level.*

Students in the first three concentrations should select their electives to ensure that they have completed at least 21 hours of coursework in their field of interest—21 hours with a BIOL rubric for the Biological Education concentration, 21 hours with a CHEM rubric for the Chemical Education concentration, and 21 hours with a MATH or STAT rubric for the Mathematics Education concentration.

### F. Research/Dissertation:

12 hours

| Dissertation Research | 12 credit hours |

| MSE 7640 | Dissertation Research | 12 credit hours |
Every student in the proposed Ph.D. in Mathematics and Science Education will be required to undertake, complete, and successfully defend a dissertation that will be interdisciplinary in nature. Students are only allowed to enroll in Dissertation Research following advancement to candidacy after successfully completing a preliminary exam.

G. Admission, Retention, and Graduation Requirements:

The program will be constituted in accordance with the existing university requirements described in the Graduate Catalog.

_Proposed Catalog Description Of Admissions Requirements_

Admissions will be based on a comprehensive assessment of the candidate’s qualifications, and will include an evaluation of the candidate’s undergraduate and graduate GPA, Graduate Record Examination scores, and letters of recommendation. Applicants must:

1. Formally apply for admission to the College of Graduate Studies and fulfill all requirements, including submission of official transcripts from all academic work and official scores on the Graduate Record Examination.

2. Have a grade point average (GPA) in previous academic degrees which indicates potential for success in advanced study. Successful applicants typically present a minimum 3.25 GPA in their most recent graduate degree or a minimum 3.0 GPA when entering with a bachelor’s degree.

3. Submit scores for the verbal, quantitative and analytical writing measures of the Graduate Record Examination (GRE) which indicate potential for success in the MSE program. Although specific minimum scores are not set, evaluation of scores is an important factor in admission decisions.

4. Provide letters of recommendation from at least three professors or professionals that address the candidate’s potential for successfully completing a Ph.D. in Mathematics and Science Education.

5. If they hold a master’s degree, have earned at least 24 semester hours of graduate mathematics, science, and/or education credit. Candidates holding only a baccalaureate degree will be expected to have earned an undergraduate degree in an area of mathematics or science.

6. International students must also meet the College of Graduate Studies requirement for proof of English language proficiency. This may be accomplished by submission of TOEFL, UMELI test, or IELTS scores that meet COGS requirements, or by successful completion of level 112 of ELS coursework

Candidates who do not meet the minimum requirements listed above but whose application materials indicate high potential for success may be admitted conditionally and would have to meet the conditions of their admission in the time stated to remain in the program of study.
Additional Application Information

1. Students currently in the Doctor of Arts Program in Chemistry at MTSU have the option of applying for admission to the Ph.D. program in Mathematics and Science Education. To do so, they must formally apply to the Mathematics and Science Education program and if accepted may not reenter the D.A. program. Doctor of Arts candidates making the transition to Ph.D. candidacy must satisfy all of the requirements of the MSE Ph.D. program.

2. The application deadline is February 15 for those wishing to be considered for a graduate assistantship in the fall. Late applications may be considered but admission and financial support in the form of an assistantship is not guaranteed.

Retention and Graduation Information

Students must meet the expectations of the University regarding adequate progress toward the degree. Specifically:

1. Doctoral students are expected to maintain a 3.25 minimum GPA for all graduate coursework.

2. Students may not enroll for more than one semester before full admission is granted.

3. Students must complete and submit an approved degree plan by the time 24 credits are completed.

4. Students are expected to consistently enroll and complete coursework in their area of study, making satisfactory progress toward attainment of the degree.

5. Once students have begun taking dissertation research (MSE 7640), they must enroll in at least one credit hour of dissertation research each semester until the dissertation is completed.

6. At least two thirds of the credits counted toward the degree must be at the 7000 level.

Additional Graduation Requirements

A major goal of the Ph.D. in Mathematics and Science Education is to produce graduates who are prepared to successfully pursue teaching and research careers in academia. To ensure that these students are prepared, they will be required to:

1. Make at least two research presentations at regional, national or international meetings as lead or co-author.

2. Be lead author or make significant contribution as co-author of two articles published, in press, or under review in high-quality peer-reviewed journals.
3. In collaboration with an MTSU faculty member serving as principal investigator, make a significant contribution to the development of at least one external grant proposal.

H. Describe any unique features such as interdepartmental cooperation, collaboration with other institutions, articulation, industry partnerships, etc.

By its very nature, the Ph.D. program in Mathematics and Science Education at MTSU will be based on interdepartmental cooperation utilizing faculty from two colleges (the College of Basic and Applied Sciences and the College of Education and Behavior Science) and encompassing at least six departments within these colleges (Biology, Chemistry, Educational Leadership, Elementary Education, Mathematical Sciences, and Psychology). Faculty and students involved in this program will also be working with the Tennessee Mathematics, Science, and Technology Education Center (TMSTEC), a center whose primary goal is to enhance the quality of mathematics, science, and technology education at all levels in Tennessee. In addition, MTSU is a member of the Oak Ridge Associated Universities (ORAU) and has access to the scientists and resources of the Oak Ridge National Laboratory.

Students in this program will be required to perform interdisciplinary doctoral-level research at the interface of mathematics or science and education that could involve the TMSTEC, TQRI, or the ORAU. In addition to interdisciplinary research, all students will share a common core of pedagogical knowledge based on coursework taken in educational research methodologies, qualitative and quantitative educational research designs, educational theories of teaching and learning, cognitive psychology, and instructional technology.

The mathematics and/or science content courses in the concentration core and electives represent the core mathematics and science content knowledge that students will need to become general experts in mathematics and/or science. The psychology and education courses within the program core represent the core pedagogical knowledge that students will need to become experts in educational theory and educational research methodologies. The science-specific education courses (Teaching and Learning Biology, Teaching and Learning in Chemistry, Teaching and Learning Mathematics, etc.) in the individual concentration cores, the Teaching Internship, the Seminar in Mathematics and Science Education, and Special Topics in Mathematics and Science Education will provide students with substantial experiences related to discipline-based education research.

This combination of a strong core curriculum and discipline specific research will ensure that graduates of the Ph.D. degree in Mathematics and Science Education are well-prepared in their primary science content areas and in the discipline-based education research issues that will be critical to the success of K-16 science and mathematics education in the 21st century.

**Interdisciplinary Nature of the Degree**

The interdisciplinary objectives of the program are addressed in several ways.

1. **Curriculum.** The curriculum includes formal coursework in several traditional disciplines in the sciences and education. The science disciplines include biology, chemistry, and mathematics. The education disciplines include educational leadership, elementary education, and psychology. The MSE Coordination Committee will have primary responsibility for ensuring that this curriculum is well-integrated and coherently focused on topics that satisfy the broad educational and research goals of the program.
2. **Faculty.** The faculty for the program will be drawn from several different departments within the College of Basic and Applied Sciences and the College of Education and Behavior Science. All faculty members teaching courses in the curriculum or supervising doctoral students will be active and engaged researchers who maintain graduate faculty membership. Further, faculty serving as dissertation chairs must hold doctoral-level membership on the graduate faculty of the university ([http://www.mtsu.edu/~graduate/pdf/Graduate_Faculty_Membership.pdf](http://www.mtsu.edu/~graduate/pdf/Graduate_Faculty_Membership.pdf)). Students in this program are assured of qualified and engaged mentorship as all graduate faculty undergo periodic review of their teaching and research credentials in order to maintain graduate faculty membership.

3. **MSE Coordination Committee.** Primary responsibility for the coherence of the curriculum lies with the MSE Coordination Committee. Together with the academic colleges and the College of Graduate Studies, this committee is responsible for selecting and appointing participating faculty members and for ensuring the coherence of (and adherence to) the program’s curriculum and research activities. The MSE Program Coordinator serves as chair of the MSE Coordination Committee.

4. **Special Topics.** The Special Topics in Mathematics and Science Education (MSE 7840) will consist of regularly-scheduled courses covering topics of interest to the students and faculty in the MSE program that will be presented at a level general enough to be of use to students in all four concentrations. These courses will be important components of the educational program, and will allow faculty to present topics based on that instructor’s specific areas of expertise, or to introduce new or cutting-edge topics that have not yet been incorporated in the existing curriculum at the discretion of the instructor.

5. **Seminars.** The Seminar in Mathematics and Science Education (MSE 7820) will consist of regularly-scheduled seminar courses covering topics of interest to students enrolled in the mathematics and science education Ph.D. program. These topics will be determined by the instructor and presented at a level general enough to be of use to students in all concentrations. These courses will also serve as opportunities for exposing students to a variety of perspectives on critical issues related to mathematics and science education.

6. **Administrative and Disciplinary Identity of the Program.** Because of the inherently interdisciplinary nature of this doctoral program, it will be jointly located within the College of Basic and Applied Sciences and the College of Education and Behavioral Science.

7. **Dissertation Topic and Committee Composition.** The dissertation topic will be decided between the student and his or her major advisor with input and oversight from the student’s dissertation committee. The student’s dissertation topic must involve original research questions relevant to the teaching and learning of a specific field of mathematics or science. The dissertation committee will consist of at least five faculty members including the major advisor. One of these faculty members must be a mathematician or scientist from the College of Basic and Applied Sciences, one must be from the College of Education and Behavioral Science, and one must be a designated mathematics or science education researcher from either college.
I. Description of New Courses:

**BIOL 6800**  Intermediate Life Science. Three credits. Prerequisite: An undergraduate biology course. Uses a process-oriented approach to the study of life with emphasis on execution and analysis of activities and experiments suited to actual classroom situations. (May not be used for biology majors or minors.)

**BIOL 7900**  Teaching and Learning Biology. Three credits. Provides an overview of how students learn biology and best practices for teaching biological concepts.

**MSE 7640**  Dissertation Research. One to six credits. Selection of a research problem, review of pertinent literature, collection and analysis of data, and composition of the dissertation. Once enrolled, students must register for at least one credit hour of dissertation research each semester until completion. S//U grading.

**MSE 7900**  Teaching and Learning Mathematics and Science. Three credits. Focus on theoretical and practical issues regarding how students learn mathematics and science, best practices for teaching mathematics and science topics, and issues from current literature on the teaching and learning of mathematics and science.

**MATH 7900**  Teaching and Learning Mathematics. Three credits. Prerequisite: Permission of instructor. Emphasis on current issues and trends of mathematics curriculum and their impact on mathematics instruction. Attention given to historical curriculum reform materials as well as standards-based materials. Theoretical as well as practical bases will be studied.

**MSE 7800**  Teaching Internship. Three credits. Teaching of a science or mathematics course under the supervision of an experienced faculty mentor. The mentor will assist the student in preparing a syllabus, developing and teaching the class, and writing and administering assessment activities. The mentor will also provide the student with constructive feedback based on the student’s teaching experiences.

**MSE 7820**  Seminar in Mathematics and Science Education. One credit. Required of graduate students specializing in Mathematics and Science Education. This course involves presentations on current issues or research developments in Mathematics and Science Education. May be repeated. [The course CHEM 7820 would be modified to fit this need.]

**MSE 7840**  Special Topics in Mathematics and Science Education. Two credits. Required of graduate students specializing in Mathematics and Science Education. This course provides an overview of current issues related to the teaching and learning of mathematics and science. May be repeated.

**PSCI 6800**  Intermediate Physical Science. Three credits. Prerequisite: An undergraduate course in a physical science. The basic concepts, laws, and principles of astronomy, chemistry, geology, and physics with particular emphasis on the
utilization of equipment and supplies available or easily improvised in actual school situations to illustrate these concepts, laws, and principles.

**SPSE 7170  Learning Theories and the Educational Process.** Three credits. Explores major learning theories as well as associated concepts that may be applied in a variety of learning situations including formal education settings, informal learning environments, and work-based settings. Course material will provide knowledge and understanding in order to inform the design of learning environments and instruction. Theories covered may include behaviorism, Bruner’s Constructivist Theory, Bandura’s Social Learning Theory, Vygotsky’s Situated Cognition and Activity Theory, Gagne’s Information Processing Theory, and Gardner’s Multiple Intelligence Theory.

**SPSE 7180  Qualitative Research Methods.** Three credits. Provides students with the basic skills needed to apply qualitative methods in order to engage in qualitative and naturalistic studies. Includes an exploration of theoretical factors, methods, and frameworks related to qualitative research in education; literature review structure; analysis and application of methods; designing qualitative and naturalistic inquiry studies; appropriate data for qualitative studies; data analysis, coding, and management; and reporting findings. Structured to assist students in designing and implementing a qualitative project. Students must identify a work-based issue and design a study that employs a qualitative approach.

**SPSE 7220  Advanced Educational Technology.** Three credits. Advanced teaching strategies using technology with PowerPoint, streaming-videos, webpage construction, audio & video recording/editing. Varied to meet the needs of the individual student.
FORMAT – PJ  (Program Performance and Justification)

Institution:              Middle Tennessee State University
Program Name:            Ph.D. in Mathematics and Science Education
Date:                    Fall, 2009

A.  Accreditation

There are no separate professional accrediting agencies for this particular degree, but the departments of the college maintain affiliation or membership in the major professional associations of their disciplines. Middle Tennessee State University has been accredited by the Southern Association of Colleges and Schools (SACS) since 1962. The Office of Institutional Effectiveness, Planning, and Research coordinates planning and review for ongoing SACS accreditation. The doctoral program will be integrated into the current institutional effectiveness plan of the College of Basic and Applied Sciences and the College of Education and Behavioral Science.

Additionally, this degree program will be reviewed by an external reviewer on a regular five-year cycle in accordance with University, TBR, and THEC policy.

MTSU currently awards Doctor of Philosophy degrees and the development of this new degree has no implications for continuing SACS accreditation of the university.

B.  Evaluation Plans

This Ph.D. program will undergo regular and systematic program evaluation. The assessment standards that are most appropriate for measuring the effectiveness and success of the proposed program are

- congruence with and demonstrated achievement of the mission of the University set forth in the goals and objectives of the institutional effectiveness plan for the Ph.D. program and consistency with the University’s Academic Master Plan;
- favorable external review;
- favorable exit interviews with students completing the Ph.D. program;
- favorable employment and career patterns for Ph.D. program students, including but not limited to, publication of original scholarly work in the field; and,
- how successfully students are able to meet the research objectives outlined in the graduation requirements, namely:
  - make at least two research presentations at regional, national or international meetings as the lead or co-author.
  - be lead author or make significant contribution as co-author of two articles published, in press, or under review in peer-reviewed journals.
  - make a significant contribution to the development of at least one external grant proposal.
The Office of Institutional Effectiveness is responsible for organizing and conducting official evaluations and programmatic reviews at MTSU in compliance with regular five-year external reviews mandated by TBR and THEC. The College of Graduate Studies also conducts a comprehensive review of every graduate program every five years. These reviews are conducted jointly and include development of a comprehensive self-study, student and alumni evaluations, employer data, and an on-site assessment of the program by a recognized expert serving as an external evaluator.

C. Evidence of Demand and Need

The proposed new degree in mathematics and science education has been developed in response to widespread recognition for the need of a new type of doctoral program in mathematics and science education—one that will produce graduates with an expansive set of professional skills that allow them to be agents of change in science and mathematics education as they serve as university science/mathematics faculty and policy advisors to national organizations. Evidence of recognition of this need is found in the recently published call by the National Academy of Sciences (Interdisciplinary Research Urged) for academic institutions to foster interdisciplinary research by changing degree programs, policies, and ideologies (NAS, 2004) and the national report entitled “Rising Above the Gathering Storm: Energizing and Employing American for a Brighter Future” (National Academy Press, 2005).

Educational Need: In the past, research and scholarship in the area of teaching and learning in mathematics and the sciences have been traditionally performed by faculty in education departments. While these faculty members are experts in pedagogy, few of them have enough content knowledge in a specific field of mathematics or science necessary to address specific pedagogical issues in these fields. At the same time, faculty in mathematics and science departments are experts in their field of mathematics or science, but few have the training necessary to address specific pedagogical issues in their fields. While both of these groups of professionals are addressing important problems in the teaching and learning of mathematics and sciences, they are often working in isolation without the benefit of the expert knowledge of their colleagues in the other areas of specialization. The need to change the way doctoral institutions educate future academic instructors has also been recognized by such national organizations such as the “Preparing Future Faculty” program (http://www.preparing-faculty.org) and Project Kaleidoscope (http://www.pkal.org). Other national reports (National Commission on Mathematics and Science Teaching for the 21st Century, 2000; Trends in International Mathematics and Science Study, 2003a and 2003b) show the great deficiencies of science and mathematics education at all levels in the United States. National organizations (including NSF, NRC, and NCTM) that are concerned with this growing problem recommend bringing new voices into the dialog by building a community of scholars that include experts with strong science content backgrounds as well as those with expertise in the research of teaching and learning.

This new Ph.D. program will bring together experts in mathematics, chemistry, biology, education, and psychology to address these issues from a research perspective that utilizes the expertise of a large variety of professionals. In addition to breaking down discipline and
administrative barriers that sometimes impede traditional Ph.D. programs, it is anticipated that this collaboration will result in the preparation of scholars who will be experts in designing and conducting research in the teaching and learning of the sciences. Graduates from this program will be in a position to improve mathematics and science education in a variety of ways.

- MSE graduates will have performed cutting-edge discipline-based educational research (DBER) on the teaching and learning of mathematics and science as part of their dissertation. This work will lead to improved instructional techniques and pedagogical materials for the mathematics and science classrooms.
- MSE graduates will have a good understanding of science, technology, engineering, and mathematics (STEM) content, general learning theories and pedagogies based on best-practices, and how these learning theories and pedagogies can be applied to improve STEM instruction.
- MSE graduates will be prepared to become university professors who will provide effective instructional opportunities in mathematics and science for all students, including pre-service K-12 mathematics and science teachers.
- MSE graduates will be qualified to become mathematics and/or science policy advisors to national boards, whose primary goals are to perform DBER research and to use the results of previous DBER research to improve mathematics and science instruction.

**Student Interest/Demand:** Data collected through the existing D.A. program in Chemistry show there are at least 75 potential candidates who are interested in the Chemistry Education option of the Ph.D. in Mathematics and Science Education (some prospective students have expressed reservations about the D.A. in Chemistry, but said they would reconsider once the Ph.D. program has been approved). These inquiries have come from at least 16 states across the country. The MTSU Biology Department conducted a regional survey of potential candidates, all of whom held master’s degrees, to assess interest and need for the proposed concentration among potential biology education students. Over 100 individuals indicated an interest in this option of the Ph.D. program. The Department of Mathematical Sciences at MTSU has collected data informally and found that a number of graduates from MTSU would be interested in obtaining a Ph.D. in Mathematics and Science Education with an emphasis in Mathematics Education. Furthermore, many of these potential students can not or do not wish to leave this region to pursue doctoral study. Research in graduate education conducted by the Council of Graduate Studies has shown that a significant percentage of prospective graduate students are not willing to relocate to pursue their degrees. SREB data (http://www.sreb.org) indicates that the demand for this type degree is strong and is unmet regionally. This program will be unique and will attract students from the southeast and beyond.

In addition, as Tennessee, the surrounding region, and the nation respond to this widespread need for more and better-prepared science and mathematics teachers at the K-12 level (NAP, 2005), new initiatives such as those recommended by the national Academies of Sciences and legislated through the America COMPETES Act will encourage thousands of persons to seek careers in science and mathematics education with a corresponding demand for college and university faculty. Thus, there is clearly student interest in and a long term need for such a program in this region.
Labor Market Evidence: The most recent comprehensive reviews of the status of doctoral programs in mathematics education (Reyes, 2007) and science education (Jablon, 2002) reveal critical shortages in the number of individuals with doctorates in science and mathematics education. Unfortunately, this shortfall coincides with, perhaps, the time of greatest need for individuals with the knowledge, experience and skills to make an impact in these fields. As a result of the national crisis in STEM education, more colleges and universities (as well as national agencies) are creating positions for individuals who are educated in discipline-based educational research (DBER) and who have expertise in a field of mathematics or science and in education. In fact, there are more positions advertised for these DBER experts than the current doctoral programs in mathematics and science education can fill with their graduates (Reys, 1999; Reys, 2000; NCLB, 2001; Reys, 2002; Ashman, 2004; Reys, 2006).

A recent search of the Chronicle of Higher Education (CHE) and Chemical & Engineering News (C&EN) job postings revealed at least 70 chemistry/science education faculty positions for which graduates from this program with the chemical education concentration would be qualified. Of these positions, 18 of them (25%) required the candidate to be involved in chemical education research (the others were for community college instructors, general chemistry coordinators, or laboratory coordinators). During the same time period, the existing chemical education programs in the nation produced fewer than 15 graduates. A recent search of the job postings in the CHE, C&EN, and a chemical education list-serve run through the Miami University of Ohio showed 185 chemistry/science education faculty positions for the period of January-December 2006. Of these positions, about 40% required the candidate to be involved in chemical education research. An article in C&EN pointed out that during this same time period 7% of chemists spent a majority of their efforts in the chemical education specialty while just over 1% had any training in this area (C&EN, 2006). Clearly, there is labor market demand for graduates of programs that provide specialized training in chemical education research. Establishing a chemical education concentration within the Mathematics and Science Education Ph.D. will provide MTSU with an opportunity to be a national leader in advancing this critically undersupplied field by establishing the only program of its kind in this region of the United States.

The situation for prospective students who would be interested in the biological education concentration is similar. For both timeframes, the number of biology/science education positions listed in the CHE was similar to the chemistry/science education positions. For example, there were 115 biology/science education faculty positions advertised from January-December 2006. In addition, ninety percent of the administrators at the southeastern community colleges surveyed said that graduates of this program would be highly competitive for faculty positions at their institutions. Over the next six years, they expect to advertise for, on average, one such position every other year. Thus, there is an interest in and need for a program addressing issues in biological education research in the southeast. Three programs in the country produce most of the biological education doctorates, and none of these institutions are in this region of the United States.

The number of institutions offering doctoral degrees in mathematics education is greater however, the number of doctoral graduates in mathematics education has averaged less than 100 per year for the past 20 years. In a search of 2000-01 position announcements in mathematics,
Reys (2002) found 134 announced positions in mathematics education, and a search of job postings in the CHE from January-December 2006 showed 157 mathematics education faculty positions. These results seem to suggest that the article “Doctorates in Mathematics Education: An Acute Shortage” published by Reys (2000) is still very relevant today. In this article, a study of the 48 leading doctoral-granting institutions found that 51% of their mathematics education faculty members are eligible to retire immediately, and 80% will reach retirement age within seven years. Clearly, the demand for mathematics education faculty exceeds the supply and the shortage of mathematics education faculty will very likely worsen in the future.

**Societal Need Evidence:** In the “Gathering Storm” report (NAP, 2005), the National Academy of Sciences highlighted the critical need for a higher degree of competence for all students (K-16) in the areas of mathematics and science. President Bush (Bush, 2006) also commented on this pressing need in his 2006 State of the Union Address and outlined the American Competitiveness Initiative, which included several ideas to address this issue (with substantial, proposed funding opportunities). A year later, President Bush again mentioned the need to strengthen the math and science skills of our children to prepare them for the jobs of the future (Bush, 2007). In addition, several bills related to addressing the national crisis in mathematics and science education were introduced in the first weeks of the 110th Congress (2007). These bills include the SPEAK Act (which would mandate the creation of a voluntary core of nationwide K-12 mathematics and science content standards), the SUCCESS Act (which would provide support to states which chose to upgrade their mathematics and science standards), the Science Accountability Act (which would require that states incorporate the results of the science assessments as well as reading and math scores in their NCLB accountability measures), and the 10,000 Teachers, 10 Million Minds Science and Math Scholarship Act (which would improve teacher preparation and increase the number of qualified math and science teachers). In addition, the America COMPETES Act, which will commit $43 billion for STEM education and innovation, was written by Congressman Bart Gordon (D-TN) and has been passed into law. Clearly, the President and the members of Congress believe there is a crisis in the current state of mathematics and science education and are working to commit funding to improve it. The need for experts in the fields of science and mathematics education to lead these initiatives is critical.

**Other Evidence of Need:** The Mathematics and Science Education Ph.D. program represents Middle Tennessee State University’s opportunity to help Tennessee and the nation address the STEM education crisis, and it is consistent with one of MTSU’s strategic niches (the preparation of K-16 teachers). This Ph.D. program supports the MTSU Academic Master Plan (AMP) since the new doctoral degree is “in an area where the need is critical” (p. 4) and it is a “new program that addresses needs consistent with the mission of MTSU” (p. 9). Additionally, the proposed Ph.D. addresses the specific criteria of the AMP that graduate programs “must adapt to the changing nature of society, the workplace, and the needs of industry and the professions they serve” (p. 8) ([http://www.mtsu.edu/~provost/masterplan/amp.pdf](http://www.mtsu.edu/~provost/masterplan/amp.pdf)).

**Program Duplication.** There is no program of this type in Tennessee. An Ed.D. program in Curriculum and Instruction with concentrations in Curriculum Planning, Elementary Education, Reading, Secondary Education, and Special Education exists at Tennessee State University. A Ph.D. program in the Department of Theory and Practice in Teacher Education exists at the University of Tennessee at Knoxville. This program offers a Ph.D. in Education with a
concentration in Teacher Education that has specializations in Mathematics Education and Science Education. The University of Memphis also has an Ed.D. in Instruction and Curriculum. Unlike each of the existing programs, which are located within a college or school of education, the MTSU Ph.D. degree program in mathematics and science education is housed jointly in the Colleges of Basic and Applied Sciences and Education and Behavioral Science.

Additionally, this proposed program is clearly different than those existing programs because it is a research-intensive program that requires strong content knowledge in mathematics and/or science at the graduate level, in addition to expertise in pedagogy and epistemology at the graduate level. This program also differs from the existing programs by including a primary focus on the preparation of mathematics and science education researchers focusing on DBER research studies performed at the interface of the mathematics or science discipline and pedagogy similar to the Ph.D. program in Science Education offered through the College of Science and Technology at the University of Southern Mississippi (an MTSU Peer Institution).

D. Human Resource Needs

It is of paramount interest to the University that doctoral students in this program receive quality education, training, and mentorship allowing them to succeed in their professional careers. As such, the University has made a serious commitment to support this program to ensure its short- and long-term viability and growth. MTSU presently has vibrant graduate programs at the master’s level in the primary disciplines represented in the MSE Ph.D. proposal. Additionally, the Department of Educational Leadership has master’s and educational specialist (Ed.S.) degrees, and the Department of Chemistry has a Doctor of Arts (D.A.) degree, all nationally competitive. MTSU also has the Tennessee Mathematics, Science & Technology Education Center (TMSTEC), one of only three STEM centers in Tennessee, that provides professional development for pre-service and in-service mathematics and science teachers in the middle Tennessee region. Because MTSU has strong existing programs in the areas of mathematics, science, and education, the University will be able to absorb the teaching and advising responsibilities required for the Ph.D. program in Mathematics and Science Education. Additional resource needs are addressed below.

1. Faculty:

The development of this proposed degree and the selection of concentrations were based upon the expertise of existing faculty within the Departments of Biology, Chemistry, Educational Leadership, Elementary and Special Education, Mathematical Sciences, and Psychology. As such, core faculty members for each proposed concentration have already been identified from the ranks of the MTSU graduate faculty who qualify to serve as doctoral mentors. As program enrollment increases, it is anticipated that additional faculty resources will be directed to this program. One additional faculty position is budgeted to beginning in year two. This position and any additional positions will be supported by increased enrollment. It is expected that potential for participation in the MSE doctoral program will be used as one of many criteria during the recruitment of new faculty in the involved departments and/or disciplines.

2. Administrative:
It is critical that this degree program benefit from strong faculty leadership by faculty members involved in and committed to the degree program. In order to accomplish this, the following oversight and support structure has been created.

The Mathematics and Science Education Coordination Committee (MSE CC) is primarily responsible for the coherence of the curriculum and with the overall selection, training, and mentorship of the graduate students. In partnership with the academic colleges and the College of Graduate Studies, this committee is responsible for selecting and appointing participating faculty members and for insuring the coherence of (and adherence to) the program’s curriculum. In addition, the MSE CC will meet to determine whether each student’s dissertation topic (as approved by the student’s dissertation committee) represents original research in mathematics or science education and to formally approve the student’s dissertation topic.

The MSE CC will be chaired by the coordinator of the MSE program, who will be appointed by the Deans of CBAS and CEBS. This individual will receive six credits of reassigned time to support recruitment, admissions, and coordination. The department in which this person is tenured will be provided adjunct replacement for the proportionate reduction of teaching service to the department, and the MSE program coordinator will receive a stipend for summer service. In addition to the MSE coordinator, the committee will be composed of the coordinators of the four concentrations. These individuals will also be appointed by the Deans of CBAS and CEBS. The CBAS and CEBS deans or their designees will serve as ex-officio members of the committee. The concentration coordinators will be responsible for communicating information from the MSE CC back to their faculty and for bringing the concerns of their faculty to the attention of the MSE CC. The MSE CC will meet at least once every semester and more frequently as required. These procedures will be re-evaluated on an annual basis.

E. Other Needs for Support

1. Library:

The MTSU library has significant existing resources to support the delivery of the proposed Ph.D. However, to fully support a high quality doctoral program that has at its core a focus on original research in mathematics and science education, additional journal, text, and database subscriptions will be acquired. With this in mind, the proposal includes one-time ($5,000 in each of the first three years) and recurring funding ($10,000/year) to support the acquisition of additional library resources (see Format FP).

2. Instructional Facilities:

The University has adequate instructional, laboratory, and faculty office space to support the creation of this degree. The construction of the new 258,000 ft² MTSU Sciences Building (with science research and educational facilities) to be completed in 2011, and a new education building to be constructed on the MTSU campus will significantly enhance the quality and the quantity of available space for this endeavor. Space will be available for mathematics and science education research in the new science building (including interview rooms and a video
control room for recording and analyzing student interviews). In addition, research space will be available in an existing science building for the mathematics and science education research once the new science building is occupied. Taken together, the new and renovated research space available in these two buildings will be adequate for the successful implementation of this Ph.D. program.

3. **Instructional Equipment:**

A Ph.D. program in Mathematics and Science Education needs to be in a position to utilize the latest instructional technologies. The completion of the new science building and the new education building will occur within the first two years of this program, and it is anticipated that each of these buildings will be equipped with state-of-the-art instructional technology equipment that will be used by the faculty and students in this program.

4. **Other Needs:**

Assistantships are vital to the success of the program in recruiting high potential graduate students. This proposal includes resources to create 18 assistantships at $18,000 per student per year plus tuition remission. Five assistantships will be created in year one, three in year two, four in year three, four in year four, and two in year five.

Other resources committed to this proposed degree include additional funds to offset travel-related expenses associated with dissemination of research results, recruitment of students, and promotion of the degree program. In addition to travel expenses, the University has committed funds specifically for the recruitment of students. This includes web page design, print and promotional media and postage.
FORMAT – SE (Student Enrollment Projections)

Estimate the headcount and full-time equated enrollment and the number of graduates for a complete program cycle.

<table>
<thead>
<tr>
<th>Year</th>
<th>Full-Time(^1) Headcount</th>
<th>Part-time Headcount</th>
<th>Total Year Headcount</th>
<th>FTE</th>
<th>Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>5</td>
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<tr>
<td>2</td>
<td>8</td>
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<td>8</td>
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<tr>
<td>3</td>
<td>12</td>
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<tr>
<td>4</td>
<td>16</td>
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<td>1</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
<td>0</td>
<td>20</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>

\(^1\)Full-time students are enrolled in 9 or more hours.

FTE is calculated based upon the following assumptions:

It is anticipated that several students currently enrolled in the existing Doctor of Arts in Chemistry degree program will apply for admission into the Ph.D. in Mathematics and Science Education program. As a result, front-end enrollment may be slightly higher than what would normally be expected of a new Ph.D. program at start-up. Students in the existing Doctor of Arts program who cannot meet the admission requirements or elect not to apply for the Ph.D. program would have up to seven semesters past the start date of the Ph.D. to complete the D.A. degree (Fall 2011).

It is anticipated that students entering with a bachelor’s degree in mathematics or an area of science will take five years to graduate from the Ph.D. in Mathematics and Science Education program. Students entering with a master’s or specialist’s degree will probably take four years to graduate from this program.
THEC Financial Estimate Form
Middle Tennessee State University
Ph.D. in Mathematics and Science Education

Five-year projections are required for baccalaureate and post-baccalaureate programs and certificates. Three-year projections are required for associate degrees and undergraduate certificates. Projections should include cost of living increases per year.

<table>
<thead>
<tr>
<th>I. Expenditures</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. One-time Expenditures</strong></td>
<td>$5,000</td>
<td>$15,000</td>
<td>$5,000</td>
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<td>$-</td>
</tr>
<tr>
<td>New/Renovated Space</td>
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<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Equipment</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Library</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Consultants</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Travel</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Other</td>
<td>$-</td>
<td>$10,000</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td><strong>Sub-Total One-time</strong></td>
<td>$5,000</td>
<td>$15,000</td>
<td>$5,000</td>
<td>$-</td>
<td>$-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>B. Recurring Expenditures</strong></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Administration</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salary</td>
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<td>$14,400</td>
<td>$14,400</td>
<td>$14,400</td>
<td>$14,400</td>
</tr>
<tr>
<td>Benefits</td>
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<td>$1,200</td>
<td>$1,200</td>
<td>$1,200</td>
<td>$1,200</td>
</tr>
<tr>
<td><strong>Sub-Total Administration</strong></td>
<td>$15,600</td>
<td>$15,600</td>
<td>$15,600</td>
<td>$15,600</td>
<td>$15,600</td>
</tr>
<tr>
<td><strong>Faculty</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salary</td>
<td>$-</td>
<td>$60,000</td>
<td>$63,000</td>
<td>$66,150</td>
<td>$69,458</td>
</tr>
<tr>
<td>Benefits</td>
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<td>$21,000</td>
<td>$22,050</td>
<td>$23,153</td>
<td>$24,310</td>
</tr>
<tr>
<td><strong>Sub-Total Faculty</strong></td>
<td>$-</td>
<td>$81,000</td>
<td>$85,050</td>
<td>$89,303</td>
<td>$93,768</td>
</tr>
<tr>
<td><strong>Support Staff</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salary</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Benefits</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td><strong>Sub-Total Support Staff</strong></td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Graduate Assistants</strong></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>$90,000</td>
<td>$144,000</td>
<td>$216,000</td>
<td>$288,000</td>
<td>$324,000</td>
</tr>
<tr>
<td>Benefits</td>
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<td>$1,200</td>
<td>$1,200</td>
<td>$1,200</td>
<td>$1,200</td>
</tr>
</tbody>
</table>

| **Tuition and Fees* (See Below)** | $42,810 | $71,921 | $113,275 | $158,585 | $187,329 |
| **Sub-Total Graduate Assistants** | $132,810 | $215,921 | $329,275 | $446,585 | $511,329 |

<table>
<thead>
<tr>
<th><strong>Operating</strong></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Printing</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Equipment</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>Other</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td><strong>Sub-Total Operating</strong></td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
</tr>
</tbody>
</table>

| **Total Recurring** | $178,410 | $342,521 | $459,925 | $581,488 | $650,697 |

| **TOTAL EXPENDITURES (A+B)** | $183,410 | $357,521 | $464,925 | $581,488 | $650,697 |

*If tuition and fees for Graduate Assistants are included, please provide the following information.

| Base Tuition and Fees Rate | $8,562.00 | $8,990.10 | $9,439.61 | $9,911.59 | $10,407.16 |
| Number of Graduate Assistants | 5 | 8 | 12 | 16 | 18 |
II. Revenue

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees¹</td>
<td>42,810</td>
<td>71,921</td>
<td>113,275</td>
<td>158,585</td>
<td>187,329</td>
</tr>
<tr>
<td>Institutional Reallocations²</td>
<td>140,600</td>
<td>285,600</td>
<td>351,650</td>
<td>422,903</td>
<td>463,368</td>
</tr>
<tr>
<td>Federal Grants³</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Private Grants or Gifts¹</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Other⁴</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td><strong>TOTAL REVENUES</strong></td>
<td>$183,410</td>
<td>$357,521</td>
<td>$464,925</td>
<td>$581,488</td>
<td>$650,697</td>
</tr>
</tbody>
</table>

Notes:

1. In what year is tuition and fee revenue expected to be generated and explain any differential fees. Tuition and fees include maintenance fees, out-of-state tuition, and any applicable earmarked fees for the program.

   Tuition and Fees are calculated conservatively, using projected 2008 in-state tuition rates and factoring a 5% annual tuition rate increase.

2. Please identify the source(s) of the institutional reallocations, and grant matching requirements if applicable.

   The amount is derived from reallocation of existing resources including technology access fees and indirect costs collected on grants and contracts. Additionally, funds allocated to Gas in the Chemistry DA program will be reallocated to this program. As external funding is obtained, institutional support will be reduced accordingly.

3. Please provide the source(s) of the Federal Grant including the granting department and CFDA number.

4. Please provide the name of the organization(s) or individual(s) providing grant(s) or gift(s).

5. Please provide information regarding other sources of the funding.

   NOTES FOR EXPENSES:
   
   Graduate Coordinator has six credit hours reassigned each semester, in addition to a $6,000 stipend in the summer. Travel costs are included to provide for faculty, student, and visiting speakers' travel in support of the program. Other one-time expenses include $10,000 for start-up funds for a new faculty in year-two. Other recurring expenses include funds for print and online journal subscriptions and database subscriptions.
Appendices
1. Structure of the MSE Curriculum 24
2. Typical Course Schedule for Students in this Program 26
3. Architect’s Drawings of new MTSU Sciences Building 28
4. Faculty Vitae 36
Appendix 1 – Structure of the MSE Curriculum

Successful mathematics and science educators are required to have content mastery of mathematics and/or science, have mastery of educational theories, research methodologies, and best practices; and have substantial experiences with discipline-based educational research (DBER) at the interface between the fields of mathematics or science and education. The diagram below shows how the curriculum in the proposed Ph.D. will guarantee that students reach expert-level status in each of these three areas.

Mathematics & Science Education

Education

- PSY/SPSE courses in Program Core (21 hours)
- Electives (up to 15 hours)

- BIOL/CHEM/ MATH/MSE 7900 Course (3 hours)
- MSE courses in Program Core (9 hours)
  - Internship
  - Seminars
  - Special Topics

- Benchmarks
  - External Grant Writing
  - Peer-Reviewed Papers
  - National Presentations

- Dissertation Research (12 hours)

Mathematics & Science

- BIOL/CHEM/ MATH/PSCI/PSY courses in Conc. Core (15 hours)
- Electives (up to 15 hours)

Mathematics & Science: Students in each concentration will take 15 hours of mathematics or science content courses. For the Biological Education, the Chemical Education, and the Mathematics Education concentrations, students will focus on developing a broad but strong content knowledge in the one content area. When these candidates graduate and are hired to teach in their content area (biology, chemistry, or mathematics), it is very likely that they will be asked to teach introductory-level courses. Teaching these courses requires the educator to have a broad but strong content knowledge of the entire field as a whole. For some candidates (i.e., those enrolled in the Interdisciplinary Science Education concentration), it will make more sense to have a broad but strong content knowledge of mathematics and the sciences as a whole. This concentration allows these students to take courses in all three areas (biology and life science,
chemistry and physical science, and mathematics). If the D.A. in Chemistry is any indication, most of the restricted elective courses taken by these students will be in the mathematics and science content areas.

Education: Students in this program will take 21 hours of education courses to develop a strong content knowledge of education and pedagogy. These courses include learning theories, cognitive psychology, qualitative and quantitative research methods, educational research methodology, and instructional technology. These students may also opt to take additional education courses as part of their restricted electives.

Mathematics & Science Education: Students in this program will also take courses that help them develop their pedagogical content knowledge (i.e., the knowledge of teaching and learning mathematics or the sciences). These courses include a teaching internship, seminars in mathematics and science education, and special topics courses in mathematics and science education. In addition, each of them will take a Teaching and Learning course that will focus on issues related to pedagogical content knowledge in a specific field of mathematics or science.

The courses in the three areas will provide the breadth of knowledge and experiences needed by these students to complete the Ph.D. degree. Their depth of expertise will be demonstrated by their doctoral dissertation research in an area of discipline-based educational research (DBER). As part of their doctoral research, these students will be required to make substantial contributions to a grant proposal sent to an external funding agency, write and submit two peer-reviewed papers, and give two presentations at national or regional mathematics and science education conferences.
Appendix 2 - Typical Course Schedule for Students in this Program

Students in this program are expected to take courses in the program core and the concentration core and electives at the same time. Students should consider taking ‘Learning Theories and the Educational Process’ in the program core before enrolling in the mathematics- or science-specific teaching and learning courses in the concentration core and electives. Students should focus on taking required courses prior to choosing a major advisor and a dissertation committee since decisions regarding the concentration electives should be made in consultation with these faculty members. After completing the required courses, the student will take a written preliminary exam designed by the student’s major advisor and his or her dissertation committee.

Since there are four concentrations within this program and some students will enter with graduate credit (e.g., Master’s or Specialist’s degrees), it is difficult to envision a single suggested schedule. In every case, the students’ advisory committee, or dissertation committee if they have advanced to candidacy, will conduct an annual evaluation of their progress toward completion of degree requirements.

An example of a possible schedule for a student entering with a bachelor’s degree in chemistry who chose to receive the Chemical Education concentration is shown below (courses with an [E] next to them represent courses from the restricted electives). The student is enrolled for only 6 hours because it is assumed that this student’s graduate assistantship will be to teach laboratory courses. Only 12 of the 20 hours of Dissertation Research (MSE 7640) would be applied toward the program of study.

Fall 1
   CHEM 6100 Intermediate Organic Chemistry (3)
   SPSE 7170 Learning Theories and the Educational Process (3)

Spring 1
   CHEM 6230 Intermediate Analytical Chemistry (4)
   MSE 7840 Special Topics in Mathematics and Science Education (2)

Summer 1
   CHEM 6400 Intermediate Inorganic Chemistry (3)
   PSY 7190 Advanced Cognitive Psychology (3)

Fall 2
   CHEM 7420 Advanced Topics in Inorganic Chemistry [E] (3)
   PSY 7290 Psychological Statistics: Anova (3)

Spring 2
   CHEM 6500 Intermediate Biochemistry (3)
   PSY 7280 Psychological Statistics: Regression (3)
<table>
<thead>
<tr>
<th>Semester</th>
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<th>Course Title</th>
<th>Credits</th>
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<td>CHEM 7900</td>
<td>Teaching and Learning in Chemistry (3)</td>
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<tr>
<td></td>
<td>SPSE 7180</td>
<td>Qualitative Research Methods (3)</td>
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<tr>
<td>Fall 3</td>
<td>FOED 7520</td>
<td>Problems of Evaluation in Higher Education [E] (3)</td>
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<tr>
<td></td>
<td>SPSE 7220</td>
<td>Advanced Educational Technology (3)</td>
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<tr>
<td>Spring 3</td>
<td>CHEM 6300</td>
<td>Intermediate Physical Chemistry (3)</td>
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<tr>
<td></td>
<td>MSE 7820</td>
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<tr>
<td></td>
<td>MSE 7840</td>
<td>Special Topics in Mathematics and Science Education (2)</td>
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<td>Summer 3</td>
<td>CHEM 6870</td>
<td>Chemistry Research [E] (3)</td>
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<td>SPSE 7010</td>
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<td>Fall 4</td>
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<td>Teaching Internship (3)</td>
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<td></td>
<td>PSCI 6800</td>
<td>Intermediate Physical Science [E] (3)</td>
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<td>Spring 4</td>
<td>MATH 6330</td>
<td>Algebra for Teachers [E] (3)</td>
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<td>MSE 7640</td>
<td>Dissertation Research (2)</td>
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<td>Seminar in Mathematics and Science Education (1)</td>
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<tr>
<td>Spring 5</td>
<td>MSE 7640</td>
<td>Dissertation Research (6)</td>
<td></td>
</tr>
</tbody>
</table>
Architect’s drawing not included…
Appendix 5 - Faculty Vitae

Biology
Rutledge, Michael L.
Sadler, Kim C.
Seipelt, Rebecca L.

Chemistry
Handy, Scott T.
Phelps, Amy J.
Sanger, Michael J.
Wulfsberg, Gary

Educational Leadership
Butler, Kyle
Craig, Dorothy V.
Snead, Donald
Watts, Rebecca

Elementary and Special Education
Burriss, Kathleen G.

Mathematical Sciences
Chappell, Michaele F.
Enderson, Mary C.
Kimmins, Dovie
Miller, L. Diane
Rowell, Ginger H.

Psychology
Kim, Jwa K.
Langston, William
Short, Rick J.
Michael L. Rutledge

Professor of Biology
Middle Tennessee State University
Murfreesboro, TN 37132
Phone: 615.898.5951
Email: mrutledg@mtsu.edu

EDUCATION

1996  Doctor of Education in Science (Biology), Ball State University
1988  Master of Science (Biology), Middle Tennessee State University
1985  Bachelor of Science (Biology/Math), Middle Tennessee State University

PROFESSIONAL EXPERIENCE

2006 – present  Professor of Biology
Middle Tennessee State University
2001 – 2006  Associate Professor of Biology
Middle Tennessee State University
1996 – 2001  Assistant Professor of Biology
Middle Tennessee State University
1995-1996  Adjunct Instructor of Biology
Ivy-Tech Community College, Indianapolis/Anderson/Muncie, IN
1988-1992  Science/Math Teacher
Dalton Independent High School, Dalton, GA
1987-1988  Instructor of Biology
Belmont University, Nashville Tennessee
1986-1987  Biology Instructor
The Webb School, Bell Buckle, Tennessee

TEACHING RESPONSIBILITIES

Introductory Biology (Exploring Life—BIOL 1030); Life Science for Teachers (BIOL 3000).

RESEARCH SPECIALIZATION
Biological Education with an emphasis on evolutionary biology and the nature of science as a method of inquiry.

**PUBLICATIONS**


MANUSCRIPTS in SUBMISSION/PREPARATION


PRESENTATIONS


Teachers of Science, Charleston, West Virginia.


**ADDITIONAL PROFESSIONAL SERVICE & EXPERIENCE**


Network Scientist: National Association of Biology Teachers

Resource Scientist: Tennessee Academy of Science

Event Supervisor, Tennessee Regional Science Olympiad

Reviewer for the North Carolina Environmental Science Consortium.
Kim Cleary Sadler  
2314 Canterbury Chase  
60  
Murfreesboro, TN  37128  
615/896-1908

Middle Tennessee State University  
Dept of Biology – PO Box  
60  
Murfreesboro, TN  37132  
615/904-8283 ksadler@mtsu.edu

EDUCATION

Ed.D., Curriculum and Instruction  
Tennessee State University, 2002  
Ed.S., Curriculum and Instruction  
Middle Tennessee State University, 1998  
M.S., Botany and Ecology  
Middle Tennessee State University, 1979  
B.S., Biology  
Middle Tennessee State University, 1976

WORK EXPERIENCE

Biology Faculty Member, Middle Tennessee State University, Murfreesboro, Tennessee.  
Present - August 2002  
A lecture instructor teaching BIOL 1030 Topics in Biology; BIOL 3000 Life Science for Elementary Education Majors; BIOL 3230/6230 Introduction to Biological Literature; BIOL 4280 Undergraduate Research; BIOL 6620 Biological Research.

Adjunct Biology Faculty Member, Middle Tennessee State University, Murfreesboro, Tennessee.  
July 2002 - August 1989  
- A lecture instructor teaching introductory biology, life science for elementary education majors, university seminar; additional teaching responsibilities have included laboratory classes: zoology, botany, introductory biology, anatomy and physiology.

Biology Consultant  
- Assistant Director and Environmental Education consultant for MTSU Center for Environmental Education.  Present - September 1995.  
- Science Mentor for Renaissance Program, science advisor for MTSU preservice students in K-4 certification program. Present-August 2002  
- Book Reviewer for high school biology textbooks through Tennessee Academy of Science volunteer science textbook accuracy review program. Present - September 2002  
- Test Bank Reviewer for Content Connections. Present - September 2002  
- Project director for GLOBE, a science data-reporting network, sponsored through Murfreesboro City Schools ATLAS Community Learning grant. Present-July 2000  
- Facilitator-trainer for Environmental Science high school course curriculum revision in Rutherford County, training teachers in inquiry-based learning strategies. Present-August 2000  
- Key Leader for NSTA Building a Presence for Science in Tennessee, a network that promotes standards-based science teaching and learning. Present-July 1999  
- Project director and facilitator-trainer for Green Shopping in Tennessee, a consumer education program to provide environmentally positive alternatives when

- Middle Tennessee regional director for GET WET!, water education grant award program, serving 11 schools in Middle Tennessee. December 2000- January 1999
- Educational Director for Tims Ford State Park, responsible for development and implementation of educational programs. July 1999-August 1996
- Co-director for We’re Involved in Real Discoveries, life science training program for Murfreesboro City Schools. June 1999-July 1998
- Co-director for Environmental Education for Everyone, an OBIS (Outdoor Biology Instructional Strategies) training and curriculum development program. May 1999-July 1998
- SCIENCEWORKS facilitator for Children’s Discovery House, interactive, hands-on classes on a variety of science topics. May 1998-September 1995
- Served as a biology advisor for City of Glen Rock, Pennsylvania regarding water treatment and water quality maintenance; served on planning commission, assessing impact of housing developments in the community. December 1987-December 1981

High School Biology Teacher, Cedar Hall Academy, Christiana, Tennessee and Rutherford County Home School Association, Murfreesboro, Tennessee

- Taught college preparatory Biology I and II

Biologist-Instructor, Operator Training Center, State of Tennessee, Division of Water Quality Control, Murfreesboro, Tennessee

- Instructor for water and wastewater plant personnel in proper maintenance and laboratory controls
- Responsible for course development and instructional video development
- Trainer for personnel in American Red Cross First Aid and CPR

PUBLICATIONS AND CREATIVE WORK

Peer Reviewed Journal Articles


Sadler, K. 2003. The Effectiveness of Cooperative Learning as an Instructional Strategy to Increase Biological Literacy and Academic Achievement in a Large, Non-majors College Biology Class. College Park, MD: Clearinghouse on Assessment and Evaluation. (ERIC Document Reproduction Service No. ED471548)


Manuscript Accepted, Under Revision for Submission
Sadler, K, Smith-Walters, C, Ring, T, & Lasater, M. Accepted May 2005, with revisions. School, University, and Community Partnerships: A Descriptive Study of an Outdoor Science Laboratory in Urban Elementary School, School Science and Mathematics.

Book Chapter
Sadler, K, Smith-Walters, C, Lasater, M, & Ring, T. April 2006 publication date. Thinking Outside the Box- No Child Left Inside at Campus School. NSTA Monograph of Exemplary K-4 Science Programs.

Textbook Ancillary

Selected Creative Work and Multi Media Publications

Research Presentations and Published Abstracts
*Abstracts are peer reviewed before acceptance for presentation at the meeting


Selected Public Service Presentations and Workshops
Tour of the Cedar Glades for Regional National Science Teachers Association Conference; 3 hour guided tour with 28 NSTA teachers; Nashville, TN; December 2005

Geology Rules and Ecology of the Cedar Glades for Regional National Science Teachers Association Conference; 1 hour interactive workshop to showcase the Center for Cedar Glade Studies; Nashville, TN; December 2005

Flying WILD: A Global Economic Connection for North American Environmental Education Association International Conference; Two-hour workshop; Albuquerque, NM October 2005

Swimming Into Life Science, workshop and presentation at the National Association for Biology Teachers; Milwaukee, WI; October 2005

Middle TN State University’s Center for Environmental Education, poster presentation at National Association for Biology Teachers K-12 Outreach Section, October 2005

Here’s Looking at You! Presentation for Expanding Your Horizons in Math and Science, MTSU, October 2004

MTSU Faculty and Creative Research Showcase, Demonstration representative for Center for Environmental Education, October 2004

Introduction to the Microscope—Two Hour Training Session, facilitator for the Microscope Program for Campus School 4th grade, Elementary School, March 2004

Introduction to the Microscope—Two Hour Training Session, facilitator for Microscope Program for Campus School 5th grade, Elementary School, February 2004

Introduction to the Microscope—Two Hour Training Session, facilitator for Camp PRISM—Microscope Program for Gifted Students 6th grade, January 2004

Plan It with Plan-It 3, presentation for the Tennessee Science Teachers Association State Conference; Franklin, Tennessee; November 2003

Take a PEEK!—Packing in Environmental Education for Kids, co-facilitator for the North American Association for Environmental Education Conference; Anchorage, Alaska; October 2003
CaPOW—Catfish Partners Out of Water, co-facilitator for the North American Association for Environmental Education Conference; Anchorage, Alaska; October 2003

Here’s Looking at You! Presenter for Expanding Your Horizons in Math and Science, MTSU, October 2003

Show Me the Money! co-facilitator for the Tennessee Environmental Education Association Conference; Fall Creek Falls, Tennessee; September 2003

Building a Presence for Science, Phase II, host for the Workshop NSTA’s Building a Presence for Science, MTSU, June 2003

Microbes and Microscopes, facilitator for Camp Prism Practice in Science and Mathematics, MTSU, June 2003

Microscopes and Me! Facilitator for the Building a Bridge to College camp for Middle School Students, MTSU, June 2003

Magnificent Microbes, co-director and facilitator for the Microbiology Institute, hosted by MTSU and Discovery Center, June 2003


Like It? Love It? Want Some More of It? – Threatened and Endangered Species in the Southeast, co-facilitator for the National Science Teacher Associations Regional Conference; Louisville, Kentucky; October 2002

Shop ‗til you Stop, co-facilitator for MTSU’s teleconferencing video presentation, Murfreesboro, Tennessee, October 2002

The Eyes Have It!, presenter for afternoon session for Expanding Your Horizons in Math and Science, Murfreesboro, Tennessee, October 2002

Project Learning Tree, co-facilitator for Expanding Your Horizons in Math and Science, half day adult session, Murfreesboro, Tennessee, October 2002


Water Education for Tennessee Teachers, presenter for half-day professional development for St. Rose School, Murfreesboro, Tennessee, August 2002

Tennessee Science Standards and Natural Selection, co-facilitator for the Science Institute; Columbia, Tennessee, June 2002

GLOBE Soils Training, co-facilitator for GLOBE training sessions for Murfreesboro City Schools and MTSU Faculty, Murfreesboro, Tennessee, May 2002
Sink or Swim, co-presenter at Pathways to Science International Conference, Arlington, VA, April 2002

Plan it with Plan-It3: Explore the Forest, co-presenter at the National Science Teachers Association Regional Conference; Memphis, Tennessee; December 2001

Here’s Looking at You, Kid! Presentation at the Expanding Your Horizons in Science and Math Conference, Murfreesboro, Tennessee, October 2001

Savvy Shopping, presentation to Recycle Rutherford, Murfreesboro, Tennessee, October 2001

Rutherford County Middle Schools Science Ecology Workshop, facilitator-trainer, Murfreesboro, Tennessee, June 2001

Murfreesboro City Schools GLOBE Teacher Training Workshop, co-facilitator, Murfreesboro, Tennessee, May 2001

Rutherford County Environmental Science Training Workshops, facilitator-trainer, Murfreesboro, Tennessee, May 2001-September 2000

Shopping Green in Tennessee, presentation at the Children’s Discovery House, Murfreesboro, Tennessee, March 2001

DNA, Genes, and More, presentation at Rutherford County Middle School Science Workshop, Murfreesboro, Tennessee, March 2001


Trees are Terrific! presentation at the Children’s Discovery House, Murfreesboro, Tennessee, November 2000

Trees in the Forest Workshop, co-presenter at Rutherford County training workshop, Murfreesboro, Tennessee, March 2000

GET WET! presentation at Tennessee Environmental Education Association regional conference, Nashville, Tennessee, March 2000

Noxious Neighbors, co-presenter at MTSU Video Conferencing Workshop, Murfreesboro, Tennessee, February 2000

Celebration of the Urban Forest, coordinator for a day of hiking and meeting an environmental specialist on the trail, Murfreesboro Greenway Trail System, May and September 2000

REACH (Raising Environmental Awareness in Children), co-presenter at the National Conference for Teachers of Mathematics, Chicago, Illinois, April 2000

Project Ecology and the Gateway Standards Workshop, co-presenter for Rutherford County Middle Schools, Murfreesboro, Tennessee, February 2000

SELECTED PROPOSALS FUNDED
2005 Mathematics and Science Partnership – Science/Mathematics Synergies: Earth, Space, and Environment, co-PI $932,384
2005 MTSU Public Service Grant – The Top Trees at MT, PI - $1,500
2004 National Geographic-Special Habitats of Tennessee, Center for EE collaborative partner with M. Ball, Carson Newman, co-PI $50,000
2004 MTSU Public Service Grant- Hypothesis Testing With Elementary School Students, collaboration with A.B. Cahoon (PI), $431
2004 MTSU Faculty Instructional Development Grant- Microworld Adventures with Biology 3000 Preservice Teachers, PI - $4,756
2004 International Paper- “Tree”mendous Efforts, co-PI $2,500
2003 EPA- Backpack Biology, co-PI $5,000
2003 Congressional Funds- Center for Cedar Glades Studies at MTSU, co-PI $193,000
2003 Pfizer Foundation- Magnificent Microbes, PI - $22,710
2002 MTSU National Women’s History Month – Carole Baldwin, Marine Biologist, mini grant award, PI - $1,500
2002 MTSU Public Service Grant – Expanding Your Horizons in Science and Mathematics – Parents, Teachers, and Youth Leaders, co-PI $745
2002 MTSU Public Service Grant – Breakfast of Champions, co-PI $3,000
2001 THEC Grant - A Teacher Partnership with Maury, Lewis, and Williamson County, co-PI $40,500
2000 TDEC/EPA Savvy Shopping Grant - Green Shopping for Tennessee, co-PI $23,000
2000 Toyota TIME Grant - Trails in Math Education, co-PI $10,000

AWARDS, HONORS, HONOR SOCIETIES
2006 MTSU College of Basic & Applied Science Overall Excellence Award
2006 MTSU College of Basic & Applied Science Excellence in Grantsmanship Award
2006 MTSU Foundation Public Service Award of the Year Winner
2005 MTSU Foundation Public Service Award of the Year Nominee
2004 MTSU College of Basic & Applied Science Public Service Award
2002 EFG Curriculum Collaborative Community Connections Honor
2001 Recognized for Making a Difference in the Life of a Student
2000 GAANN Fellowship Award – declined

PROFESSIONAL SOCIETIES
Association for College and University Biology Educators
Association for Science Teacher Education
Ecological Society of America – SEEDS grant committee
Mid-South Educational Research Association
National Association of Biology Teachers – Prof Development committee member
National Association for Research in Science Teaching
National Science Teachers Association – JCST review board
North American Association of Environmental Educators – Research committee
Society for College Science Teachers – TN membership committee Chair
Tennessee Academy of Science – Education committee member & section chair
Tennessee Environmental Educators Association
Tennessee Science Teachers Association
PROFESSIONAL COMMITTEES

ASTE – conference proposal reviewer
Ecological Society of America – Teaching Issues in Ecology publication reviewer;
   SEEDS grant reviewer
NARST – conference review panel, college teaching section
NSTA - Journal of College Science Teaching Publication Review Panel
NSTA/NCATE - Science Review Board
Tennessee Academy of Science – Publicity & Education Committee; TAS publication
   reviewer, education section; Math and Science Education section chair Fall 2004
   & 2006
Rebecca L. Seipelt, Ph.D.
Associate Professor of Biology/Biotechnology Resource Group Director
Master of Professional Science Coordinator, Biotechnology
Middle Tennessee State University
1301 East Main Street, Box 60, Murfreesboro, TN 37127
rseipelt@mtsu.edu, (615) 904-8393, FAX (615)898-5093

Education

- **Ph.D. Medical Microbiology, and Immunology.** 1996. University of Kentucky, Lexington, Kentucky. “Regulated alternative mRNA processing in tissue culture cells and transgenic mice.”

Research Experience

- **Assistant/Associate Professor.** Biology Department. Middle Tennessee State University, 1999-present.
- **Graduate Student.** Department of Microbiology and Immunology. University of Kentucky. Immunoglobulin Gene Expression in B Cell Development. 1991-1996. Advisor: Dr. Martha Peterson.
- **Research Student.** Microbiology and Immunology Department/Biology Department. University of Michigan College of Medicine/Berea College. Genetics of B Cell Development. Summer 1990. Co-Advisors: Dr. Latham Claflin (UMich) and Dr. Cheryl Dell (Berea College).

Teaching Experience

- **Assistant/Associate Professor.** Biology Department at MTSU, BIOL 1030 (Topics in Biology), BIOL 2120 (Genetics), BIOL 2120H (Honors Genetics), BIOL 3200 (Internship in Biology), BIOL 4280 (Undergraduate Research), BIOL 4460/5460 (Human Genetics), BIOL 6500 (Special Problems in Biology), and BIOL 6620 (Thesis Research). 1999-present.
- **Instructor.** Biology Department at University of Kentucky, BIO425 (Bioethics: Gene therapy, cloning and animal use). 1998-1999.
- **Teaching Associate.** Microbiology and Immunology Department at the University of Kentucky, Immunology. Fall 1993.
- **Teaching Associate.** Biology Department at Berea College, Genetics and Microbiology. Fall 1990, Spring 1991.
Peer-Reviewed Publications (11)


Non Peer-Reviewed Publications (4)


**Peer-Reviewed Manuscripts in Preparation (4)**

- Anthony Newsome, Jon Paul Montgomery, Rebecca L. Seipelt, and Michael W. Thompson. Apolactoferrin inhibits the catalytic domain of matrix metalloproteinase-2 (MMP-2) by zinc chelation. Estimated submission 12/06.
- Michael W. Thompson, Matthew Schmidt, Erin A. Archer, and Rebecca L. Seipelt. A conserved tryptophan residue with an altered pKa is essential for the peptidase reaction of *Saccharomyces cerevisiae* leukotriene A₄ hydrolase. Estimated submission 2/07.
- Michael W. Thompson and Rebecca L. Seipelt. Aminopeptidase B-like (RNPEPL1) is an alternatively processed, ubiquitous aminopeptidase with preference for neutral and aromatic amino acids. In preparation, estimated submission 2/07.

**Presentations Given at Professional Meetings (18)**

- A putative Stem-loop Structure in Important for RNA1p Cleavage of U1 snRNA. Southeast Regional Yeast Genetics Meeting (Gatlinburg, TN) 2002.
- Student Assessment of Traditional and Non-traditional Course Elements in a First Genetics Course. Oral presentation at the Tennessee Academy of Science Meeting (Murfreesboro, TN) 2001.
- Sequence and structure contributions to U1 snRNA processing. Oral presentation at the Tennessee Academy of Science Meeting (Nashville, TN) 2000.
- Sequence and structure contributions to U1 snRNA processing. Yeast Genetics and Molecular Biology Meeting (Seattle, WA) 2000.
- Exosome proteins may be involved in snRNA biogenesis. Oral presentation at the Tennessee Academy of Science Meeting (Memphis, TN) 1999.
- Yeast U1 snRNA biogenesis. Poster presentation at the RNA Processing Meeting (Madison, WI) 1998.
- U1 snRNA biogenesis. Poster presentation at the RNA: Tool and Target Meeting (Chapel Hill, NC) 1997.
- Regulated alternative RNA processing in tissue culture cells and transgenic mice. Poster presentation at the RNA Processing Meeting (Madison, WI) 1996.
- An in vivo test of the balanced competition model of immunoglobulin mRNA processing. Poster presentation at the Autumn Immunology Conference (Chicago, IL) 1994.
  - α immunoglobulin mRNA processing is regulated similarly to μ. Poster presentation at the RNA Processing Meeting (Madison, WI) 1994.
  - α immunoglobulin mRNA processing is regulated similarly to μ. Poster presentation at the Autumn Immunology Conference (Chicago, IL) 1993.

Specialized Teaching Experience (>200 students)

- **Internship Experiences**
  - 73 student internship experiences directed at 8 biotechnology companies over 5 years
- **Undergraduate Research Experiences**
  - 10 individual undergraduate research experiences over 7 years
  - 3 undergraduate honors research experiences over 4 years
  - 110 class-related undergraduate research experiences over 6 years
- **Graduate Research Experiences**
  - 7 Master’s research projects, including 3 current, over 6 years
  - 11 Class-related graduate research experiences over 3 years

**Grants (total funded $599,396.50)**

- NIH AREA Grant (**In preparation**). “Aminopeptidase involvement in rheumatoid arthritis” will be submitted October 25, 2006, ($150,000).
- MTSU Faculty Research and Creative Activity Grant (**Funded**). “Cloning and characterization of human RNPEPL1” January 06-Fall 06, ($16,823).
- 2004 MTSU Instructional Technology Summer Fellowship Recipient “Interactive problem-solving in genetics” ($3500).
- MTSU Faculty Research and Creative Activity Grant (**Funded**). “Identification of snRNA maturation proteins using the yeast gene deletion collection” 2002-2003 ($7,000.00).
- MTSU Faculty Research and Creative Activity Grant (**Funded**). “Three hybrid screen to identify proteins that trim U1 snRNA in yeast” Spring 2000 ($4,000.00).
- MTSU Faculty Research and Creative Activity Grant (**Funded**). “Three hybrid screen to identify proteins that trim U1 snRNA in yeast” Summer 2000 ($4,587.50).


**Awards (7)**

- 2004-2005 MTSU Outstanding Achievement in Instructional Technology Award Winner ($3000).
- 2002-2003 MTSU Outstanding Achievement in Instructional Technology Award Finalist.
- 2002 MTSU Teaching, Learning, and Technology Roundtable Award Winner (funded conference attendance).
- 2001 Teaching, Learning, and Technology Roundtable Award Finalist.
- 2000-2001 MTSU Outstanding Achievement in Instructional Technology Award Finalist.
- 1997 Travel Award for RNA Biology: Tool and Target Symposium. ($275).

**Service Related to Biotechnology Resource Group**

- **Biotechnology Outreach**
  - 2 three day biotechnology workshops for high school science teachers, 1 planned/executed with Dr. Phil Mathis, 1 executed with Cindy Taylor - Bioteaching Biotechnology, Getting Ahead in Biotechnology
  - 1 three hour workshop for Tennessee Science Teachers Association (TSTA)
  - 2 hands-on biotechnology demonstrations in Middle Tennessee schools
  - 1 two-hour high school teacher-in-service regarding DNA fingerprinting (Lebanon High School)
  - Coordination of borrowing/lending of biotechnology equipment to BRG-certified high school teachers (2000-present)
  - 1 four hour biotechnology workshop for TBI forensic analysts, planned alone
    - Population Genetics and Forensic DNA Analysis
  - 4 Science Olympiad events, planned/executed alone
  - Science Crime Busters (All named this)
  - 4 Expanding Your Horizons in Math and Science events, planned/executed alone
    - Your Genes, My Genes (2002)
    - Let’s Get Glowing with DNA (2001)
    - DNA Detectives and Onya-Birri, the Ghost Boy (2000)

- **12 technology consultations**

- **Biotechnology Partnerships Formed**
  - 8 partnerships with local biotechnology companies
    - DataCentric Automation (internship)
    - BioVentures, Inc. (internship, consultation)
    - Cumberland Swan (internship)
    - GenHunter (internship)
    - Environmental Science Corporation (education partner)
    - Esoterix Center for Innovation (internship)
    - Orchid Cellmark (internship)
- **Biotechnology Publicity/Networking**
  - Biotechnology Resource Group website author  
    [<http://www.mtsu.edu/~biotech>](http://www.mtsu.edu/~biotech)
  - Create and distribute flyers advertising internship opportunities
  - 2 television appearances
  - 1 radio interview
  - 5 newspaper articles on BRG or biotechnology activities
  - 8 Today’s Responses
  - author of 3 articles on the Biotechnology Resource Group
  - 5 presentations to the community on the Biotechnology Resource Group
  - 8 Tennessee Biotechnology Association Legislative Meetings
  - 5 Tennessee Biotechnology Association Workforce Development/Grant Discussions
  - 4 visits to Biotechnology Centers: VaNTH-ERC; Fralin, Virginia; Oak Ridge

**Curriculum/Program Development**

- **Program development**
  - Master of Science in Professional Science, biotechnology concentration, approved Spring 2005
  - currently Graduate Advisor for MSPS biotechnology concentration

- **Course development**
  - Issues in Biotechnology
  - Bioinformatics
  - Genomics and Proteomics

**Departmental/University/Other Service**

- **Committees/Service within the University**
  - Honors Council (2006-8)
  - Study Abroad Committee (2006-7)
  - University Graduate Council (multi-year)
  - University Honors Council (multi-year)
  - University Study Abroad Committee (2006-7)
  - June Anderson Women’s Center Advisory Board (appointed 2006)
  - STEP-MT (Science/Math Education Grant) Internal Advisory Board (appointed 2006)
  - Undergraduate Curriculum Review Committee (multi-year)
  - University Instructional Technologies Development Committee (multi-year, twice)
  - University Non-instructional Assignment Committee (multi-year)
  - Biology Department Faculty Evaluation Committee (multi-year)
  - University Instructional Evaluation and Development Committee (multi-year)
  - Biology Department Budget Committee
o Biology Department Social Committee (multi-year)
o Biology Department BIOL 1030 Curricular Committee (multi-year)
o Biology Department BIOL 1110/1120 Curricular Committee (multi-year)
o 8 Biology Department Faculty Search Committees, Chair of two of these
o University Editorial Board, *The Record* (multi-year)

- **Committees/Service outside the University**
o Advisory Committee for Biotechnology at Nashville State Technical Institute
o Tennessee Biotechnology Association Education Committee
o Nashville Career Center Advisory Board for H1-B Visa Grant

### Web Page Development

- BIO 425 Spring 1998, Fall 1998 (University of Kentucky), now defunct
- BIOL 1030 – Topics in Biology: 6 versions Fall 99-present, [http://www.mtsu.edu/~rseipelt](http://www.mtsu.edu/~rseipelt)
- BIOL 2120 – General Genetics: 14 versions Spring 00-present, [http://www.mtsu.edu/~rseipelt](http://www.mtsu.edu/~rseipelt)
- BIOL 4460 – Human Genetics: 7 versions Spring 00-present, [http://www.mtsu.edu/~rseipelt](http://www.mtsu.edu/~rseipelt)
- BIOL 3200 – Internship in Biology: 17 versions -present, [http://www.mtsu.edu/~rseipelt](http://www.mtsu.edu/~rseipelt)
- Biotechnology Resource Group Web Site, continual revisions, [http://www.mtsu.edu/~biotech](http://www.mtsu.edu/~biotech)

### Selected Current Projects (7)

- Yeast Leukotriene A4 Hydrolase (*yLTA4*) Enzymatic Characterization by Site-Directed Mutagenesis with M. Thompson (MTSU)
- Human Aminopeptidase B-Like (*hRNPEPL1*) Alternative mRNA Processing and Enzymatic Characterization with M. Thompson (MTSU)
- Human Aminopeptidase Laeverin Alternative mRNA Processing and Enzymatic Characterization with M. Thompson (MTSU)
- Student attitudes to peer-peer group projects in genetics education with K. Sadler (MTSU) and C. Smith-Walters (MTSU)
- Enhancing Student Problem-solving Skills using Practice Problems
- Genes Involved in B Cell Development with M. Peterson (UK)
- Concept Map Use in Upper Division Biology Courses
- Gene Expression Correlation as a Measure of Evolutionary Relatedness
Vitae
Scott T. Handy, Associate Professor
Box 68, Department of Chemistry, Middle Tennessee State University, Murfreesboro, TN 37132
Born January 6, 1969; Bethesda, Maryland

Education
Postdoctoral Research (National Institutes of Health Postdoctoral Fellow), 1996-1999, Stanford University, California
Ph.D. in Organic Chemistry, 1996, Indiana University, Bloomington, Indiana
B.S. in Chemistry, 1991, University of Iowa

Employment
Middle Tennessee State University, Murfreesboro, TN, 2005-date.

Teaching Responsibilities (since 2005)
Organic Chemistry I and II (3010 and 3020), Intermediate Organic Chemistry (6100), Laboratory coordination for 3010 and 3020.

Area of Research Specialization
Organic Chemistry, Synthesis of natural and non-natural bioactive products, Regioselective cross-coupling reactions of polyhaloheteroaromatics, Green synthesis using room temperature ionic liquids, Synthesis of new, base-stable ionic liquids, Nucleophilic catalysis (recyclable catalysts), Chemical education (development of new laboratory experiments that more closely mimic the research experience and more involve the students).

Publications

* This manuscript has already been cited over 100 times.


**Presentations**
1. Gordon Conference on Heterocyclic Compounds, June 2007, Newport, RI (poster)
2. STEP®MT Poster Session, July 2006, MTSU (poster)
4. 231st National ACS meeting, April, 2006, Atlanta, GA (2 posters)
5. MTSU Scholar’s Week, October 2005, MTSU (poster)
6. NERM, October 2004, Rochester, NY (2 invited talks)
7. 206th Electrochemical Society Meeting, October, 2004, Honolulu, HA (2 invited talks)
8. 228th National ACS meeting, August, 2004, Philadelphia, PA (invited talk)
11. 226th National ACS meeting, September, 2003, New York City, NY (2 invited talks)
14. 222nd National ACS meeting, August, 2001, Chicago, IL (2 invited talks)
15. Gordon Conference on Natural Products, July 2001, Tilton, NH (poster)
16. 221st National ACS meeting, April, 2001, San Diego, CA (invited talk)
17. 220th National ACS meeting, August, 2000, Washington, DC (2 invited talks)
18. 219th National ACS meeting, March, 2000, San Francisco, CA (talk)
19. 215th National ACS meeting, March, 1998, Dallas, TX (invited talk)

**Theses Directed**
Amy J. Phelps, Professor
PO Box X-143
Department of Chemistry
Middle Tennessee State University
Murfreesboro TN 37132

Education

Ph.D. Science Education, August 1990 - Purdue University
M.S. Chemistry, December 1988 - Purdue University
B.S. Chemistry, June 1984 - Berry College, Rome GA

Professional Experience

Middle Tennessee State University, Murfreesboro TN. August 2001-Present
University of Northern Iowa, Cedar Falls IA, August 1993- July 2001
University of Louisville, Louisville KY, August 1991 to June 1993
Florida State University, Tallahassee FL, August 1990 to June 1991
Purdue University, West Lafayette IN., August 1986 to August 1990
Dalton High School, Dalton, GA., August 1984 to June 1986

Teaching Responsibilities
Honors General Chemistry 1120H, General Chemistry 1110 and 1120, Teaching and Learning Chemistry 7900, Physical Science 1030

Areas of Specialization

Chemical Education, Science Education K-12, Qualitative Research, Assessment of learning both traditional and nontraditional, Role of laboratory in the teaching of science, Misconceptions of science in pre-service teachers, Students use of process skills as it correlates to their teachers’ science process skills.

Publications:


**Presentations from 1995 to date**

*Invited Presentations*


5. "'You've got to stop thinking like a first year teacher" and other lessons I learned from J. Dudley Herron." Amy J. Phelps. Invited talk at a special symposium honoring J. Dudley Herron at the 217th National ACS meeting in Anaheim CA. March 1999.


Other Selected Presentations:


6. “Doctor of Arts in Chemistry at Middle Tennessee State University: A Terminal Degree for College Teachers.” 225th National American Chemical Society meeting in New Orleans LA, April 2003


Thesis and Dissertations Directed:

1. Midge Hall, Middle Tennessee State University, Doctor of Arts
2. Elliot Ennis, Middle Tennessee State University, Doctor of Arts
3. Laura Whitson, Middle Tennessee State University, Undergraduate
4. Linda Downing, Middle Tennessee State University, Masters
5. Jennifer Ancell, University of Northern Iowa, Masters
6. Melissa Hesner, University of Northern Iowa, Masters
7. Alan Junck, University of Northern Iowa, Masters
8. Resa Kelly, University of Northern Iowa, Masters
9. Josh Denhart, University of Northern Iowa, Undergraduate
10. Jason Feinhold, University of Northern Iowa, Undergraduate
11. Lisa Krapfl, University of Northern Iowa, Masters
12. Bheki Hadebe, University of Northern Iowa, Masters
13. Craig Thomae, University of Northern Iowa, Undergraduate
14. Tony Adams, University of Northern Iowa, Undergraduate
15. Aileen Mahood, University of Northern Iowa, Undergraduate
16. Lance Northway, University of Northern Iowa, Undergraduate
17. Steve Pruett, University of Louisville, Masters/Ph.D.

Grants:


2. Highly Qualified and Beyond: A focus on chemistry. Improving Teacher Quality Grant. Drs. Pat Patterson, Linda Gilbert and Amy J. Phelps. January-October 2005, $65,000.00


4. Provosts Mini-Grant: "Developing Microcomputer-based Laboratory Experiments for Introductory level Chemistry Courses." Shoshana Coon, Laura Hoistad, Amy Phelps, Michael Sanger and Russ Wiley. $1200.00 Summer 1999


Awards

1. Nominated MTSU Foundation Outstanding Service Award Fall 2006
2. MTSU Foundation Outstanding Teacher Award Fall 2005
3. Outstanding Service Award, College of Basic and Applied Science Fall 2005
4. Outstanding Classroom Teacher, College of Basic and Applied Science Fall 2004
5. Dean's Award for General Education 2001
6. UNI University Book and Supply Junior Faculty Teaching Award 1995
7. Sallie Mae Rookie Teacher of the Year 1985

**University and Departmental Service from 1995 to date**
Chair of i-Sciences Ph.D. Program 2005
CiS Committee, Basic and Applied Sciences i-Sciences Ph.D. Program 2005
Chair of Chemistry Graduate Program 2003- present
Chemistry Undergraduate Curriculum Committee 2001-present
Chemistry DA committee 2001-present
Chair of Mathematics and Science Education Building Task Force 2006
Mentor for DEMOMANIA 2001- present
Chair of Science Education Group UNI 1999-2001
Social Committee at UNI 1995-2001
Curriculum Committee UNI 1995-2001

**Workshops and Public Service from 1995**
Young Scholars Program for Middle School Age Students 1995-1997
Co-Director of Regional Science Olympiad 2001- present
ITQ workshop for Teachers Summer 2005, Summer 2006
PRISMS workshop for Teachers Summer 2006
Coordinator of Siegel Science Lab 2003-2005
Science Fair Judge Coordinator Siegel Elementary School 2002-2004
Crime Scene for Bellwood K-1 Enrichment Spring 2006
Science Experiments You Can Eat Enrichment Bellwood Elementary Spring 2006
Coordinator of Bellwood Science Laboratory Fall 2006
EYH presenter 2001-2004

**Professional Organization Memberships and Offices Held:**
America Chemical Society Second Semester General Chem. Exam revision 2000-2002
American Chemical Society Conceptual Exam Committee 1993-1995
American Chemical Society Second Semester General Chemistry Exam 1996-1998
American Chemical Society Conceptual Exam Revision Committee 1999-2001
NSTA Fall 1993 Regional Meeting Organizational Steering Committee
Chemical Education Research Committee January 2001-present
Chair of Chemical Education Research Committee January 2002-present
Co-Chair of Regional Science Olympiad-MTSU-2001-present
Editorial Review Board for Journal of Chemical Education-2002-present
American Chemical Society General Chemistry Full Year Exam 2005-2007
Advisory Board of the Discovery Science Center 2005-present
Michael J. Sanger, Professor
Department of Chemistry
Box 396
Middle Tennessee State University
Murfreesboro, TN 37132

Education
Ph. D. in Chemistry and Education, 1996, Iowa State University
M.S. in Inorganic Chemistry, 1994, Iowa State University
B. S. in Chemistry with a Music Minor [highest honors], 1989, University of California, Davis

Employment
Department of Chemistry, Middle Tennessee State University, Murfreesboro, TN, 2002-date.
Department of Chemistry and Science Education Program, University of Northern Iowa, Cedar Falls, IA, 1996-2002.

Teaching Responsibilities
General Chemistry CHEM1110 and CHEM1120; Physical Science PSCI1030 and PSCI4030;
Issues in Chemical Education Research CHEM7820; Using Technology in the Science Classroom CHEM7910.

Area of Research Specialization
Chemical Education: Identifying student misconceptions in chemistry; designing and evaluating instructional methods to confront student misconceptions; using computer-based visualization strategies (computer animations, electron density plots) to improve students’ conceptual knowledge of chemistry at the molecular level.

Selected Publications:

**Selected Presentations**


Undergraduate Research Projects and Doctoral Dissertations Directed

Grants Awarded

Awards
4. Awarded the MTSU Outstanding Achievement in Instructional Technology Award, 2003.
5. Nominated for the Dean’s Award for Superior Achievement in Research, UNI College of Natural Sciences, 2001.

Recent collaborations
Dr. Jwa Kim (Psychology Department, Middle Tennessee State University)
Dr. Tammy Melton (Chemistry Department, Middle Tennessee State University)
Dr. Amy Phelps (Chemistry Department, Middle Tennessee State University)
Dr. Barbara Sawrey (Chemistry Department, University of California, San Diego)
Dr. Vickie Willamson (Chemistry Department, Texas A&M University)
Dr. Gary Wulfsberg (Chemistry Department, Middle Tennessee State University)

Selected University and Departmental Service
Chair of Program Committee, Basic and Applied Sciences Mathematics and Science Education Ph.D. Program, 2005-present.
Member of Institutional Review Board, 2005-present.
Member of Chemistry Department Planning Committee, Science Building, 2006-present.
Member of D.A. Committee, Chemistry Department, 2002-present

Selected National Service in Chemical Education
Member of the Examination Writing Committee for the 2008 Conceptual Chemistry Examination, American Chemical Society Exams Institute, 2006-present.
Member of the Selection Committee for the ACS Award for Research in the Teaching and Learning of Chemistry, American Chemical Society Award Programs, 2006-present.
Organizer and Presider for Oral Presentation Sessions at several National Meetings of the American Chemical Society and the Biennial Conferences in Chemical Education, 2002-2006.
Feature Editor for the Chemical Education Research Editorial Board of the Journal of Chemical Education, 2005-present.
Member of Organizing Committee, 18th Biennial Conference on Chemical Education, Iowa State University, Ames, IA, July 2004.
Member of Committee on Computers in Chemical Education, American Chemical Society Division of Chemical Education, 1999-present.
Manuscript Reviewer for the Journal of Chemical Education, 1997-present.
Manuscript Reviewer for The Chemical Educator, 2003-present.
Vitae
Gary P. Wulfsberg, Professor
Box 405, Department of Chemistry, Middle Tennessee State University, Murfreesboro, TN 37132

Education
Postdoctoral Study, Spring 1988, Technische Hochschule Darmstadt, W. Germany
Postdoctoral Study, 1976, Technische Hochschule Darmstadt, W. Germany
Postdoctoral Study, 1971-2, Cornell University Program on Science, Technology, and Society
Ph. D. in Inorganic Chemistry, 1971, University of Wisconsin, Madison
B. S. in Chemistry [ACS approved], 1966, Iowa State University

Employment
Middle Tennessee State University, Murfreesboro, TN, 1981-date.
St. John's University, Collegeville, MN, 1977-81.

Teaching Responsibilities
Honors General Chemistry 1110H and 1120H; General Chemistry 1110 and 1120; Inorganic Chemistry courses (4400, 4410, 6400, 6420, 7420). In earlier years Advanced Synthesis 4430, Environmental Chemistry 470/570, Introductory General Chemistry 111/112. Laboratory setups for Chemistry 1110H and 1120H; in earlier years for 4430 and 4410.

Area of Research Specialization
Inorganic Chemistry, Organometallic Chemistry, Chemical Education. Applications of Nuclear Quadrupole Resonance (NQR) spectroscopy in Inorganic Chemistry: run samples for North American inorganic chemists; studies of bonding of halocarbon ligands to metal ions; fluxional behavior in chlorinated cyclopentadienyl mercurials; bonding of anions to metallocene catalysts used in industrial olefin polymerization. Chemical Education: development of more rational (less memorization-oriented) approach to teaching descriptive inorganic chemistry; writing of learning-cycle discovery lab experiments in descriptive inorganic chemistry; use of Student Response Systems in science teaching.

Publications:


38. M. Richardson, S. Zaghoni, G. Wulfsberg, K. Shadid, J. Gagliardi, D. McCorkle, and B. Farris, "Coordination of Ortho Chlorines in Nickel and Zinc 4-Substituted-2,6-Dichlorophenolates; Crystal Structure of (N,N,N',N'-Tetramethyl-1,2-ethanediameine)bis-(2,4,6-trichlorophenolato-O,Cl)nickel(II) and of Tris(pyridine)bis(2,4,6-Trichlorophenolato-O)nickel(II), Inorganic Chemistry, 1993, 32, 1913-19.


41. G. Wulfsberg, D. Jackson, W. Ilsley, Shi-qi Dou, A. Weiss, and J. Gagliardi, Jr., "Coordination of Ortho Chlorines in Copper(I) and Silver(I) 4-Substituted-2,6-Dichlorophenolates; Crystal Structure of (2,4,6-Trichlorophenolate-O,Cl)bis(triphenylphosphine)-silver(I)", Zeitschrift für Naturforschung, 1992, 47a, 75.


**Presentations from 1995 to date**

35. "Weakly coordinating halogenated anions for metalloocene catalysis: crystallographic and $^{35}$Cl, $^{79,81}$Br, $^{127}$I NQR studies of halogen-metal bonding in silver salts." 221st National Meeting of the American Chemical Society, San Diego, April 4, 2001.
50. "Applications of Nuclear Quadrupole Resonance (NQR) Spectroscopy in Inorganic Chemistry"--invited seminar, Department of Chemistry, University of Tennessee--Chattanooga. Mar. 31, 1995

**Theses and Dissertations Directed**


**Research Grants and Awards:**


8. MTSU Technology Access Fees to purchase RITEC Fourier-Transform Pulse NQR Spectrometer with 2D capabilities, for National Center at MTSU. 1999-2000, $40,395.


11. "National Center for NQR Spectroscopy in Inorganic Chemistry:, 1997, MTSU Faculty Research Grant, $2,600.


16. Fellowship from Alexander von Humboldt Foundation, 1988, for research in West Germany, DM 15,000.
17. "Metal Complexes of Halocarbons," 1987, MTSU Faculty Research Grant, $725.
18. NATO Travel Grant for International Collaboration in Research; 1985, $1,250
22. "$^{35}\text{Cl} \text{NQR Studies of Inter- and Intramolecular Secondary Halogen-Metal Bonding in Metal Derivatives of Chlorocarbons}," 1979, Research Corporation, $6,000.
23. Fellowship from Alexander von Humboldt Foundation, 1976, for research in West Germany, DM 30,000.

**Awards**


**Recent collaboration with outside scientists:**
Collaboration in NQR with: Dr. Tatyana Babushkina, Russian Ministry of Health, Moscow
Collaboration in NQR with: Dr. Eleanora Kravchenko, Russian Academy of Sciences, Moscow
Collaboration in NQR with: Prof. Hiromitsu Terao, Tokushima University (Japan)
Collaboration in NQR with: Prof. Steven H. Strauss, Colorado State University
Collaboration in NQR with: Prof. John Powell, University of Toronto (Canada)

**University and Departmental Service from 1995 to date**
MSE Ph.D. Planning Committee, member, 2006-7.
Chair of Chemistry Graduate Program Committee, 2000-2003
Chair (or co-Chair) of Chemistry M.S. Advisory Committee, 1991-2000; 2004-2007
Chemistry Undergraduate Curriculum Committee
Chem. Dept. Committee on Conversion of D.A. to Ph.D. degree, 2000-2003; Chair for part of this time
Departmental Building Committee
Project FIRST Committee (College of Basic & Applied Sciences Building Committee)
College of Basic & Applied Sciences Project Kaleidoscope/ Keck Foundation Grant Writing Committee (successful)
Faculty Development
Non-Instructional Assignment, Spring 2007.
Released time from College of Graduate Studies for science education research involving
Released time from Department to develop Honors Chemistry 121H Laboratory Experiments, 1995.
Non-Instructional Assignment, Spring 2000.

Workshops and Public Service from 1992 to date
Program Committee, XIV International Conference on Hyperfine Interactions & XVIII
     International Symposium on Nuclear Quadrupole Interactions, Iguaçu Falls, Brazil, August 2007.
Elected to International Steering Committee for Symposia on Nuclear Quadrupole Interactions,
Local Organizing Committee, XIIIth International Symposium on Nuclear Quadrupole
     Interactions, Providence, RI, 1995.
Served on the Scientific Board for the 1992 International Chemistry Olympiad in Pittsburgh,
     writing and grading an exam and experiment done in 23 languages.
Review of several manuscripts submitted for publication in the Journal of Chemical Education
     and Inorganica Chimica Acta, Inorganic Chemistry, and Analytical Chemistry.
Review of book manuscript submitted for publication to University Science Books.
Kyle A. Butler, Ph.D., Assistant Professor
Box 91
Department of Educational Leadership
Middle Tennessee State University
Murfreesboro, TN 37132

Education
Ph.D. (Curriculum and Instruction), 2004, Southern Illinois University, Carbondale, IL
M.S. (Science Education), 2000, Eastern Illinois University, Charleston, IL
B.S. (Zoology/Botany)(Teacher Cert.), 1997, Eastern Illinois University, Charleston, IL
Major of Highest Earned Degree: Curriculum & Instruction (Science Education & Teacher Leadership)

Employment
Middle Tennessee State University, Murfreesboro, TN, 2004-date.
Southern Illinois University, Carbondale, IL, 2001-2004.

Teaching Responsibilities
Fall 2006
- FOED 6020-004 Educational Foundations
- FOED 7060-002 Seminar in Educational Foundations
- SPSE 7080-001 Studies in Leadership

Summer 2006
- SPSE 6010-001 Organization/Administration of Public Schools
- SPSE 6010-002 Organization/Administration of Public Schools
- YOED 6680-001 Issues/Trends in Teaching & Learning

Spring 2006
- FOED 7080-002 Contributions of Psychology to Education
- SPSE 7190-001 Professional Field Experience

Fall 2005
- FOED 1110-013 Education as a Profession (Online)
- FOED 6020-003 Educational Foundations
- FOED 7060-002 Educational Foundations-Seminar

Summer 2005
- FOED 1110-003 Education as a Profession (Online)
- FOED 1110-004 Education as a Profession
- FOED 2110-003 Educational Psychology

Spring 2005
- FOED 1110-006 Education as a Profession
- FOED 1110-009 Education as a Profession
- FOED 1110-010 Education as a Profession (Online)
- FOED 2110-008 Educational Psychology

Fall 2004
- FOED 1110-012 Education as a Profession
- YOED 4000-001 Classroom Management
- YOED 4000-002 Classroom Management
- YOED 4000-003 Classroom Management

Directed Research
1. In Spring 2006 and in Spring 2007, I am teaching a course called SPSE 7190 Professional Field Experience. This course represents the last professional experience required for our Ed.S. students. In this course, students are required to conduct (design, implement, create) an
action research project. The project is research based and it requires a tremendous amount of mentorship and supervision. Not only do I meet with them as a group, I schedule several meetings with them individually as they travel through the investigation. This is a teaching/research mentoring activity because it is helping them learn how research supports practice. Not only do they research best practices, they also conduct their own research for the purpose of professional development.

2. Since 2004, I have supervised two independent study courses and, for the purpose of SACS and NCATE accreditation, I am currently supervising a graduate student on the process of data collection and analysis of graduate student performance data.

Area of Research Specialization

Publications:

Presentations from 1997 to date
8. Butler, K. A. Scaffolding Software and Handheld Computers: Is this the answer to meeting the NETS standards? A presentation at the Tennessee Association for Childhood Education International at Middle Tennessee State University, Murfreesboro, Tennessee, October, 23, 2004.

Research Grants and Awards:
1. **2005-2006 ITQ Grant** (submitted 10/04/06)
   Specifically geared toward helping science teachers acquire the knowledge and skills they need to better teach students at low literacy levels. Helping teachers teach science to students who have trouble reading.
   $75,000 Approved 11/20/06
2. **NSF 06-560** (submitted 9/01/06) $789,039 Approved 12/01/06
   ESI – Academy for Young Scientists
   Middle Tennessee State University AYS:
Energy, Earth, and Civilization
My role in this grant is to help develop & facilitate
the teacher professional development sessions over
the summer and to serve as senior personnel in
the grant evaluation.

3. Project ASSESS (http://www.letus.org/kdi) (Analyzing Scaffolding Software in Educational Settings for Science), funded by the National Science Foundation Knowledge and Distributed Intelligence Program, August, 2001-Present.
This project seeks to both theoretically articulate and empirically assess the role and effectiveness of scaffolds, embedded in the learning environments comprised by software and curricula. We are currently looking at classroom applications for two different types of software. I will be working with surrounding districts on the implementation and evaluation of the scaffolding software in their classrooms.

4. Blazing Learning Trails (BLT) (http://www.blazinglearningtrails.org/), funded by the United States Department of Education Technology Innovation Challenge Grant Program, K. Butler, Evaluation Assistant to A. Lumpe, (subcontract to Regional Office of Education #21). I was a member of an Evaluation Team with Dr. Jennifer Earls and Dr. Andrew Lumpe. My duties focused on data collection and analysis of the project. We worked closely with the Regional Office of Education and surrounding districts to collect data from multiple sources. Data sources included formal observations of teachers’ classrooms and professional development sessions, interviews; technology generated artifacts, evidence of student learning, and validated questionnaires. Our main objective was to evaluate the effectiveness of the BLT model to meet the goals of the project. (August, 2001-August, 2003)

Faculty Development & Awards
1. Developed my first webpage to supplement course instruction and student-teacher communication. Currently, I am still using it to facilitate instruction (http://www.mtsu.edu~kbutler).
2. Taught three online sections of FOED 1110 for the first time using WebCT. The course was developed by Dr. Dorothy Valcarcel Craig, Associate Professor in the Department of Educational Leadership.
3. Attended several sessions of professional development focused on faculty leadership (Faculty Leadership Academy), grant writing, and the tenure process.
4. Provided input on the restructuring of YOED 4000, Managing the Classroom for Instruction
5. Attended a professional development session on educational software (TK20), which is being used by the College of Education and Behavioral Sciences to supplement classroom instruction and to aggregate student performance data on critical performances. This is for the purpose of instructional improvement (inform instruction) and SACS/NCATE accreditation.
6. In 2004-2005 and 2005-2006, I have received a letter from the Vice President for Student Affairs and Vice Provost for Enrollment Management indicating that students had
identified me as someone who significantly contributed to his or her success while at the University. This is a great honor for me.

University and Departmental Service
Department:
1. Education advisor for both English undergraduates and on-campus Ed.S students in Curriculum and Instruction (About 200 Students Total).
2. Undergraduate and Graduate Curriculum Committees.
3. Departmental Effectiveness Committee.
4. Student teacher remediation team, which works with improvement (remediation) plans for student teachers in the field.
5. Over the past year, I have volunteered to teach and work with our off-campus graduate cohort programs, which are graduate programs taught off-site through the Office of Continuing Education. These programs are in high demand and are very valuable to our department.
6. Currently serve the Educational Leadership department in collecting and analyzing graduate student performance data for the purpose of departmental improvement and SACS/NCATE accreditation.

College:
7. College-Wide Institutional Effectiveness Committee
8. College-Wide Research Committee.
9. 2004-2006: Served on The College Scholarship Committee
10. NCATE Steering Committee

University:
11. Volunteered to serve on several University committees for Fall 2006, but was tuned down because there were no vacancies.
12. Currently serve on the Science/Math Ph.D. Committee. This committee is developing a new Ph.D. program, made up of a collaborative curriculum, between the College of Education and Behavioral Sciences and the College of Basic and Applied Sciences.
13. Currently serve on Middle Tennessee State University’s Pedagogy Task Force.
14. 2004-2006: Serve as the McNair Scholars Program Liaison for the Educational
Leadership Department.
15. 2004-2005 Serve the University as one of the graduates of the MTSU Faculty Leadership Academy.
16. Graduate Student Training (Fall 2005) Department of Mathematical Science.

Workshops and Public Service
Professional Service
2005-2006
Reviewer for the Journal of Research in Childhood Education
Reviewer for the Association of Teacher Educators

2004-2005
Reviewer for the Journal of Research in Childhood Education
Reviewer for the National Association for Research in Science Teaching

Public Service
1. In 2006, served as a judge in two K-12 educational competitions (Science Olympiad and We the People).
2. 2006 – I am just beginning to serve on a committee called CADCOM, which is a Community Anti-Drug Coalition of Murfreesboro. The mission of this group is to bring people and organizations together to create a healthy environment and improve the quality of life for citizens of Murfreesboro by reducing substance abuse, crime, and violence.
4. 2005-2006 – Serve as Faculty Sponsor for The Real Life Community Student Organization at MTSU.
5. 2004-2005 – Speaker (Education Representative) at the Impacting the Marketplace Conference in Nashville, TN.
Formal Education

University of Memphis, Memphis TN
Tennessee State University, Nashville TN

Doctor of Education
Tennessee State University, Nashville TN
Dissertation: When the Learner is in Charge: Technological Literacy Patterns in a Student Inquiry Program for Fifth Graders

Educational Specialist
Middle Tennessee State University, Murfreesboro TN

Fellowship – The Iowa Chautauqua – July 1995
The University of Iowa, Iowa City IA

The University of Tennessee, Chattanooga

Fellowship – The Tennessee Academy of Teachers of the Gifted – June 1994
Belmont University, Nashville TN

Master of the Arts in Education – Emphasis: Early Childhood Education/Reading – May 1988
East Carolina University, Greenville NC

Bachelor of Science, Magna Cum Laude – Early Childhood Education – December 1986
East Carolina University, Greenville NC

Professional Certification

Certified Online Instructor (C.O.I.) – LERN, May 2005
Tennessee Professional License – Career Ladder I – Pre K through 4
North Carolina Teaching Certificate – Reading Specialist; K-6; 7-9; Mentor; ESL
Professional Experience

Professor of Education
Department of Educational Leadership – August 1996 – present

Associate Dean for Teacher Education – August 2002 to August 2004
College of Education and Behavioral Science

Honors Faculty – 1999 to present

Graduate Faculty – Full Status – 2000 to present
Middle Tennessee State University, Murfreesboro TN

Curriculum Specialist – Content Areas and Technology – July 1995 - August 1996
Classroom Teacher – August 1993 – June 1995
Williamson County Schools, Franklin TN

Classroom Teacher, Summer School Teacher, Interim Teacher – August 1987 to June 1993
Pitt County Schools, Greenville NC

Graduate Teaching Assistant/Diagnostic & Prescriptive Reading – Summer 1987
East Carolina University, Greenville NC

Course Designer / Instructor / Reviewer

Middle Tennessee State University / D2L, WebCT, and Blackboard

FOED 1110 / Education as a Profession – Online Course Designer & Instructor
FOED 2110 / Educational Psychology – Online Course Designer & Instructor
SPSE 6140 / Teacher Leadership for School Improvement – Online Course Designer & Instructor
SPSE 6430 / Introduction to Curriculum Development – Online Course Designer & Instructor
SPSE 6520 / Teaching ESL Grammar and Writing – Online Course Designer
SPSE 6700/6710/6720 / Practicum in ESL – Online Course Designer & Instructor (ESL EP)
SPSE 7130 / The Curriculum: Structures & Functions – Online Course Designer & Instructor
SPSE 7010 / Educational Research Methods – Online Course Designer & Instructor
YOED 6020 / Reading, Writing, & Learning Methods for ESL – Course Designer & Instructor
YOED 6680 / Issues and Trends in Teaching and Learning – Online Course Designer & Instructor
FOED 1110 / Education as a Profession Honors – Web-Enhanced Course Designer & Instructor
FOED 2110 / Educational Psychology Honors – Web-Enhanced Course Designer & Instructor
SPSE 3220 / Teaching with Technology – Course Instructor
LS 4150 / Books & Media for Children – Course Instructor
YOED 3100 / Methods & Strategies for Instruction – Course Instructor
YOED 4000 / Managing the Classroom for Instruction – Course Instructor

Regents Online Degree Program (RODP) / WebCT:
TELC 5006 / Teachers as Agents of Change – Online Course Designer & Instructor
TEAE 6020 / Methods for English as a Second Language – Online Course Designer & Instructor

Coastline Community College:
SPEECH 1001 / Intercultural Communications – Online Course Reviewer

Research & Grant Endeavors

The Community Naturalist Club: A Community Beautification Program
Funding Source: MTSU Public Service Grant
Date: September 2006 – May 2007

Hablemos English! A Community Adult Literacy Project
Funding Source: MTSU Public Service Grant
Date: September 2005 – May 2006

ESL Enterprise Project: Students & Teachers Learning, Collaborating & Reflecting
Funding Source: U.S. Department of Education
Date: October 2002 – October 2007

Village of Learners: Improving Practice Through Action Research
Methodology: Case Study
Funding Source: MTSU Faculty Research Grant
Date: August 2000 – May 2001

Major League/A League of Their Own – Qualitative Research
Methodology: Grounded Theory & Constant Comparative Method Case Studies
Funding Source: Dwight D. Eisenhower Professional Development Grant
Date: April, 1999 – August, 1999

A League of Their Own: Girls, Math, Science & Inquiry Through Technology
Methodology: Grounded Theory & Constant Comparative Method Case Studies
Funding Source: Dwight D. Eisenhower Professional Development Grant
Date: April, 1998 – August, 1998

A Plot of the Past: Historic Preservation Through Environmental Science
Funding Source: Toyota Tapestry Grant
Date: January 1998 – December 1998

Selected Publications


Recent Presentations, Workshops, Seminars

Title: *e-Literacy and Literacy: Second Language Learning*
Paper presented at the American Educational Research Association Annual Meeting
Chicago, IL
April 2007

Title: *Action Research: An Analysis of Teacher Practices*
Paper presented at the American Educational Research Association Annual Meeting
Chicago, IL
April 2007

Title: *Using iPods to Promote Language Learning*
Paper presented at the Society for Information Technology in Education Annual Conference
San Antonio, TX
March 2007

Title: *Action Research for Practitioners*
Mini Course presented at AACTE
New York, NY
February 2007
Title: Literacy and e-Literacy: iPods, Ells and Literature
Paper presented at TN TESOL
Gatlinburg, TN
April 2006

Title: Action Research for ESL Professionals
Paper presented at the 40th Annual TESOL Convention and Exhibit
Tampa, FL
March 2006

Title: Multicultural Literature and the English Language Learner
Workshop presented at the National Black Child Development Council
Orlando, FL
October 2005

Title: Action Research in the ESL Environment
Poster session presented at the 39th Annual TESOL Convention and Exhibit
San Antonio, TX
April 2005

Title: We are Reading! Working With Second Language Learners in the Community Library Setting
Workshop presented at the Tennessee Library Association Annual Conference
Nashville, TN
April 2005

Title: A Kaleidoscope of Learning: Learning Styles and Online Course Accommodations
Session presented at the 10th Annual Instructional Technology Conference
Middle Tennessee State University
April 2005

Title: Developing ESL Writers Through Literature and Story Tools
Workshop presented at the 2005 TN TESOL Conference
Clarksville, TN
March 2005

Title: Action Research in the Online Environment: An Examination of Graduate Students’ Practices
Paper presented at the Society for Information Technology in Teacher Education Annual Meeting
Phoenix, AZ
March 2005

Title: Examining Curriculum Design, Adaptations, and Effective Practices in an Online Learning Environment
Paper presented at the International Conference on Technology, Knowledge, and Society
The University of California, Berkeley
February 2005

Title: Inquiry-Based Action Research: Practical Research to Improve Practice
Mini-Course presented at the AERA Annual Meeting, San Diego
April 2004

Title: Utilizing the Online Environment for Field-Based Practicum
Workshop presented at the 8th Annual Tennessee Board of Regents Online Conference, Nashville
March 2004

Title: The Use of Mentors in an Early Childhood Education Program
Symposium presented at AACTE Annual Conference, Chicago
February 2004

Title: The ESL Enterprise Project – Teachers and Students Working Collaboratively  
Workshop presented at SE TESOL, New Orleans  
September 2003

Title: View from an Online Learning Environment – Graduate Students in an Online Education Class  
Research Symposium paper presented at AERA, Chicago  
April 2003

Title: Educating Esme – Preservice Students and the First Year  
Paper presented at AERA, Chicago  
April 2003

Title: Many Voices, Many Stories – Multicultural Literature in the ESL Classroom  
Workshop presented at TN TESOL, Cool Springs Conference Center]  
March 2003

Title: Baseball Saved Us – Literature Circles in the ESL Environment  
Workshop presented at SE TESOL, Atlanta  
September 2002

Title: Inside Separate Worlds – A Symposium on Diversity  
Symposium presented at AERA, New Orleans  
April 2002

Title: The Online Learning Environment – Patterns and Perception From Graduate Students  
Paper presented at SITE, Nashville  
March 2002

Book and Manuscript Reviews


Contact Information

Department of Educational Leadership
PO Box X-147
301 Jones Hall
Middle Tennessee State University
Murfreesboro TN 37130
615.898.2332
dvcraig@mtsu.edu
Donald Snead  
Middle Tennessee State University  
College of Education  
Box 536  
Murfreesboro, TN 37132

**Academic Qualifications**

<table>
<thead>
<tr>
<th>Year</th>
<th>Degree</th>
<th>Institution</th>
<th>Location</th>
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<tbody>
<tr>
<td>2000</td>
<td>Ed. D. in Curriculum and Instruction with Concentration in Science Education</td>
<td>University of Kentucky</td>
<td>Lexington</td>
</tr>
<tr>
<td>1986</td>
<td>MAT</td>
<td>Western Kentucky University</td>
<td>Bowling Green</td>
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<tr>
<td>1978</td>
<td>Georgia Teacher Certification</td>
<td>Georgia Southwest College</td>
<td>Americus, GA</td>
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<tr>
<td>1975</td>
<td>B.S. in Natural Science and Chemistry</td>
<td>Fort Valley State College</td>
<td>Fort Valley, GA</td>
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**Employment**

<table>
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<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
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<tbody>
<tr>
<td>2000-present</td>
<td>Middle Tennessee State University, Murfreesboro, TN</td>
<td>Tenured and promoted to Associate Professor.</td>
<td></td>
</tr>
<tr>
<td>1975 to 1999</td>
<td>Public School Science Teacher</td>
<td>Grades 8-12</td>
<td></td>
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</table>

**Teaching Responsibilities**

- Foundation Education Courses FOED 1110 and 2110
- Analysis and Application of Educational Research FOED 6610
- Studies in Leadership SPSE 6080/7080
- Directed Individual Educational Research FOED 7610 and 7611
- Previously taught School and Community Relation, FOED 6030
- Previously taught Managing the Classroom for Instruction, YOED 4000
- Previously supervised Student Teachers in Science, FOED 4110

**Area of Research Specialization**

Constructivist teaching methods for science teaching in Middle School Science teaching.

The use of concept maps to aid lower ability students in science achievement
**Teaching Achievements**

My teaching career includes both public school and university. In 1997 I was selected and inducted into the Distinguished Educator’s Cadre in the Commonwealth of Kentucky.

Six times I have received “Made a Difference” letters from the Vice President of Student Affairs.

I am an advocate of Constructivist teaching which is rooted in the educational theory that teachers cannot learn for students even with the best developed lectures. Learning therefore, “has to be constructed in the minds of students” (Wulfsberg, G. P. Department of Chemistry, MTSU). In addition to traditional preparation, I have created web-enhanced classes in order to provide “scaffolding” for students. I also provide and grade a weekly “question of the week” to provide ongoing feedback to help students “self manage” their progress in the undergraduate classes.

I am presently serving as research committee member for two D. A. degree students in Chemistry.

I have supervised the research of four ED.S students in the College of Education of which three have completed their research project.

I have developed, with assistant of Dr. Barbara Young, my first online course (FOED 6610) and beginning offering the Analysis and Application of Educational Research to students online during the Spring Semester of 2005.

**Journal Publication:**


**Presentations:**


“Attitudes Toward Multicultural Issues: College of Education Students (MTSU) Versus College of Liberal Arts Students (University of Incarnate Word, Texas).” 4th Annual Hawaii International Conference on Arts and Humanities. Honolulu, January 11-24, 2006


“Concept Mapping: To Use or Not to Use.” Mid-South Educational Researcher Annual Meeting. Gatlinburg, TN. November 19, 2004

“Concept Mapping and Science Student’s.” St Rose Catholic School, Murfreesboro, TN. Faculty In-service, November 8, 2004

“Concept Mapping and African American Science Students.” 4th International Diversity Conference. Los Angeles, California (UCLA), July 2004

“Using Concept Mapping to Aid African-American Students’ Understanding of Middle Grade Science.” AACTE, February 7-10, 2004, Chicago, IL.

“An online Graduate Course that Creates a New Culture for Learning.” Barbara Young and Donald Snead. Mid-South Educational Researcher Annual Meeting, November 5-7, 2003, Biloxi, Mississippi


“Using Teacher Work Samples to Document Academic Excellence by Showing Accountability for Teacher and Student Achievement.” ATE Summer Conference, Williamsburg, VA. August 7, 2002


“Concept Mapping and Science Achievement of Middle Grade Students,” Annual Meeting, Mid-Atlantic AETS Regional Meeting, Cumberland Falls State Park, Corbin, Kentucky, September 15-16, 2000.

“How to Increasing Achievement levels and test scores of African American Students,” Bowling Green Junior High School, Bowling Green, KY, August 1997.

University Service:

Chair of Space Committee for the College of Education (Fall 2006) and Space Committee representative for the Department of Educational Leadership (Spring 2006– present)

Academic Appeals Committee

Committee Member, Career Achievement Committee, Faculty Senate Appointment, Fall 2003-2005.

Committee Member, Council on Teacher Education, College of Education, Fall 2003-2005

Faculty Coordinator, AV LAB, Educational Leadership Department, Fall 2004- present

Committee Member, Teacher Education Scholarship Selection Committee, College of Education, Spring 2001-2004.

Committee Member, Admission to Teacher Education Committee, College of Education, Fall 2000-2005.

Trainer, Mentor, and Faculty representative for the Renaissance Teacher Work Sample Project, Fall 2001-2004, College of Education. Spring 2001- 2004
Faculty Senate Representative, Educational Leadership Department, 2002-2003.

Faculty Search Committee, Educational Leadership Department, Fall 2002-2004.

Consultant Educational Talent Search Grant, Dr. Tom Cheatham, Dean of College of Basic and Applied Sciences, Director. Fall 2002-2003.

Committee Member, Faculty Scholar Form, College of Education, 2000-2001

Public Service:

Proposal Reviewer, NEA Foundation’s Student Achievement Grants, Spring 2006-Spring 2007
Reviewer for Middle Level Education Quarterly, Fall 2006


Reviewer for Middle Level Education Quarterly, Spring 2005

Faculty In-service, St Rose Catholic School, November 8, 2004

Reviewer for Journal of Childhood Education, Fall 2004

Professional Development, Faculty In-Service on Teaching Adult Learners. Tennessee Technology Center at Hartsville, TN. June 22, 2004

Evaluation Committee for Mid-South Educational Research Association Annual Meeting, Fall 2003

Professional Development, Faculty In-Service for Wilson County Schools July 30, 2003.


Executive Board Member; Highland Rim Tech Prep Consortium, Tennessee Technology Centers, Middle Tennessee 2003 to present

President of Local Chapter of Phi Delta Kappa International 2004-present

Activities:

Educational Consultant for the MTSU Educational Talent Search (METS) Program, 5-year Federal Trio Grant. The project involves 600 secondary school students from three
Rural counties in Middle Tennessee. September 1, 2002 through August 31, 2007.


Teacher Work Sample Training for Renaissance Mentoring Team, August 2001 to 2003.

Consultant—U. S. Department Educational Talent Search Grant (2002), sponsored by College of Basic and Applied Science, MTSU

Co-director of PREP-95, a summer study program for middle school students in the Fayette County School System sponsored by the College of Engineering, University of KY.

**Professional Organization:**

Mid-South Educational Research Association

National Education Association

Phi Delta Kappan International, (President of MTSU Chapter; 2004-Present)
Rebecca S. Watts, Assistant Professor
PO Box 91
Department of Educational Leadership
Middle Tennessee State University
Murfreesboro, TN 37132

Education
Postdoctoral Study, Curriculum and Instruction (6 semester hours), Spring and Summer 2005, The University of Louisiana at Monroe
Ed.D. in Educational Leadership with Cognate in Research Methodology and Statistics, 2003, The University of Louisiana at Monroe
M.Ed. in Educational Administration and Supervision, 1998, The University of Louisiana at Monroe
B.S. in Science Education, 1990, Louisiana Tech University, Ruston, LA

Employment
Middle Tennessee State University, Murfreesboro, TN, 2006-date.
The University of Louisiana at Monroe, Monroe, LA, 2001-2005.

Teaching Responsibilities
Educational Research Methodology (SPSE 7010); Educational Psychology (FOED 2110); Instructional Design for Critical Thinking (YOED 3500); Education as a Profession (FOED 1110); Analysis and Application of Educational Research (FOED 6610). Previous assignments included Assessment (EDFN 401); Research for Practitioners (EDFN 403).

Area of Research Specialization

Publications:


**Presentations from 2000 to date**


Consultation on Theses and Dissertations
2. Don Coker, "The Effect of Participation in the Louisiana Principal Internship/Induction Program on School Performance Scores and on Teacher and Principal Perceptions of Principals’ Knowledge, Skills, and Dispositions," Ed.D., May 2005
5. Rebecca A. Callaway, "Faculty and Teacher Candidate Computer Self-Efficacy and the Relationship of Faculty Computer Self-Efficacy, Technology Professional Development, and Technology Use," Ed.D., May 2004
8. Phyllis Shantelle Sanders, "An Investigation of the Impact on Student Achievement of Specific Demographic Variables of Third-Grade Teachers in North Louisiana Rural Schools Who Were Certified Through Traditional or Alternate Parallel Programs," Ed.D., May 2003

**As Director of the Center for Educational Research, College of Education and Human Development, The University of Louisiana at Monroe, I provided consultation on methodology, data collection, and analyses for doctoral students.

Research Grants and Awards:
2. "The ULM Center for Improving Low Performing Schools, 2004, with P. Watts, L. Magoun, and V. Eaton, Institute of Education Sciences, $10,000,000, not funded.

Awards

**University and Departmental Service from 2000 to date**

Member of Faculty Search Committee, Department of Educational Leadership, Middle Tennessee State University, 2006.

Member of Math/Science Education Ph.D. Program Development Committee, College of Education and Behavioral Sciences, MTSU, 2006 – date.

Member, NCATE Standard 1 Committee, College of Education and Human Development, The University of Louisiana at Monroe, 2004-2005.


Member, Undergraduate and Initial Review Committee, College of Education and Human Development, The University of Louisiana at Monroe, 2004-2005.

Member, Unit Assessment System Review Committee, College of Education and Human Development, The University of Louisiana at Monroe, 2004-2005.

Member, University Library Committee, The University of Louisiana at Monroe, 2003-2005.

Member, Department of Educational Leadership Program Redesign Committee, The University of Louisiana at Monroe, 2003-2005.

**Faculty Development**

Attended Annual Meetings of Mid-South Educational Research Association: Birmingham, AL, Fall 2006; Gatlinburg, TN, Fall 2004; Bowling Green, KY, Fall 2000.

Attended Children and Rural Education Conference (CARE), Monroe, LA, Spring 2005.


Hierarchical Linear Modeling and Factor Analysis Workshops (12 hours), Spring 2005.

Louisiana Teacher Assistance and Assessment Program (LaTAAP), Assessor Training (24 hours), Fall 2004.

Leadership and Assessment Institute (16 hours), Summer 2004.


PASS-PORT Assessment Coordinators’ Institute (5 hours), Spring 2004.

Louisiana’s Redesign for Educational Excellence Institute (24 hours), Spring 2004.

State Board of Examiners Training (30 hours), Fall 2003.


Educational Leadership Summit (8 hours), Summer 2003.


ULM Quest Project (45 hours of technology training), Spring 2003.

Attended Annual Meetings of Louisiana Education Research Association: Ruston, LA, Spring.
Technology in Higher Education | Quality Education for Students and Teachers (48 hours),
Fall 2001.

Current Professional Memberships

American Association of Behavioral and Social Sciences
American Educational Research Association
Association for Supervision and Curriculum Development
Mid-South Educational Research Association
Southwest Educational Research Association
Phi Delta Kappa
Phi Kappa Phi

Workshops and Public Service from 1992 to date

Vice President for Membership, Phi Delta Kappa, Chapter # 1330.
"The Neighborhood Naturalist Club: An After School Community-Based Service Project for the
City of Lebanon", MTSU Public Service Grant Award with D. Craig and C. True,
$2,482.00, Purchase materials to support beautification project by Lebanon School District.
Proposal Reviewer for the Annual Meeting of the American Educational Research Association,
Kathleen Glascott Burriss
Middle Tennessee State University
P.O. Box 69
Murfreesboro, TN 37132
(615) 898-2323

EDUCATION

1992 Ed.D.
Arizona State University, Tempe, AZ
Curriculum & Instruction, Early Childhood

1976 M.S.
State University of New York College at Buffalo
Elementary Education

1972 B.S.
State University of New York College at Fredonia
Elementary Education

PROFESSIONAL EXPERIENCE

1992 - present Middle Tennessee State University
Teaching undergraduate/graduate courses

1990 – 1992 Arizona State University
Teaching undergraduate courses

1988 – 1989 Roosevelt Central District #66 (Phoenix, AZ)
Substituted grades K-1
Kindergarten Teacher

1972 – 1987 Akron Central (Akron, New York)
Kindergarten Teacher

Classroom Teaching at Middle Tennessee State University

ELED 100 Pedagogy Seminar/Leonardo Project
ELED 3050 Creating Learning Environments K-4
ELED 325 Elementary Curriculum K-4
ELED 327 Elementary Curriculum 5-8
ELED 411 Directive Teaching K-8
ELED 411A Directive Teaching 1-6
ELED 429/529 Early Childhood Curriculum K-4
ELED 430/530 Kindergarten Program
JOUR 4900 Family-centered Community Building
ELED 6010 Teacher As Reflective Decision-Maker Seminar (a)
ELED 6011 Teacher As Reflective Decision-Maker Seminar (b)
• ELED 6030  History and Theory of Early Childhood
• ELED 6090  Creating Learning Environments (online)
• ELED 6170  The Mixed-Age Classroom
• ELED 622  Seminar in Early Childhood
• ELED 6260-02  Outdoor Learning & Play
• ELED 6260-03  The Project Approach
• ELED 6300  Play and the Curriculum
• ELED 6310  Play and Social Emotional Learning
• ELED 6320  Play and Literacy
• ELED 6330  Play (online)
• ELED 6500  Teaching and Learning (online)
• ELED 7220  Seminar in Elementary Education
• ELED 7250  From Policy to Practice in American Public Schools (online)

**Classroom Teaching at Arizona State University**

• ECD 308  Introduction to Early Childhood
• ECD 312  Kindergarten and Nursery School Environments
• ECD 314  The Developing Child
• ECD 322  Communication Arts

**INSTRUCTION AND RELATED AREAS**

**University Teaching**

• 2002  Awarded Full Professor
• 2001  Burriss, L. & Burris, K. Team taught Journalism 4900 as a part of “Family Centered Community Building” (The Gore Class).
• 2001-Present  Admitted as member of Honors College
• 2001  Created the ELED3050-H section
• 1997  Awarded Associate Professor
• 1992-Present  Graduate Faculty Member-Middle Tennessee State University

**Selected Development of New Instructional Techniques**

• 2006  Developed online graduate course, “Play.”
• 2005  Developed online section of ELED Teaching and Learning
• 2002  Developed online section of ELED 6090 “Creating Learning Environments.”
• 2002  Online section for ELED 6030, "Early Childhood Practitioner K- 4.
• 2001  Produced video to train cooperating teachers with the use of the student teaching evaluation instrument and manual.
Selected Conference/Workshops Attended

- 2004 MidSouth Reading and Writing. Birmingham, AL.
- 2004 Transforming the Learning Environment. Middle Tennessee State University
- 2003 Job Accessibility With Speech (JAWS), Four-day training, Middle Tennessee State University, Murfreesboro, TN.
- 2003 “Stop Surfing, Start Teaching Annual Conference”. Las Vegas, NV.
- 2002 “Effectively Integrating Technology Into Today’s PR Classroom”. Ball State, Muncie, IN.
- 2002 Middle Tennessee State University, Faculty Leadership Academy
- 2001 Attended day-long IRB workshop. Middle Tennessee State University, Murfreesboro, TN.
- 2000 Workshop on race, class, gender, and sexual orientation. Commission on the Status of Women, Middle Tennessee State University, Murfreesboro, TN.
- 1999 Preservice Institute, Developmental Studies Center, one-week, Holland, MI.

Selected Curriculum and Program Development

- 2006 Tennessee Association for Childhood Education (TACEI) Midsouth Writing Project with B. Solley, TACEI a state education conference (MTSU)
- 2005-2006 Initial Licensure Program (ILP) Development
- 2004 With R. Martin organized TACEI state conference (MTSU).
- 2002 Developed a new graduate course "Outdoor Learning and Play” ELED 6260-02.
- 2002 Developed a new graduate course "The Project Approach" ELED 6260-03.
- 2001 Revised student teaching instrument to include goals chart.
- 2001 Revised rubrics for student teaching instrument.
- 2000 Burriss, K.G. and Means H.W. Designed rubrics for student teaching
- 2000 Burriss, K.G. Submitted to Dean Bonner design for creating the Center for Reflective Practice in Teaching and Learning.
1999  Burriss, K. and Means, H. Designed rubrics for student teaching portfolio.

Supervision of Specialized Instructional Activities

2006-2007  Coordinator Traditional Graduate Program
2006  Initial Licensure Program (ILP) supervisor
2005-2006  Co-coordinator K-6 committee.
2002-2007  Co-coordinator graduate program.
1992-1997  Member of Leonardo Project, an interdisciplinary program integrating the Colleges of Liberal Arts and Education.

Academic Advising

2006  Committee member Ed.S. Thesis – Misty Moody
2006  Committee member Ed.S. Thesis – Elizabeth White
2004  Mentor McNair Project

1997-2007  Graduate Advisor
1992-1997  Undergraduate Advisor; Graduate Advisor-Early Childhood.

RESEARCH

Publications

In Progress
• Rationalistic research: Gathering survey data titled, “Parents’ Perceptions Regarding Outdoor Learning & Play.”
• Narrative Research: Gather Interview Data titled, “Parents’ Perceptions Regarding Outdoor Learning & Play.”
• Burriss, L. & Burriss, K. Collecting survey data for project titled, “Photographs from Space: Perceptual Reality.”

•
•

Books

• 2002 Crawford, P. and Burriss, K.G. *It's Elementary*. Olney, MD: Association for Childhood Education International.

•

Book Chapter

• 2007 Outdoor Play. In Ferguson C.J. & Dettore E. *To play or not to play: Is it really a question?* (pages 87-94). Olney, MD: Association for Childhood Education International.
• 2002 Burriss, K.G. Finally, Heterogeneous Learning. In P. Crawford & K. Burriss (Eds.), *It's Elementary* (pp.33-37). Olney, MD: Association of Childhood Education International.
• 2002 Burriss, K. Rubrics: The learner’s choice. In P. Crawford & K. Burriss (Eds.), *It's Elementary* (pp.139-143). Olney, MD: Association of Childhood Education International.

• National Newsletter


• National Brochures


• Journals

• 1999 Glascott, K. and Burriss, L. Use of constructed speech to improve classroom performance. ERIC/CS Clearinghouse. ED 427 351, 97 22p.
• 1998 Glascott, K. and Burriss, L. Food in the curriculum: What values are we teaching? In Multicultural Education.
• 1997 Glascott, K. and Trent, S. What will Tim be when he grows up? In Journal of Vision Rehabilitation. 22(1).
• 1995 Glascott, K. and Stone, S. Einstein should have asked kindergarten teachers for the answers. In Tennessee Educational Leadership.
• 1992 Glascott, K. Holistic restructuring; A partnership between public schools and Universities, SCOPE: Official Journal of AASCD.
Journal Reviews

2002 Burriss, K.G. Connecting Classroom Practice and Research. In *Childhood Education* 78(3)


Cited In


PRESENTATIONS

Selected International Presentations

2008 Proposal accepted. Create the Outdoor Classroom. ACEI World Conference. Moscow, Russia.


Selected National Presentations

2007 Paper accepted with T. Ring, ACEI Research Forum, Tampa, FL.


2006 Create the Outdoor Classroom. Association for Childhood Education International. San Antonio.


2005 Special session to introduce book titled, “Outdoor Learning and Play: Ages 8-12.”

2004 The outdoor classroom: Moving beyond the nature trail. Association for Childhood Education International. New Orleans.


2002 Burriss, K.G. A reflective alternative for student teaching evaluation. Association for Childhood Education International Research forum, ACEI, San Diego, CA.

2001 Burriss, L. and Burriss, K. Kitty on a cold, concrete sidewalk: The death of Kitty Genovese as an icon for teaching moral relativism. Lilly Conference on College Teaching. Miami, OH.

2001 Craig, D., Burriss, L. and Burriss, K. Symposia proposed. AERA Multicultural Teaching and Learning. New Orleans, LA.


2000 Burriss, K. G. and Burriss, L. L. Interculturalism: Moving out of the box of crayons. Association for Childhood Education International, Baltimore, MD.
1999 Glascott, K. School reform as a function of teacher goal orientation and teacher affect. Research Forum for Association for Childhood Education International, San Antonio, TX.

1998 Glascott, K. A call for interpretation beyond hands-on: When manipulatives are not enough. Association for Childhood Education International, Tampa, FL.


Selected Regional Presentations

2006 Burriss, K. Using the project approach. Mid-South Reading and Writing Institute, Birmingham, AL.

2006 Burriss, K. Creating a literate environment. Mid-South Reading and Writing Institute, Birmingham, AL.

2005 Burriss, K. The project approach. MidSouth Reading and Writing Conference, Birmingham, AL.

1999 Glascott, K. and Burriss, L. L. Interculturalism: Moving out of the crayon box. Southern Early Childhood Association, Nashville, TN.


1998 Glascott, K. What do I have to do to get a ‘A’? Annual Teacher/Learning Conference. Ashland University, Ashland, KY.

1998 Glascott, K. Play: Misunderstood and Forgotten. Presented at the National Association of Child Care Resources and Referral Agencies, Savannah, GA.

1998 Glascott, K. and Burriss, L. L. Intercultural: It's bigger than a box of crayons. Presented at the National Association of Child Care Resources and Referral Agencies, Savannah, GA.

Selected State Presentations

2006 Outdoor leaning and play. Tennessee Association for Childhood Education, TACEI, Murfreesboro, TN.


2005 Outdoor learning and play. Tennessee Association for Childhood Education International, Memphis, TN.
• 2004 Outdoor learning & play for all ages. Tennessee Association for Childhood Education International, MTSU.

• 2003 Burris, K. and Paxson L. Classroom management: Wal-Mart parking lot or the church social. Tennessee Association for Childhood Education International. Jackson, TN.

• 2003 Let’s get serious about play. Association for Childhood Education International. Jackson, TN.

• 1998 Glascott, K. and Burriss, L. Moving out of the crayon box. Tennessee Association for the Education of Young Children. Chattanooga, TN.

• 1997 Glascott, K. Inclusion: Ok, now what do I do? Tennessee Educational Association, Gatlinburg, TN.

• Selected Local Presentations
• 2002 Burriss, K.G. & Burriss, L.L. Moving out of the crayon box. Anderson Association for Education of Young Children.

• 2002 Burriss, K. Play and literacy. Rutherford Association for the Education of Young Children Spring Conference. Murfreesboro, TN.

• 2000 Burriss, K. and Burriss, L. The serious business of play. Spring Rutherford Association for the Education of Young Children, Murfreesboro, TN.

• 1999 Burriss, K. and Burriss, L. Love, language, and literacy. Fall Rutherford Association for the Education of Young Children, Murfreesboro, TN.

• 1999 Glascott, K. and Burriss, L. Multiculturalism: Moving out of the crayon box. Spring Rutherford Association for the Education of Young Children, Murfreesboro, TN.

• 1998 Glascott, K. and Burriss, L. Kitty on a cold concrete sidewalk: The death of Kitty Genovese as an icon of moral relativism. 1998 Spring Honors Lecture Series, Middle Tennessee State University, Murfreesboro, TN.

• 1998 Glascott, K. Are your children talking to themselves? Spring Rutherford Association for the Education of Young Children, Murfreesboro, TN.

• PUBLIC SERVICE
• In-Service

• 2007 Burriss, L. & Burriss, K. “Paris, City of Lights.” Video Presentation Distance Learning. MTSU.

• 2006 Burriss, L. & Burriss, K. “Alaska: More Than Ice & Snow.” Video Presentation Distance Learning. MTSU.

• 2005 Burriss, K. Using the Project Approach. Homer Pittard Campus School, Murfreesboro, TN.
• 2002 Burriss, K. Contributions of Play for Children’s Learning and Development: Part One. Hobgood Elementary School, Murfreesboro, TN.
• 2002 Burriss, K. Contributions of Play for Children’s Learning and Development: Part Two. Hobgood Elementary School, Murfreesboro, TN.
• 2002 Burriss, K. Contributions of Play for Children’s Learning and Development/Play and Literacy: Part Three. Hobgood Elementary School, Murfreesboro, TN.
• 2001 Accepted as a trainer for Rutherford Association for the Education of Young Children in collaboration with the Mid-Cumberland Resource Center.
• 2001-1999 Facilitated student teaching supervisors' training. Middle Tennessee State University, Murfreesboro, TN.
• 1999 Glascott, K., Multicultural Education. Student teaching seminar addressing multicultural education, Middle Tennessee State University, Murfreesboro, TN.
• 1998 Glascott, K., Completed one year consultation and participation. Jones Elementary, Manchester, TN.

Community Service

• 2006 “The Importance of Play,” coordinated by Margaret McKinley at MTSU
• 2005-2006 Murfreesboro City Schools: Pre-K Advisory Council Member
• 2005 Interview with Lisa Moore regarding children and outdoor play. (Play Corp.) Chattanooga, TN.
• 2005 “Literacy in the Home Environment”, Black Fox Elementary After School Program, Murfreesboro, TN
• 2005 Interview with Christina Frank. Imagination and Children. Parenting.
• 2005 Interview with Scott Broden. MTSU educator says focus should shift back to recess. Daily News Journal, A1, January 24.
• 2004 Interview with T. J. Green. Student raps’ up education class: MTSU master’s candidate makes boring material into musical song. Daily News Journal, D1, December 2.
• 2004 WMOT interview ACEI state conference
<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>“Reach Out and Read.” Volunteer at Smyrna Library</td>
</tr>
<tr>
<td>2004</td>
<td>Served as a judge for the Invention convention, MTSU</td>
</tr>
<tr>
<td>2004</td>
<td>Served as a juror for the EFG Juried Presentation in Ms. Lasater, 2nd grade, at the Homer Pittard Campus School.</td>
</tr>
<tr>
<td>2004</td>
<td>Served as a juror for the EFG Juried Presentation in Ms. Babbs kindergarten at the Homer Pittard Campus School.</td>
</tr>
<tr>
<td>2003</td>
<td>“Love, Language and Literacy.” Poster display at Parent Child Festival, Murfreesboro, TN.</td>
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<tr>
<td>2003</td>
<td>National Night Out. A facilitator at the Early Literacy booth, Murfreesboro, TN.</td>
</tr>
<tr>
<td>2002</td>
<td>Burriss, L. and Burriss, K. G. “New technologies in the classroom”. Kiwanis Club, Gallatin, TN.</td>
</tr>
<tr>
<td>2002</td>
<td>Burriss, K. Presentation in adaptive technology. Lioness Club, Murfreesboro, TN.</td>
</tr>
<tr>
<td>2002</td>
<td>Burriss, K. G. Quoted in &quot;Educators see flaws in Bush reforms.&quot; Published in Sidelines Vol. 77(6). (Middle Tennessee State University Newspaper, Murfreesboro, TN)</td>
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<td>2002</td>
<td>Burriss, K. G. “New technologies in the classroom”. Kiwanis Club, Gallatin, TN.</td>
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<td>2001</td>
<td>Burriss, K. &quot;Love, Language and Literacy&quot;. Murfreesboro Medical Center Parent Child Festival, Murfreesboro, TN.</td>
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<td>2001</td>
<td>Burriss, L. and Burriss, K. G. Quoted in “Educators see flaws in Bush reforms.&quot; Published in Sidelines Vol. 77(6). (Middle Tennessee State University Newspaper, Murfreesboro, TN)</td>
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<td>2001</td>
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<td>2001</td>
<td>Burriss, L. and Burriss, K. G. Quoted in “Educators see flaws in Bush reforms.&quot; Published in Sidelines Vol. 77(6). (Middle Tennessee State University Newspaper, Murfreesboro, TN)</td>
</tr>
<tr>
<td>2000</td>
<td>Burriss, K. G. “Actions speak louder than words” Young Authors Conference, Middle Tennessee State University, Murfreesboro, TN.</td>
</tr>
<tr>
<td>2000</td>
<td>Burriss, K. G. &quot;Little children, big ideas: Promoting literacy through play.&quot; Young Author's Conference, Middle Tennessee State University, Murfreesboro, TN.</td>
</tr>
<tr>
<td>2000</td>
<td>Burriss, K. G. Served as a judge, Thurman Francis Curriculum Fair, Rutherford County, TN.</td>
</tr>
<tr>
<td>2000</td>
<td>Burriss, K. G. Served as a judge, Thurman Francis Curriculum Fair, Rutherford County, TN.</td>
</tr>
<tr>
<td>1999</td>
<td>Burriss, L. and Glascott, K. “A few notes about music as play.” Sixth annual Rutherford County Choir Festival, Murfreesboro, TN.</td>
</tr>
<tr>
<td>1999</td>
<td>Burriss, K. G. Quoted in “Tuning in: Do you know what television is teaching your child?” Published in Murfreesboro Parent, June 1999.</td>
</tr>
</tbody>
</table>

**Selected Special Projects**

- 2007 Australia Visit: Coordinated students’ study abroad; multiage school visit.
• 2007 Japan visit: Coordinated MTSU students’ school visit.
• 2007 Institutional Effectiveness Report (NACTE). (writer)
• 2006 Presented a one day project approach component to “The Advanced Multi-age Institute”. Flagstaff, AZ.
• 2005 Served as external reviewer for promotion: Dr. Thomas Reed, University of South Carolina Upstate
• 2005 Endorsement for Dr. Bobbie Solley’s book titled, “When Poverty’s Children Write.”
• 2004 Served as external reviewer for promotion: Dr. Judith Keiff, New Orleans University
• 2004-2006 Faculty Advisor, ACEI MTSU
• 2004 Initiated student chapter of ACEI.
• 2004 Home-stay visiting students from Japan.
• 2004 Co-coordinator TACEI state conference held at MTSU.
• 2004 Two day in-service/visitation. Terra Nova Academy. West Palm, Florida.
• 2002 Presented a one day project approach component to “The Advanced Multi-age Institute”. Flagstaff, AZ.
• 2001 Produced training video for cooperating teachers' assessment of student teachers
• 2001 Teleconference. "Plearning: Learning through play." Middle Tennessee State University, Murfreesboro, TN.
• 1999 Editorial content review. Writers’ Workshop: Reflections of Elementary and Middle School Teachers. Solley, B Allyn & Bacon.
• 1998 Founded web discussion group. Reflect thru’ Tech.
• 1998-2001 Co-editor with Burriss, L The Reflector. Department newsletter distributed throughout Middle Tennessee.

Grants

• 2007 Non-Instructional Grant
• 2005-2006 Faculty Research Grant to conduct research.
• 2003 Instructional Technology Fellowship. Provided 40 hours of adaptive software training.
• 2001 Mini-Grant for "Plearning: Learning Through Play."
• 2001 Faculty Development Grant funded attendance at Project Institute. University of Illinois, Champagne-Urbana. (five days)
• 2001 Non-instructional grant.
• 2000 Means, H.W. and Burriss, K. G. Video-Conferencing Faculty Mini-Grant; "Surfing the Internet with the young learner."
• 1997 Burriss, K. G. Faculty Research Grant, "Curriculum Integration and Thematic Cycles."
• 1996 Burriss, K. G. Instructional Technologies Development Grant: "Discovery with Disks."

Selected University Committees

- 2005-2007  Sick Bank Committee
- 2003  June Anderson Women’s Director Center Search Committee
- 2002-2005  Faculty Senate
- 2001-2003  Committee on Admissions and Standards
- 1999-2003  June Anderson Women’s Center Advisory Board-Chair
- 1994-2005  Day Care Advisory Chair
  - Grants and Scholarships
- 2000-2002  Library Committee
- 1996-1999  Ad Hoc Committee on A.D.A. Accessibility
- 1996-1999  Leonardo Project, Advisory Board Member
- 1995-1999  Ad Hoc Committee on Intergenerational Care

Service to the University

- 2000-2006  Project HELP Advisory Board Member
- 2004  Outdoor Learning and Play: A National Perspective Regarding Policy and Practice. Poster Session, Scholars’ Forum, MTSU.
- 2004 & 2005  Faculty Senate- member Steering Committee, Liaison Committee, Nominations Committee, Elections Committee.
- 2002  Burriss, L. & Burriss, K. G. "Gutenberg Revisited." Honors Lecture Series, MTSU.
- 2002  Member editorial board for The Record. Middle Tennessee State University, Murfreesboro, TN
- 2001  Burriss, K. and Burriss, L., Faculty Scholars Forum.
- 1997  MDA "Lock-Up" Participant, MTSU.
- 1997  Tenure and Promotion Workshop, Presenter, MTSU.

College Committees

- 2005-2007  Research Committee
- 2005  Japan Committee Facilitator: student visitors, public school visits, and home-stays.
- 2001  Member Literacy Committee
- 1995-1997  Early Childhood Committee
- 1994-1995  Multicultural Task Force
1993-1994 Committee on Student Teaching Evaluation

Departmental Committees

2006-2007 Search Committee Member – Literacy and Curriculum Positions.
2006 Co-coordinator, K-6 Committee
2004-2006 Student Teaching Committee
2003-2007 Tenure and Promotion Committee
2003 Vision Statement Committee
2002-2003 Member Chair Search Committee
1996-2006 Ed.S. Committee
1999-2006 Faculty Search Committee
2000 Tenure and Promotion Review Committee
1999-2000 Portfolio Development Committee
1999 Scholarship Committee
1999 Department Faculty Search
1998-1999 Department Chair Search, Chair
1998-1999 Student Teacher Evaluation Committee, Chair
1998 Goals Committee
1997-1998 Graduate Program Revision Committee
1996-1997 Sub-Committee 5-8
1995-1996 K-4 Interdisciplinary Undergraduate Committee
1993-1994 Scholarship Committee
1993-1994 Task Force on Computer Technology
1992-1993 Search Committee

Service to Professional Organizations

2007-2008 Public Committee – Chair (elected)
2007 Content Reviewer: Theme Issue on Inclusion Practices Abroad. ACEI.
2006-2007 Coeditor ACEI Inclusion Quarterly
2003-2007 Charter member a ACEI state chapter, TACEI.

2001 Content reviewed manuscripts for an ACEI special publication on immigrant and minority children in schools.
• 1999 & 2005-2008 Member Publication Committee - Association for Childhood Education International.
• 1998-1999 Co-Editor with R. Newman Focus on Pre-K and K. ACEI newsletter.
• 1997 Reviewed manuscripts for NAECTE Journal of Early Childhood Teacher Education.
• 1997 Reviewed proposals for research forum, 1998 National Conference. ACEI.
• 1997-1999 Co-Editor with P. Crawford for Focus on Elementary. ACEI.
• 1995 Reviewed proposals for concurrent sessions for 1996 ACEI National Conference.
• 1994-1997 Board Member, Rutherford County Association for the Education of Young Children.

Meetings and Committees

• 1997-2008 ACEI Publications Committee
• 1990-2007 Association for Childhood Education International
• 1994-2000 Mid South Educational Research Association
• 1994-2000 Research Committee for Association For Childhood Education International
• 1992-2000 National Association for the Education of Young Children
• 1992-1997 Tennessee Association for the Education of Young Children
• 1993-1997 National Association for Early Childhood Teacher Education
• 1994-1997 Infant/Toddler Committee Association for Childhood Education International
• 1996-1997 Association for Supervision of Curriculum Development
• 1996-1997 National Association for Multicultural Education
• 1995-1996 Early Childhood News, Advisory Board
VITA

Michaele F. Chappell

Department of Mathematical Sciences
P.O. Box 34
Middle Tennessee State University, [MTSU]
Murfreesboro, TN 37132
Phone: (615) 898-2393 /Fax: (615) 898-5422
E-Mail: chappell@mtsu.edu

I. EDUCATION

1991- Ph.D. (Mathematics Education), The Florida State University [FSU], Tallahassee, FL
1983- M.S.T. (Mathematics Education), Georgia Southern College [GSC], Statesboro, GA
     (currently Georgia Southern University)
1981- B.S.Ed. (Mathematics Education), Georgia Southern College [GSC]

II. PROFESSIONAL EXPERIENCES

Fall, 2004 – 2006  Interim Chair, Dept of Mathematical Sciences, MTSU
Fall, 2001 – present  Professor, Mathematics Education, Dept of Mathematical Sciences, MTSU
Fall, 1997 – Sum 2001  Associate Professor, Mathematics Education (w/ Tenure), Dept of Secondary Education University of South Florida [USF], Tampa FL
Spg. 1991 – Sum 1997  Assistant Professor, Mathematics Education, Dept of Secondary Education, USF
Fall, 1990  Mathematics Education Instructor, Dept of Curriculum & Instruction, FSU
Fall, 1989  Student Teacher Supervisor, Dept of Curriculum & Instruction, FSU
Summer, 1989  Research Assistant, Dept of Educational Research, FSU
     Project: Minority Students’ Communicative Competence in Cooperative Learning Environments
Fall, 1988 – Spg. 1989  Instructor, Dept of Curriculum & Instruction, FSU
Summer, 1988  Instructor, Dept of Childhood Education, FSU
Summer, 1988  Research Assistant, Dept of Curriculum & Instruction, FSU
     Project: Computers, Geometry, and Problem Solving: An Integrated Approach
Spring, 1988  Computer Instructor, Moore Elementary School Computer Program, Tallahassee, FL
Summer, 1987  Instructor, Dept of Mathematics, FSU
III. TEACHING EXPERIENCES at USF and MTSU

GRADUATE Courses (# of instruction times)
- Research Issues in Math Ed (PhD/MS) / 5
- Current Trends in Sec. School Math (MA/PhD) / 9*
- Preparing Teachers of Math: K-12 (PhD) / 1
- Topics for Teaching Geometry (MA) / 2
- Geometry for (Middle Grades) Teachers (MA/ 5*
- Teaching Pre-Secondary Mathematics (MA) / 1
- Problem Solving for Teachers) (MA) /3*
- Mathematics for Teachers (MA)/2*

UNDERGRADUATE Courses
- Teaching Elementary Math  1/22
- Teaching Elementary Math II / 14
- Teaching Math in the Middle Grades /12*
- Teaching Sr High School Math / 2
- Senior Seminar in Math Ed / 7
- Concepts/Struct. of Elem. Math / 5
- Informal Geometry / 6
- Internship / 7

*Includes the maximum number of times course has been taught at MTSU.

RESEARCH AREAS of INTERESTS

Research and scholarly agenda has focused on:
- the mathematics achievement of African-American learners at all levels;
- the professional development of teachers of mathematics—particularly those who practice at the elementary and middle school levels; and
- spatial-reasoning abilities and mathematical problem solving of both teachers and students.

DOCTORAL STUDENT COMMITTEES

1999 – 2004 Pamela Moses Snipes (Mathematics Education/USF), Assistant Chair  
Dissertation: The Effect of African Culture on African-American Students’ Achievement in and Perceptions of Selected Geometry Topics in the Elementary Mathematics Classroom. /Status: Assistant Professor at Winston Salem State University, Winston Salem, NC.

1997 - 2002 Lorie S. Holden (Mathematics Education/USF), Member  
Dissertation: Effects of Computer Mediated Learning Instruction on Community College Intermediate Algebra Students= Attitudes and Achievement/Status: Associate Professor at Manatee Community College, Bradenton, FL.

1994 - 2001 James Condor (Mathematics Education), Assistant Chair
Dissertation: Effects of Computer Coaching in Metacognitively-Cued Elementary Statistics Instruction /Status: Associate Professor at Manatee Community College, Bradenton, FL.

1999 - 2000 Janet Marderness (Mathematics Education), Member

1994 - 1998 Dennis C. Runde (Mathematics Education), Assistant Chair
Dissertation: Effects of Computer Algebra Systems and Problem-Solving Heuristics on Community College Algebra Students= Word-Problem-Solving Abilities /Status: Associate Professor at Manatee Community College, Bradenton, FL.

1993 - 1998 Maggie Cran (Educational Leadership), Member
Dissertation: Correlations Between Student Presage Variables and Performance on the Mathematics Subtest of the Florida College Level Academic Skills Test (CLAST)
Status: Professor at Edison Community College, Ft. Myers, FL.

1993 - 1998 Liana F. Fox (Mathematics Education), Member
Dissertation: The Effect of a Graphic Calculator Used in an Active Learning Environment on Intermediate Algebra Students= Achievement and Attitude/ Status: Professor at Hillsborough Community College, Tampa, FL.

1993 - 1996 Lynette Fields (Educational Leadership), Member
Dissertation: Effects of Videotape and Verbal Feedback on Disruptive/Negative Behavior of Students Riding School Buses/Status: Asst. Professor at USF, Tampa, FL.

1993 - 1995 Kathy Cousins (Mathematics Education), Member
Dissertation: A Path Analysis Study of the Factors Affecting Mathematics Achievement for African-American and White Third-Grade Students/Status: Assistant Professor in Mathematics Department at North Carolina A & T, Greensboro, NC.

1992 - 1996 Thomas Collins (Mathematics Education), Assistant Chair
Dissertation: The Effects of Computer-Assisted Algebra Instruction on Achievement, Mathematics Anxiety Levels, and Attitudes Toward Personal Use of Computers of Students in an Historically Black University/Status: Professor in Mathematics Department at Johnson C. Smith University, Charlotte, NC.

1991 - 1996 Michael Mears (Interdisciplinary Education), Member
Dissertation: The Effects of Cooperative Learning Strategies on Mathematics Achievement and Attitude in College Algebra Classes/Status: Chair of Mathematics Department at Manatee Community College, Bradenton, FL.

1991 - 1995 Alphonso Smith (Mathematics Education), Member
Dissertation: Discovery Learning with a Computer Graphics Utility as a Tool in Investigating the Characteristics of Linear Equations: Effects on Student Achievement and Attitudes/Status: Professor a community college in central Florida.

1991 - 1993 Linda Greico (Mathematics Education), Member
Dissertation: The Effectiveness of Coupling a General Format with a Conceptual Schema Upon College Algebra Students' Ability to solve Mathematical Word Problems/Status: Professor at community college in Florida.

IV. PROFESSIONAL ASSOCIATIONS

2001 - present Tennessee Mathematics Teacher Association [TMTA]
2001 - present Middle Tennessee Mathematics Teachers Association [MT]
1993 - 2004 Research on Mathematics Education [SIG-RME], Special Interest Group of the American Education Research Association [AERA]
1993 - present Association of Mathematics Teacher Educators [AMTE]
1990 - 2004 Research Focus on Black Education [SIG-RFBE], Special Interest Group of the AERA
1990 – 2004 American Education Research Association [AERA]
1988 - present Benjamin Banneker Association, Inc. [BBA], Affiliate of the NCTM
1988 - present The National Council of Teachers of Mathematics [NCTM]/also: 1981 - 1986

V. RESEARCH and SCHOLARLY PUBLICATIONS (2001-2007)

Refereed Manuscripts

Book(s)

**Book Chapters**


**Journal Articles**


**VI. GRANTS/CONTRACTS (2001-2007)**

**University Level**

2006 (Summer)  
**Title:** Faculty Development Proposal  
**Investigator:** Michaele Chappell  
**Agency:** MTSU/Desegregation Funding: Institutional Equity and Compliance  
**Purpose:** Complete revision of book proposal for Heinemann Publishers  
**Amount Funded:** $2100
2003 (Spring)  
**Title:** Learning Mathematics, Building Character: A Book Proposal  
**Investigators:** Michaele Chappell  
**Agency:** MTSU/Faculty Research and Creative Activity Committee  
**Purpose:** Develop a Book Proposal  
**Amount Funded:** $1800

2002 (Spring)  
**Title:** Using Standards-based Curricula to Enhance Mathematics Instruction  
**Investigators:** Mary Enderson & Michaele Chappell  
**Agency:** MTSU/Instructional Evaluation and Development Committee  
**Purpose:** Purchase complete teacher and student sets of NSF standards-based curriculum materials at the middle and secondary levels  
**Amount Funded:** $6630

2002 (Spring)  
**Title:** Resource for Weaving Culture and Mathematics in Classrooms: A Book Proposal  
**Investigator:** Michaele Chappell  
**Agency:** MTSU/Faculty Research and Creative Activity Committee  
**Purpose:** Develop a book proposal  
**Amount Funded:** $2550

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**Grant Proposal(s) Generated & Submitted**  
**National Level**  
2004 (June)  
**Title:** NSF GK-12: Mathematics Teaching Fellows Project at MTSU  
**Investigators:** Ginger Holmes Rowell & Michaele Chappell  
**Agency:** National Science Foundation  
**Purpose:** Service/Research Grant  
**Amount:** $1 500 000

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**VIII. PRESENTATIONS (2001-2007)**

**Lecture Presentations**  
**National Level**  
2007 (Mar)  
*Writing for NCTM Journals: Tips and Discussion with Editorial Panel Members*  
– Session presented at the NCTM Annual Meeting and Exposition, , Atlanta, GA.  
2006 (Jan.)  
*Panel Presenter. Strengthening the content understanding of teachers through pedagogical explorations.*  
Presented at the 10th Annual Conference of the Association of Mathematics Teacher Educators (AMTE), Tampa, FL.  
2004 (Oct)  
*Kimmins, D., and Chappell, M. Positioning Teachers to Enact Standards-based Instruction.*  
Presented at the 26th Annual Meeting of North American Chapter of the International Group for the Psychology of mathematics Education (PME-NA), Toronto, Canada.  
2004 (Jan.)  
*Panel Presenter. Integrating the thinking of middle grades students into a mathematics methods course.*  
Presented at the 8th Annual Conference of the Association of Mathematics Teacher Educators (AMTE), San Diego, CA.  
2003 (Jan/Feb)  
*Chappell, M. and Kimmins, D. Monitoring Teachers’ Growth in the F.O.C.U.S.*
Project: Overview and Insights. Presented at the 7th Annual Conference of the Association of Mathematics Teacher Educators (AMTE), Atlanta, GA.

2002 (Nov.) Chappell, M. Mathematics, Media, and Multiculturalism. Presented at the Eastern Regional Meeting of the NCTM, Boston, MA.


2001 (April) Thompson, D., and Chappell, M., Weaving culture through mathematics. Presented at the 79th Annual Meeting of the NCTM, Orlando, FL.

State/Regional Level

2007 (May) Geometry tasks and projects in preservice K-8 mathematics courses. – Presented at the annual Math 1410/1420 Conference, MTSU, Murfreesboro, TN.

2006 (Nov) Data for Assessment and Teaching Strategies – Workshop provided for MSPc2 grant teachers on the use of NAEP data in exploring classroom assessment in mathematics, Murfreesboro, TN.


2002 (Oct) Chappell, M. EYH Talk Live! Presented at the 6th Annual Expanding Your Horizons Conference. MTSU, Murfreesboro, TN.


Departmental/College/University

2007 (Feb. 28th) Learning from NAEP: Implications for Teaching, Learning, and Assessing Mathematics in College Classrooms – Department of Mathematical Sciences Research Colloquium Series, Murfreesboro, TN.

2004 (Feb. 9th) Chappell, M. The McNair Experience. Presented at the McNair Scholars, Middle Tennessee State University, Murfreesboro, TN.

2001(Nov) Chappell, M.F., What does middle-grades curriculum projects research say about student outcomes? Presented during the Fall Colloquium Series of the MTSU Department of Mathematical Sciences

Workshop/Institute Presentations (via Invitation)

State Level

1998 – present Numerous professional development workshops on varied topics have been conducted for state-funded grants/projects.

District Level

2002 (Feb) Overview of the PSSM Standards. Presented as part of an Eisenhower Workshop for elementary school teachers. Motlow Community College, Tullahoma, TN.
2001(Dec) *Teaching Mathematics* Workshop for St. Rose Academy Mathematics Teachers, Murfreesboro, TN.

2001(Oct) *The Algebra@ Standard* Workshop presented for the FOCUS Grant for Upper Cumberland Mathematics Teachers, Celina, TN.

2001 (Sept) *The Measurement@ Standard* Workshop presented for the FOCUS Grant for Upper Cumberland Mathematics Teachers, Celina, TN.

**IX. PROFESSIONAL SERVICE ACTIVITIES (2001-2007)**

**Service to the Profession**

2007 – 2009 AMTE Board Liaison for NCTM Affiliate

2006 - 2007 AMTE/Nominations and Elections Committee/Member

2006—present ProQuest Publishing/Advisory Board Member

2005 – present NCTM/ *Mathematics Teaching in the Middle School* Journal / Editorial Panel Member

2003 – 2005 AMTE Monograph Editorial Panel/Member

2002 - present *MathThematics* Middle School Curriculum Program / Advisory Panel Member

2001 - 2003 MTSU - FOCUS Eisenhower Grant, *Curriculum Coordinator*

2001 - 2003 NCTM/Duke-Energy @Reflections@ Project/Collaborator

2001 - 2002 AMTE/Nominations and Elections Committee/Member

**Service to the UNIVERSITY**

**University Level**

2006 – 2008 University Instructional Evaluation & Development Committee / Member

2003 - 2004 University Honors & Awards Committee/ Member/Secretary (2003-04)

**College Level**

2006 – present CBAS Planning Committee for Ph.D. program in Mathematics and Science Education

2005 – 2006 CBAS I-Sciences Ph.D Oversight Committee/ Member

2004 – 2006 CEBS Teacher Education Council / Member

2004 – 2005 CBAS/PKAL Committee / Member

2002 (Spring) CBAS/Search Committee for Program Coordinator and Advisor/Member

**Department Level**

2006 – present Graduate Program Policy Committee / Member

2006 – present Facilities Planning Committee / Member

2004 – 2006 Departmental Development Committee (“PKAL”)/Member

2003 – 2004 Ph.D. Committee/ Member

2003 – 2004 Mathematical Sciences Search Committee/Member / Also: 2001-02; 2002-03

2002 – 2004 Undergraduate Program Policy Committee/Chair (2003-04)

2001 – present Mathematics Education Curriculum Group Committee/Member
2001 – 2005  Research/Creative Scholarship Committee/Member
2001 – present  Mathematics Education Search Committee/Member

Community Level
2003 – present  Kingdom Business Institute/Destiny Center, Murfreesboro
               TN/Volunteer Dean/Instructor

X. HONORS and AWARDS
2005  MTSU Five-Year Service Award
2004  Granted Tenure at Middle Tenure State University
2001  Promoted to Full Professor, Middle Tennessee State University
2001  USF Ten-Year Service Award

References are available upon request.
[Vita Updated: June/2007]
Mary C. Enderson, Ph. D., Associate Professor
Box X-039
Department of Mathematical Sciences
Middle Tennessee State University
Murfreesboro, TN  37132

Education
Ph.D. in Mathematics Education, 1995, University of Georgia
M.S. in Education (Mathematics), 1990, Old Dominion University
B. S. in Secondary Education (Mathematics), 1985, Old Dominion University

Appointment and Employment Responsibilities
Middle Tennessee State University, Department of Mathematical Sciences, Murfreesboro, Tennessee (1999 – present, Associate Professor)
Indiana University of Pennsylvania, Department of Mathematics, Indiana, Pennsylvania (1994 – 1999, Assistant Professor)
University of Georgia, Mathematics Education Department, Athens, Georgia (1990 – 1994, Instructor and Research Assistant)

Research interests
Strong research interests in the following areas:
- technology as a tool for learning and teaching
- case study research
- reflective discourse and practice
- preservice mathematics teacher preparation
- teacher change
- mathematics reform movement
- assessment

Enderson, M. C. “Field work that promotes learning mathematics: Valuable experiences for future elementary teachers” (Manuscript in process – submitted to Teaching Children Mathematics (NCTM))


Enderson, M. C. (2002). *Reaching Teachers through Distance Education*. Published in the proceedings of the Society for Information Technology & Teacher Education (SITE) International Conference, Nashville, TN.


2006 Volunteer State Community College Mathematics Department Collaborative, Gallatin, TN (Mar.): Invited presentation. Title: A Search for the intersection of classroom practice and research.

2006 Research Council on Mathematics Learning (RCML) Conference, Las Vegas, NV (Feb.): Co–Presenter; Title: Preparing Secondary Teachers: Challenging their understanding of mathematics

2006 Association of Mathematics Teacher Educators (AMTE) Conference, Tampa, FL (Jan.): Panel moderator and member; Title: Strengthening the content understanding of teachers through pedagogical explorations

2006 Association of Mathematics Teacher Educators (AMTE) Conference, Dallas, TX (Jan.): Invited Discussant; Title: The Algebraic Preparation of Elementary and Middle School Teachers


2004 Research Council on Mathematics Learning (RCML) Conference, Oklahoma City, OK (Feb.): Co–Presenter; Title: Preparing Secondary Teachers: A View of Future Classrooms by Way of Case Studies

2004 Association of Mathematics Teacher Educators (AMTE) Conference, San Diego, CA (Jan.): Co-Presenter; Title: Using Cases to Prepare Secondary Mathematics Teachers

2003 National Council of Teachers of Mathematics (NCTM) Regional Conference, Charleston, SC (Nov.): Presenter; Title: Geometry Investigations


2003 Middle Tennessee State University – College of Basic and Applied Sciences Teaching and Learning Seminar, Murfreesboro, TN (Feb.): Invited Presentation: Teaching to Learn, Learning to Teach: Moving Beyond the University Classroom.

2003 Association of Mathematics Teacher Educators (AMTE) Conference, Atlanta, GA (Jan.): Panel Presentation; Title: Mathematics Preparation of Secondary Teachers.
2002 Middle Tennessee State University Instructional Technology (IT) Share Fair, Murfreesboro, TN (Oct.): Invited Presentation: Field-based Experiences for Preservice Mathematics Teachers via Video Conferencing.


2002 Society for Information Technology & Teacher Education (SITE) International Conference, Nashville, TN (Mar.): Paper Presentation: Reaching Teachers through Distance Education.

2002 Research Council on Mathematics Learning (RCML) Conference, Memphis, TN (Mar.): Co-Presenter; Title: Teacher Change: Is it possible in today’s Classrooms?

2002 Association of Mathematics Teacher Educators (AMTE) Conference, San Antonio, TX (Jan.): Discussant; Title: Developing Teachers’ Mathematical Knowledge for Teaching.

Research Grants (proposals and awards from 2007-2002)

[2006 – present] Improving Teacher Quality Professional Development Project: LMS (Learning Mathematics through Science) (Status: funded for $29,426) Director: Dr. Chuck Higgins, Physics & Astronomy, MTSU. I was one of three Co-Directors for LMS. This project focused on learning mathematics concepts by way of astronomy.

[2005 – 2010] National Science Foundation Program Revision Proposal (Status: funded for $1.2 million) – Project CONCEPT (Connecting content and pedagogical preparation of teachers) – Directors Douglas Lapp and Azita Manouchehri, Mathematics Department at Central Michigan University. My role in the project is to assist in the development of curricula/materials, piloting the materials, and evaluating the effectiveness of such materials in undergraduate mathematics education teacher preparation.

[2003] Improving Teacher Quality Professional Development Proposal (Status: not funded), Director for Project SMART (Science, Mathematics, And Reading Together). This project proposes teachers in grades 4-6 to experience how to connect science, mathematics, and reading in their classrooms by using “hands-on” instructional methods.

[2003 – 04] Faculty Video-Conferencing Mini-Grant (sponsored by the MTSU Instructional Technology Support Center). Director and coordinator of preservice mathematics teachers’ (students in MATH 3330) development and presentation of two mathematics sessions using Geometer’s Sketchpad for middle and high school students. The broadcast will be to seven surrounding counties via satellite. [Awarded Summer 2003, Implementation Spring 2004]

[2003 – present] MTSU Faculty Research and Creative Activity Committee (FRCAC) Grant (awarded Spring 2003, implementation 2003-2004 Academic Year); Project Title: A Study of Beginning Mathematics Teachers’ Perceptions of their Undergraduate Program. [This study proposes to survey recent mathematics education graduates who are presently teaching and solicit their perspectives on coursework and critical factors to help them in becoming a mathematics teacher. This research has had some delays and is still in-process.]

[2002 – 03] Faculty Video-Conferencing Mini-Grant (sponsored by the MTSU Instructional Technology Support Center). Director and coordinator of preservice mathematics teachers’ (students in MATH 3330) development and presentation of two mathematics sessions using Geometer’s Sketchpad for middle and high school students. The broadcast
will be to seven surrounding counties via satellite. [Awarded Summer 2002, Implementation Spring 2003]

[2002] Instructional Evaluation and Development Grant (MTSU) – Awarded spring 2002 – made use of materials in academic year 2002-03. This grant supported purchasing Standards-based mathematics curricula and supporting materials for use in middle and high school teacher preparation courses.

[2002] National Science Foundation MSP Proposal (not funded). The PIES Project: **Partners In Educating Students**. Co-PI of project. This project proposes to provide pre-K through sixth grade Murfreesboro City classroom teachers and students as well as MTSU preservice teachers with a partnership to enhance learning for all students.

[2001 – 02] Faculty Video-Conferencing Mini-Grant (sponsored by the MTSU Instructional Technology Support Center). Director and coordinator of preservice mathematics teachers’ (students in MATH 3330) development and presentation of two mathematics sessions using Geometer’s Sketchpad for middle and high school students. The broadcast will be to seven surrounding counties via satellite. [Awarded Summer 2001, Implementation Spring 2002]


Outstanding Achievement in Instructional Technology Award (August 2002) Middle Tennessee State University, Murfreesboro, TN

**Consulting, professional development, and school partnerships (2007-2002)**

SACS Review – Parent/community partner for Hobgood Elementary School, Murfreesboro, TN [2004 – 07]

Appalachian Collaborative Center for Learning, Assessment and Instruction in Mathematics (ACCLAIM) Professional Development Component Mentor (funded by the National Science Foundation). [2003 – 04]


Expanding Your Horizons in Science and Mathematics (MTSU campus, Oct. 2002); Material organizer for participants (program for young female students in grades 6, 7, 8)

Professional Development workshop – FOCUS Project (funded by Eisenhower or Enhancing Teacher Quality grant), Topic of PD: Transformational Geometry (June, 2002, Middle Tennessee area)


**Other professional activities (2007-2002)**

Associate Editor for *School Science and Mathematics* journal (2004 – present)

Reviewer – American Education Research Association conference proposals (2006 – present)

Conference committee (member) for Research Council on Mathematics Learning (2003-2006)

Referee for the Editorial Panel of NCTM (National Council of Teachers of Mathematics) journals (Teaching Children Mathematics, Mathematics Teaching in the Middle School, & Mathematics Teacher) [1999 – present]
DOVIE KIMMINS
Associate Professor, Department of Mathematical Sciences
Associate Director of Tennessee Mathematics, Science and Technology Education Center
Box 195 Middle Tennessee State University
Murfreesboro, TN 37132
dkimmins@mtsu.edu

EDUCATION
Ed.D. University of Tennessee, Knoxville 1994 Major in Curriculum & Instruction (Math Education)
M.S. Middle Tennessee State University 1983 Major in Mathematics
B.S. David Lipscomb College 1980 Teaching Major in Mathematics, Minor in Physics

DOCTORAL DISSERTATION
An Exploratory Study of the Relationship Between Young Children's Conceptions of Randomness and Piagetian Developmental Level. University of Tennessee. 1994

PROFESSIONAL EXPERIENCE
2004 - Present Associate Director of Tennessee Mathematics, Science and Technology Education Center, MTSU
1983-Present Faculty, Department of Mathematical Sciences, MTSU
1997-1999 Undergraduate Coordinator, Department of Mathematical Sciences, MTSU
1981-1983 Graduate Teaching Assistant, Department of Mathematical Sciences, MTSU
1980-1981 Mathematics Teacher, David Lipscomb High School

COURSES TAUGHT at MTSU
Math 1010 Mathematics for General Studies
Math 1410 Concepts and Structure of Elementary Mathematics
Math 1420 Informal Geometry
Math 1630 College Mathematics for Managerial, Social, Life Sc.
Math 1710 College Algebra
Math 1720 Plane Trigonometry
Math 1730 Algebra & Trigonometry
Math 1810 Applied Calculus I
Math 1910 Calculus I
Math 1920 Calculus II
Math 213 Mathematics of Finance
Math 3110 Calculus III
Math 4540 Topics in Secondary School Mathematics
Math 6330 Algebra for Teachers
Math 6350 Probability & Statistics for Teachers

GRANTMANSHIP
CO-PI for the following Math Science Partnership Grants funded by Tennessee Department of Education (With Mary Martin and Ray Phillips). For grades 5-8 mathematics and science teachers in a total of 14 Tennessee school districts.
2006-2008 $750,000 Science/Mathematics Synergies: Earth, Space and Environment
2005-2007 $900,000 Mathematics Partnership: Excellence in Teaching & Learning in Middle Schools

PI or CO-PI for the following THEC Improving Teacher Quality (formerly Eisenhower) grants for grades 4-8 mathematics teachers in a total of 25 Tennessee school districts.
2007 $73,000 Hardin McNairy Partnership: Improving Grades 3-8 Mathematics Instruction and Student Achievement
2006-2007 $140,553 Elk River Partnership: Systemic Initiative to Improve Elementary Mathematics Instruction
2005-2006 $122,600 Hardeman County Partnership (With Ray Phillips & Padgett Kelly)
2000 $30,000 A Teacher Enhancement Partnership for Rutherford County Middle School Mathematics Teachers.
1999 $30,000 Helping Middle School Teachers to Successfully Implement the Mathematics Framework. (With Ray Phillips)
1998 $30,476 Empowering Elementary School Teachers to Successfully Implement the New Mathematics Framework. (With Ray Phillips)

2002 – 2005 Curriculum Coordinator for three additional THEC Improving Teaching Quality grants.

PUBLICATIONS

PRESENTATIONS at PROFESSIONAL MEETINGS
“Investigative Problems to Enhance Student Interest and Motivation.” Annual Conference of the National Council of Teachers of Mathematics, St. Louis, April 2006. (With Jeremy Winters)

"Investigative Problems to Enhance Student Interest." Annual Meeting of the Tennessee Mathematics Teachers Association, Chattanooga, September 2004. (With Jeremy Winters)

"Utilizing the Power of Technology to Visualize Mathematics." International Conference on Teaching and Learning, Jacksonville, Florida, March 2004. (Poster presentation)


“Monitoring Teachers’ Growth in the FOCUS Project: Overview and Insights,” Association of Mathematics Teacher Educators, Atlanta, February 2003. (With Michale Chappell)

“Graphing Calculator Window Selection,” Regional Conference of the National Council of Teachers of Mathematics, Paducah, October 2002. (With Joan Raines)


"Are You Certain or Are You Impossible?" Annual Conference of Tennessee Mathematics Teachers Association, Knoxville, April 2000.

"Are You Certain or Are You Impossible?" Regional Conference of the National Council of Teachers of Mathematics, Mobile, Alabama, March 2000. (With Doris Hendrix)

“Are You Certain or Are You Impossible?,” Fall Conference of the Middle Tennessee Mathematics Teachers, September 1999. (With Doris Hendrix)

Calculus Reform, Why Bother?, Volunteer State Collaborative Meeting, Volunteer State Community College, Gallatin, Tennessee, March 1998. (With Don Nelson)


“What Students Should Know Before Probability,” Regional Conference of the National Council of Teachers of Mathematics, Atlanta, February, 1997. (With Doris Hendrix)


“Probability for Middle School: Building on Intuitions of Randomness,” Southeast Regional Conference of the National Council of Teachers of Mathematics, Knoxville, October 1995. (With Doris Hendrix)


“Can You Beat the Odds?” Fall Conference of Middle Tennessee Mathematics Teachers, Nashville, September 23, 1995. (With Doris Hendrix)


“Computer-Oriented Calculus,” Equity 2000 Summer Institute on Teaching College Mathematics, Nashville, August 1993. (With Nell Rayburn)
“Mathematical Discovery and Problem Solving with BASIC,” Fall Conference of Middle Tennessee Mathematics Teachers, Nashville, September 1991.
“The Probability that a Quadratic Equations Has Real Roots,” Fall Conference of Middle Tennessee Mathematics Teachers, Nashville, September 1989.

WORKSHOPS FOR INSERVICE TEACHERS

CURRICULUM DEVELOPMENT
Developed and taught the following new courses for prospective secondary mathematics teachers at MTSU. Technology Tools for School Mathematics, Topics in Secondary School Mathematics.
Developed and team-taught the following new course for inservice mathematics teachers enrolled in the MST program at MTSU: Technology Tools for School Mathematics.
Received a Middle Tennessee State University Instructional Technology Development Grant to develop technology enhancements for college algebra.

SELECTED SERVICE ACTIVITIES
Reviewer of papers for 5th International Conference on Education and Information Systems, Technologies and Applications: EISTA ’07.
Member of the Tennessee Mathematics Standards Revision Team for Mathematics Grades 6-8, 2007.
Member of Curriculum Alignment Committee of State P-16 Council, 2006.
Conference Chair of statewide Math Science Curriculum Seminar funded by Tennessee Department of Education, 2006.
Conference Co-Chair of Tennessee Summit on Mathematics and Science Education, 2006.
Co-Director of Tennessee’s NASA Educator Resource Center, 2005-present.
Conference Chair of Tennessee's Considering New Curricula Conference funded by K-12 Mathematics Learning Center, Education Development Center, 2005.
Director of Middle School Mathematics Contest, 2000-present
Webmaster and Chair of Technology Committee, Xi State (Tennessee) of the Delta Kappa Gamma Society International, 1999-2001
Principal writer of proposal for establishment of MTSU Mathematics Learning Center, $125,000 funded by MTSU. Director of Center - 1994-1999.
Membership Chair and Member of Executive Board of Middle Tennessee Mathematics Teachers, Spring 1992-1998
Member of Tennessee Curriculum Frameworks Study Group, Spring 1993-Spring 1995.
Co-Chair of Student Hosts Committee for the 70th Annual Meeting of the National Council of Teachers of Mathematics, April 1992
Member of Educational Materials Committee for Southeast Regional Conference of the National Council of Teachers of Mathematics, March 1990

PROFESSIONAL MEMBERSHIPS
National Council of Teachers of Mathematics
Mathematical Association of America
Psychology of Mathematics Education
Association of Mathematics Teacher Educators
Middle Tennessee Mathematics Teachers
Tennessee Mathematics Teachers Association
Delta Kappa Gamma Society International
LORETTA DIANE MILLER
Middle Tennessee State University, P.O. Box 301, Murfreesboro, TN 37132 (tele) 615 898 5472

EDUCATIONAL BACKGROUND

Ph.D., University of Missouri, Columbia. Mathematics Education, 1986
Ed.S., Arkansas State University. Curriculum & Instruction, 1981
M.S., Memphis State University. Mathematical Sciences, 1977
B.S., University of Tennessee, Knoxville. Mathematics Education, 1973

EXPERIENCES

Director, Undergraduate Research Center (August 1, 2006 – present), Middle Tennessee State University, Murfreesboro, Tennessee

Director, McNair Scholars Program (July 1, 2003 – present), Middle Tennessee State University, Murfreesboro, Tennessee

Interim Associate Dean for the College of Basic & Applied Sciences (July 1, 2004 – June 30, 2005), Middle Tennessee State University, Murfreesboro, Tennessee

Interim Vice Provost for Academic Affairs (February 1, 2002 – June 30, 2004), Middle Tennessee State University, Murfreesboro, Tennessee

Assistant to the President (November 2001 - January 2002), Middle Tennessee State University, Murfreesboro, Tennessee

Director, Professional Development for Mathematics (April 2001 - January 2002), Urban Systemic Project for Metro Nashville Public Schools, Funded by the National Science Foundation, Nashville, Tennessee

Professor (1997 - present), Associate Professor (1993-97), Department of Mathematical Sciences, Middle Tennessee State University, Murfreesboro, Tennessee

President Faculty Senate, Middle Tennessee State University, Murfreesboro, Tennessee, 1999-2000

Associate Professor Mathematics Education, Division of Curriculum and Instruction, Texas Tech University, Lubbock, Texas, 1992-93

Senior Research Fellow, National Key Center for School Science and Mathematics, Curtin University, Perth, Western Australia, 1990-92

Assistant Professor Mathematics Education, Department of Curriculum and Instruction, Louisiana State University, Baton Rouge, Louisiana, 1986-90

Associate Director of Undergraduate Studies and Field Experiences, College of Education, University of Missouri, Columbia, 1984-86; Assistant Director, 1983-84

Graduate Teaching Assistant, Mathematics Department and Department of Curriculum and Instruction, University of Missouri, Columbia, 1982-83

Instructor of Developmental Mathematics, Arkansas State University, Jonesboro, Arkansas, 1977-82

Teacher of mathematics, physics, and chemistry, Memphis City Schools, Memphis, Tennessee, 1974-77

Teacher of mathematics, Knoxville City School System, Knoxville, Tennessee, 1973-74
SELECTED PUBLICATIONS - REFEREED JOURNALS


SELECTED RESEARCH AND SCHOLARLY PRESENTATIONS

International


*What research and anecdotal evidence say about the use of writing to teach and learn mathematics*, paper presented to faculty and students in the College of Mathematics and Information Science, Northwest Normal University, Lanzhou, People’s Republic of China, June 2006.


*Middle Tennessee State University's Academic Master Plan - A Blueprint for Excellence*, paper presented to all administrators at Northwest Normal University, Lanzhou, People's Republic of China, and to all administrators at Tianshui Normal College, P.R.C., October 2003.

*The Principles & Standards for School Mathematics in the United States*, paper presented to faculty members and students at Northwest Normal University, Lanzhou, P.R.C., October 2003.

*The Preparation of Middle Grades Teachers of Mathematics in the United States*, paper presented to faculty members and students at Northwest Normal University, Lanzhou, P.R.C., October 2003.

National

*Writing to learn mathematics: According to research, the gain outweighs the pain*, paper presented at the annual meeting of the National Council of Teachers of Mathematics, Atlanta, GA, March 2007.

*What the literature says about the use of writing to teach and learn mathematics*, paper presented at the annual convention of the School Science and Mathematics Association, Missoula, Montana, October 2006.

*What research says about the use of writing to teach and learn mathematics*, paper presented at the annual meeting of the National Council of Teachers of Mathematics, St. Louis, MO, April 2006.

*Performance Funding Standards in Tennessee*, invited presentation at the winter meeting of the American Association of State Colleges and Universities, Point Clear, Alabama, February 2003.

*Delivering a Master’s Degree Program through Compressed Video Technology: The Case of Middle Tennessee State University*, paper presented at the annual meeting of the Association of Mathematics Teacher Educators, San Antonio, Texas, January 2002.
A profile of McNair students – beyond the eligibility criteria, paper presented at the joint annual meeting of the Tennessee Association of Special Programs and the Kentucky Association of Equal Opportunity Program Personnel, Chattanooga, Tennessee, October 2006.

EXTERNAL GRANTS


INTERNAL GRANTS


HONORS AND SCHOLARSHIPS

Awarded travel grant ($2,000) to attend the 4th East Asia Regional Conference on Mathematics Education, 18-22, June 2007, MTSU Committee for Faculty Development.

Commencement speaker, Middle Tennessee State University, August 2000

Selected to attend Summer Institute for Women in Higher Education Administration, Bryn Mawr College, Bryn Mawr, PA, 1999.

PROFESSIONAL SERVICES – WORKSHOPS, INSTITUTES, COLLOQUIUM


Integrating mathematics and physical science in the elementary grades. A series of workshops (6 hours/week-end, 1 week-end/month) presented to teachers in grades 4-6 from Sumner County, Wilson County, DeKalb County, Smith County and the Lebanon Special School district. The purpose was to enhance teachers’ construction of content and pedagogical knowledge needed to teach mathematics and physical science. Funded by the Tennessee Higher Education Commission’s Eisenhower Committee, January- May 1999.

PROFESSIONAL SERVICES – ORGANIZATIONS

2002-2004: Appalachian Collaborative Center for Learning, Assessment, and Instruction in Mathematics, Consultant
2002: Appalachia Eisenhower Regional Consortium, Region VI, Team Leader
2000: Member, Task Force for Asynchronous On-Line Teaching & Learning, Tennessee Board of Regents
1999: Chair, Tennessee Board of Regents Employee Giving Campaign, MTSU Campus
1998 – present: Reviewer for Journal for Research in Mathematics Education, NCTM
1993 – present: External reviewer of dissertations for the Science & Mathematics Education Center at Curtin University in Perth, Western Australia
PROFESSIONAL SERVICES – UNIVERSITY

Middle Tennessee State University

University Committees

2004-present: Distinguished Lecturer Committee
2004-present: Task Force on Undergraduate Research, Scholarship, and Creative Activity, Chair
2003-06: Ad Hoc Committee to Revise MTSU’s Tenure & Promotion Policies
2003-04: Faculty Workload Committee, Chair
2002-03: Compensation Pay Plan Committee, Chair
2001-04: Committee on Classroom Laboratory Utilization and Effectiveness, Chair
2002-04: Regents Online Degree Program Oversight Committee
2000-02: Lifetime Achievement Award Committee; Chair, 2001-02
1997-01: Merit Pay Task Force
2000: NCAA Certification Review Committee

College of Basic & Applied Sciences

2004-05: Ad Hoc Committee to Develop Tenure & Promotion Guidelines, Chair

Department of Mathematical Sciences

2006-07: Mathematics Education Search Committee, Chair
2005-07: Research & Scholarship Committee, 2005-06 Member, 2006-07 Chair
2005: Ad Hoc Committee to Discuss Issues Related to Developmental Mathematics, Chair
2000-01: Graduate Program Policy Committee
1997-01: Tenure, Promotion & Peer Evaluation Committee
1995-01: Research & Scholarship Committee, Chair, 1997-00

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

National Council of Teachers of Mathematics (NCTM)
School Science and Mathematics Association (SSMA)
Middle Tennessee Mathematics Teachers (MT)²
Southeastern Association of Educational Opportunity Program Personnel (SAEOPP)
Tennessee Association of Special Programs (TASP)
Ginger Holmes Rowell, Professor
Box 34, Department of Mathematics,
Middle Tennessee State University,
Murfreesboro, TN 37132

Education
Ph. D. in Applied Mathematics, 1995, University of Alabama, Huntsville
M. A. in Mathematics, 1991, University of Alabama, Huntsville
B. S. in Mathematics and Secondary Education, 1987, Birmingham Southern College

Employment
Middle Tennessee State University, Murfreesboro, TN, 2000-date.
Birmingham-Southern College, Birmingham, AL, Summer 1993.

Teaching Responsibilities
Elementary Probability and Statistics, Intermediate Statistics, Data Analysis,
Biostatistics Laboratory, Statistics for Health Care Professionals, Theory of Probability, Theory
of Statistics, Statistical Modeling and Simulation, Finite Mathematics,
Probability and Stochastic Processes*, Regression Analysis*, Experimental Design*, Statistical
Methods for Forecasting*, Probability and Statistics for Teachers**,
College Algebra, Differential Calculus, Integral Calculus, Business Calculus, Mathematics
Applications, Mathematics for General Studies, Introduction to the Internet,
Mathematics Methods for Secondary Teachers, Mathematics for Elementary Teachers,
Supervised Secondary Mathematics Student Teachers, Remedial Math,
Risk Analysis for Tornado Hazard in Rutherford County, TN: Phase 1 & 2***, Regression
Analysis with Health Care Applications***, Honors Thesis***,
Assessment of Statistics Teaching Tools that Use Technology***,
Statistical Methods of Cost Analysis***, Statistical Research Introduction***,
Statistical Analysis Methods in Nursing***, Interactive Web-Design***,
Using Internet Teaching Resources to Better Understand Statistical Concepts***, Conducting
and Analyzing Survey Data***, Risk Analysis and Simulations***,
Statistical Applications: Case Studies in Psychology***,
Grant Writing in Mathematics***,
(*Cross-referenced as graduate/undergraduate courses, ** Graduate, ***Independent Study.)

Publications
Student Understanding of Sampling Distributions of Means and the Central Limit Theorem
14(3).
2. G.H. Rowell, H.P. Stahl, G. Reese, and A. Byberg, “Multivariate Parametric Cost-model for


Presentations

1. “CAUSEweb: An Undergraduate Statistics Education Digital Library,” will present poster in the “Projects Supported by the NSF Division of Undergraduate Education” session of the Joint Mathematics Meetings, New Orleans, LA, January 6, 2007. (Co-authored with D. Pearl and R. Woodard.)

2. “Career Advice in Statistics Education: A Panel Discussion Including Waller Education Award Winners,” panel discussion (2 hours) with B. Chance, California Polytechnic State University; J. Holcomb, Cleveland State University; T. Moore, Grinnell College; and J. Utts, University of California, Davis, Joint Statistical Meetings, Minneapolis, MN, August 10, 2005.

Meetings, Minneapolis, MN, August 7, 2005. (Co-researcher with M.L. Lunsford (presenter) and T. Goodson-Espy.)


5. “Utilizing a Digital Library to Teach Undergraduate Statistics,” poster in the “Spotlight on Curriculum” session at the United States Conference on Teaching Statistics (USCOTS), Ohio State University, Columbus, OH, May 19-21, 2005. (Co-presenter with S. McDaniel (co-presenter), L. Green, and undergraduate students M. Duffey (co-presenter), I. McKee, and A. Gorham (co-presenter).)


10. “CAUSEweb: A Digital Library for Undergraduate Statistics Education,” poster in the “Projects Supported by the NSF Division of Undergraduate Education” session at the Joint Mathematics Meetings, Atlanta, GA, January 7, 2005. (Co-authored with S. McDaniel, D. Pearl, R. Woodard, M. Duffey (student), and I. McKee (student).)


34. “Biostatistics Laboratory Ideas for Your Statistics Classroom,” invited presenter at the Workshop on Teaching Statistics, the University of Alabama in Huntsville, August 16-20, 1999.
39. “Active Teaching Activities using the Calculator Based Laboratory,” Lander University, Greenwood, SC, Summer 1997. (Co-presented with W. Coker (student).)

Student Directed Research that Led to Student Presentations and/or Publications

Student Directed Research Continued

**Theses and Dissertations Directed**

**Research Grants and Awards**
3. “STEPping up Undergraduate Research at MTSU,” 2004-2009, NSF STEM Talent Expansion Program (STEP), $1,600,000.
4. MTSU Faculty Research and Creative Activity Grant, 2004-2005.
5. MTSU James Walker Library Special Funds Award, 2004, $5,000.
8. “Assessment of Using Technology to Teach Statistics,” 2003, MTSU Faculty Research and Creative Activity Grant, summer salary.
10. “Rutherford County Tornado Hazard Risk Assessment,” 2003, MTSU Faculty Research and Creative Activity Grant, supports three math faculty, three student workers, and supplies.
20. NSF Instrumentation and Laboratory Improvement Grant, 1997, $50,000.

Awards

Statistical Consulting
Landscape Architecture Survey Analysis, NC State University, 2001-2002.
Project for Nursing Faculty Dr. Judy Campbell, MTSU, Murfreesboro, TN, Summer 2001.
SAIC, Huntsville, AL, 2000-2002.

Professional Memberships
Chair, Statistics Education Special Interest Group of the Mathematical Association of America, 2006-2007.
Executive Committee Member at Large, Statistical Education Section of the American Statistical Association, 2005-2008.
Joint ASA and MAA Committee for Statistics Education
Associate Editor of CAUSE Resource Collection, Consortium for the Advancement of Undergraduate Statistics Education
Mathematical Association of America (MAA)
Secretary, Statistics Education SIGMAA, 2000-2003
Project NExT Fellow, 1996-1997
Southeastern Project NExT Fellow, 1996-1997
Southeastern Section MAA member
American Statistical Association (ASA)
Council for Undergraduate Research
Consortium for the Advancement of Undergraduate Statistics Education
International Association for Statistical Education
Project Kaleidoscope Faculty for the 21st Century, PKAL F21 Class of 1999

University and Departmental Service
University Academic Master Plan Committee, 2006-2007
University Center for the Advancement of Research and Scholarship (CARS) Mentor, 2005-date
University Pedagogy Task Force, 2003-date
University Scholar’s Day Committee, 2004-date
Master’s of Science in Professional Science Program Development Committee, 2002-date
Master’s of Science in Professional Science, Biostatistics Coordinator, 2003-date
CBAS Undergraduate Research Council, 2001-date

University and Departmental Service Continued
Chair, Department Curriculum Committee-Statistics, 2002-date
Committee wrote 2004 TMTA Statistics Test
Department Undergraduate Program Policy Review, 2004-2005
Department Master Review Committee, 2003-2004
Department Undergraduate Program Policy Committee, 2002-date
Department Graduate Program Policy Committee, 2002-date
Steering Comm. For TN Center. For Advancement of Math, Sci. & Tech. Education, 2003-date
Student Organization Advisor. Alpha Chi Omega Social Sorority, Advisor for Vice President of Education Officer, 2001-date

Faculty Development
Leader of “Statistics Across the Curriculum” Project at Belmont University, 1997-2000.

Workshops and Public Service
Post-Calculus Investigations of Statistical Concepts and Methods Workshop by the Professional Enhancement Programs of the Mathematical Association of America (PREP): Implementation and Assessment of Post-Calculus Probability and Statistics Activity and

Teaching Statistics with Internet Resources Workshop: Searching and Finding Items on CAUSEweb. Invited presenter, co-leader, and co-organizer at a satellite workshop to the US Conference on Teaching Statistics Sponsored by the Consortium for the Advancement of Undergraduate Statistics Education (CAUSE). The Ohio State University, Columbus, Ohio, May 19, 2005.


Workshops and Public Service Continued


Public School Teacher Summer Institute for Rural Counties in Middle TN, Improving Teacher Quality Project: “Introduction to Correlation and Regression Parts 1 & 2.” Workshop for Secondary Algebra Teachers. MTSU. June 12, 2003


Jwa K. Kim, Professor
Department of Psychology
Middle Tennessee State University
Murfreesboro, Tennessee 37132
(615) 898-2002

EDUCATION

Ph.D. 1989, University of Oklahoma, Norman, Oklahoma (Psychometrics & Quantitative Psychology)
M.Ed. 1982, Kyungpook National University, Taegu, Korea (Educational Psychology)
B.Ed. 1980, Kyungpook National University, Taegu, Korea (Education)

PROFESSIONAL EXPERIENCE

1999-Present: Full Professor, Middle Tennessee State University, Murfreesboro, TN
1992-Present: Graduate Faculty, Middle Tennessee State University Murfreesboro, TN
2005-Present: Honors Faculty, Middle Tennessee State University, Murfreesboro, TN
1995-2003: Honors Faculty, Middle Tennessee State University, Murfreesboro, TN
1994-1999: Associate Professor, Middle Tennessee State University, Murfreesboro, TN
1994-1996: Director of Performance-Based Funding, Middle Tennessee State University, Murfreesboro, TN
1994: Tenured, Department of Psychology, Middle Tennessee State University, Murfreesboro, TN
1989-1994: Assistant Professor, Middle Tennessee State University, Murfreesboro, TN
1984-1989: Instructor, Teaching Assistant, and Research Assistant, University of Oklahoma, Norman, OK
1982-1984: Instructor/Assistant, Kyungpook National University, Taegu, Korea. Researcher, Kyungnam University, Masan, Korea.
1980-1982: Teaching Assistant, Kyungpook National University, Taegu, Korea.

COURSES TAUGHT

Middle Tennessee State University
Undergraduate: General Psychology, Basic Statistics (with six labs).
Graduate: Psychological Testing, Intermediate Statistics, Advanced Statistics,
            Multivariate Data Analysis, Computer-Based Statistical Packages, Advanced Psychometrics.

University of Oklahoma
            Introduction to Personality, Introduction to Psychology, Experimental Psychology (Lab),
            Basic Statistics.

Kyungpook National University, Taegu, Korea
            Introduction to Psychology, Readings in Educational Psychology.
RESEARCH INTERESTS

Item Response Theory, Multivariate Analysis, Measurement and Scaling, Nonparametric Statistics, Religiosity Scales

PUBLICATIONS


**PROCEEDINGS**


**PRESENTATIONS**


34. Rigsby, C., & Kim, J. K. (1993, March). *Prior distributions and ability estimation in item response theory,* the annual meeting of the Southeastern Psychological Association, Atlanta, Georgia.

**THESIS ADVISING**

**Doctoral Dissertation Committee**
- Ethan Abercrombi (Capella University, in progress)
- Qiwei Gan (MTSU, HEPERS, in progress)
- David Dulbow (MTSU, HEPERS, in progress)
- Nilufer Harbour, Tennessee State University, Nashville, TN; graduated in April, 2004)
- James Lee Hoover (415-19-7899), Western Michigan University, Kalamazoo, MI; graduated in 1996.

**Master's Thesis Chair**
- Dong Gi Seo, graduated in 2004.
- Darrell R. Boles, graduated in 1999.
- Elaine Allen, graduated in 1999.
- Timothy Patton, graduated in 1998.
- Brian Wind, graduated in 1998.
- Jeff Burnett, graduated in 1997.
Amy Shelton, graduated in 1997.
Heather Eldridge, graduated in 1997.
Tracy Lavenda, graduated in 1995.
Linda Dunn, graduated in 1995.
Susan Britt, graduated in 1994.
Susana Bernardez, graduated in 1993.
Cathleen Rigsby, graduated in 1993.

FUNDING AND AWARDS

Academic Year Research Grant (Fall 2005), Middle Tennessee State University, December 7, 2004, $5,100.00.
Faculty Summer Research Grant (Summer 2005), Middle Tennessee State University, December 7, 2004, $6,491.76.
Non-Instructional Assignment Grant (Spring, 2004), Middle Tennessee State University, November, 2003.
Academic Year Research Grant (Spring, 2003), Middle Tennessee State University, November 26, 2002, $4,237.50
Academic Year Research Grant (Fall 2002), Middle Tennessee State University, May 10, 2002, $4,205.00.
Faculty Summer Research Grant (Summer 2002), Middle Tennessee State University, October 1, 2001, $7,845.74.
Faculty Summer Research Grant (Summer 2001), Middle Tennessee State University, October 11, 2000, $6,846.18.
Academic Year Research Grant (Spring 2001), Middle Tennessee State University, December 7, 2000, $3,975.00.
Academic Year Research Grant (Spring 2000), Middle Tennessee State University, December 8, 1999, $1,890.50.
Faculty Summer Research Grant (Summer 2000), Middle Tennessee State University, October 15, 1998, $6,614.66.
Academic Year Research Grant (Spring 1999), Middle Tennessee State University, December 8, 1998, $2,937.48.
Faculty Summer Research Grant (Summer 1999), Middle Tennessee State University, October 29, 1998, $5,491.38.
Academic Year Research Grant (Spring, 99), Middle Tennessee State University, December 8, 1998, $2,937.48.
Academic Year Research Grant (Spring, 98), Middle Tennessee State University, November 19, 1997, $1,500.00.
Summer Research Grant (97), Middle Tennessee State University October 28, 1996, $4,561.50.
Summer Research Grant (96), Middle Tennessee State University January 19, 1996, $4,248.75.
Non-Instructional Assignment Grant (Fall, 1996), Middle Tennessee State University, November, 1995.
Summer Research Grant (95), Middle Tennessee State University October 24, 1994, $4,165.45.
Faculty Development Funds, Middle Tennessee State University, November 10, 1993, $1,219.00.
Faculty Research Award, Middle Tennessee State University, April 15, 1993, $3,334.00.
Summer Research Grant (93), Middle Tennessee State University, October 14, 1992, $1,600.88.
Faculty Research Award, Middle Tennessee State University, October 24, 1991, $3,477.00.
Faculty Developmental Funds, Middle Tennessee State University, November 6, 1990, $1,200.00.
Faculty Research Award, Middle Tennessee State University, March 9, 1990, $1,570.00.
Faculty Research Award, Middle Tennessee State University, December 21, 1989, $1,185.00.

COMMITTEE SERVED AT PROFESSIONAL ORGANIZATIONS


COMMITTEE SERVED AT MTSU

University Committee
2000-present: Task Force, Academic Master Plan, Evaluative Sciences
1995-1996: University Tenure Committee
1995-1997: Advisory Committee for International Program and Service
1994-1996: Director of Performance-Based Funding
1993-1995: Research Ethics Committee (Institutional Review Board)
1994: Search Committee for Academic Services Manager for Office of Technology.
1994: Search Committee for Campus-Wide Networking Manager for Office of Technology
1992-1994: Performance-Based Funding Task Force
1990-1992: Instructional Evaluation and Development

Departmental Committee
1994-present: Ph.D. Proposal Committee
1990-present: Experimental/Statistics Lab Coordinator
2004-Present: Graduate Studies Committee
2002-2004: Long Range Planning Committee
2001-2002: Faculty Search Committee (Quantitative)
2000-2001: Chair, Faculty Search Committee (Quantitative)
1999-2000: Faculty Search Committee (I-O/Quantitative)
1997-2002: Graduate Studies Committee (Quantitative)
1997-2002: Undergraduate Studies Committee (Statistics)
1997-1998: Faculty Development, Tenure, and Promotion Committee
1997-1998: Faculty Search Committee (Cognitive/Quantitative)
1994-1995: Faculty Development, Tenure, and Promotion Committee
1993-1994: Chair, SACS self-study subcommittee (Research)
1994: Faculty Search Committee (Experimental)
1993: Faculty Search Committee (Developmental, Experimental)
1992: Faculty Search Committee (Experimental)
1991: Faculty Search Committee (Experimental)
1990: Faculty Search Committee (Experimental)

COMPUTER SKILLS

Languages: True Basic, Turbo Pascal; Statistical Packages: SAS, SPSS

SAS TRAINING


PROFESSIONAL MEMBERSHIP

Psychometric Society
Southeastern Psychological Association
Mid-South Educational Research Association

EDITORIAL BOARD

Research in The Schools: 1992 - Present

DOCTORAL DISSERTATION


MASTER'S THESIS

William Langston, Professor  
Department of Psychology  
Middle Tennessee State University  
Murfreesboro, TN 37132  

Education  
Ph.D. in Psychology, University of Wisconsin, Madison, 1994  
Major: Experimental Psychology  
Minor: Computer Science  
Dissertation: The use of spatial metaphors when thinking about nonspatial domains.  
(Chairperson Arthur M. Glenberg, Ph.D.)  
B.A. in Psychology, University of Houston, 1989  
Honors Thesis: Cognitive mapping: Automatic or effortful process. (Chairperson Mary J. Naus, Ph.D.)  

Research Interests  
I am interested in the representations people form as they understand texts. My particular concern has to do with people's ability to apply their skills at processing spatial information to nonspatial domains. I am also interested in the properties of the spatial representations people form as they read.  
I also pursue sidelines in areas that interest me. Currently, I have a project in social psychology wrapping up (territoriality in public places), a project investigating phonetic symbolism, and a human factors project that grew out of my text comprehension research. This last project investigates population stereotypes (how controls ought to work) and orientational metaphors. I also enjoy research on skeptical topics as a hobby. This has produced one paper in Skeptic (so far).  

Teaching  
Associate Professor -- Middle Tennessee State University (Current position)  
Courses Taught: Research Methods, Research Methods Laboratory, Advanced Research Methods, Psychology of Language, Human Factors, Advanced Cognitive Psychology (Graduate Course), Science and Pseudoscience in Psychology (cross-listed with Philosophy, and team-taught with Dr. Mary Magada-ward).  

Assistant Professor -- Middle Tennessee State University  
Courses Taught: Research Methods, Research Methods Laboratory, Cognitive Psychology, Cognitive Psychology Laboratory, Psychology of Language, Advanced Cognitive Psychology (Graduate Course).
Visiting Assistant Professor -- Denison University


Lecturer -- University of Wisconsin-Madison

Courses Taught: Research Methods

Lecturer -- University of Bucharest, Bucharest Romania (Under the auspices of the McDonnell Program for the Advancement of Psychology in Romania, William Hirst, New School for Social Research, Director)

Courses Taught: Psycholinguistics.

Teaching Assistant -- University of Wisconsin-Madison

Courses Taught: Research Methods, Statistics.

Publications

Books


Journal Articles and Book Chapters

Langston, W., Buchanan, T., & Logan, J. (in preparation). Will listeners’ note taking reflect the use of orientational metaphors?


**Computers in Teaching/Methodology**


**Selected Presentations/Posters**


Langston, W., & Boucher, R. (2004, November). *Using a directional Stroop task to assess spatialization of concepts*. Poster presented at the annual meeting of the Psychonomic Society, Minneapolis, MN.


“space!” But not when I’m preoccupied. (Or... The effects of intrusion and distraction on time spent at ATMs.) Poster presented at the annual meeting of the Southeastern Psychological Association, Atlanta, GA.


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**Grants and Awards**

DeVois, J. (2006, Spring). *Gap affordances.* MTSU URSCP program undergraduate research grant, $700. (Mentor)

Dotson, J. (2006, Spring). *Gap affordances.* MTSU URSCP program undergraduate research grant, $700. (Mentor)

Langston, W. (2005). *Integration of on-line survey technology into psychology research methods courses--Reapplication support grant.* CARS-PDP internal grant, $2,600. Funded


Winter, C. (2005, Spring). *Using a stroop task to assess automatic access of orientational metaphors.* MTSU URSCA program undergraduate research grant, $700. (Mentor)

Boucher, R. (2004, Summer). *Using a directional stroop task to assess spatial schema knowledge.* MTSU URSCA program undergraduate research grant, $700. (Mentor)

Middle Tennessee State University McNair Program Mentor of the Year, Summer, 2003.


Langston, W. (2002). *Phonetic symbolism and list learning.* Middle Tennessee State University McNair Program Research Stipend, $500. (Nikayla Boga)

Langston, W. (2001). *When will readers use spatial knowledge in text comprehension?* Middle Tennessee State University McNair Program Research Stipend, $500. (Tashauna Buchanan)


Langston, W. (2000). *When will readers use spatial knowledge in text comprehension?* Middle Tennessee State University McNair Program Research Stipend, $500. (Tashauna Buchanan)


**Professional Organizations**
Psychonomic Society (Associate)
Society for Text and Discourse
Society for the Teaching of Psychology
Society for Personality and Social Psychology

**Professional Experience**

**Student Organization Advising**

- [MTSU Lambda Association](#) (2002-03, 2003-04)
Rick Jay Short, Professor of Psychology and Associate Dean
College of Education and Behavioral Science
P.O. Box 93
Middle Tennessee State University
Murfreesboro, TN 37132

Education

Ph.D. 1984   The University of North Carolina at Chapel Hill – Human Development and Psychological Services – Professional Psychology, School Psychology specialization (APA-accredited)
M.Ed. 1977   Texas State University-San Marcos – School Psychology/Learning Disabilities (NCATE-accredited)
B.A. 1975    The University of Texas at Austin – Psychology (minors in mathematics and sociology)

Employment

2005-present  Professor of Psychology and Associate Dean, College of Education and Behavioral Science, Middle Tennessee State University
1995-2005    Associate Professor (Graduate and Doctoral Faculty, 1995), Department of Educational, School, and Counseling Psychology, and Director, Center for Learning, Evaluation, and Assessment Research, University of Missouri-Columbia
2002-2003    Professor, Department of Psychology, Tennessee State University, [on one-year leave from MU for 2002-2003]
1997-2001    Director, Doctoral and Ed.S. Programs in School Psychology, University of Missouri-Columbia
1993-1995    Assistant Executive Director for Education, American Psychological Association, Washington, DC
1992-1993    Special Assistant on Applications of Psychology to Education, American Psychological Association, Washington, DC
1992-1993    Associate Professor (Graduate Faculty, 1992), Program in School Psychology, The Pennsylvania State University
1989-1992    Assistant to Associate Professor (Graduate Faculty, 1989), Department of Counseling and Counseling Psychology, Auburn University
1987-1989  Assistant Professor (Graduate Faculty, 1987), Department of Psychology, and Coordinator, School Psychology Program, Eastern Kentucky University, Richmond, Kentucky

1986-1987  Visiting Assistant Professor, Department of Psychology, University of Nebraska at Omaha

1983-1986  Assistant Professor, Department of Psychology, Louisiana State University in Shreveport

Teaching Responsibilities

MTSU

PSY 4400  Behavior Modification
PSY 3590  Personality
PSY XXXX  Program Planning in Human Services Settings

University of Missouri-Columbia (2004-2005)

ESCP 8140  Psychological Assessment of Children and Adolescents III
ESCP 7810  Educational Program Planning and Evaluation
ESCP 8087  Cognitive Neuroscience
ESCP 8020  Overview of Educational Research
ESCP 8125  Professional Issues in School Psychology I
ESCP 8126  Professional Issues in School Psychology II
ESCP 8870  Public Health Psychology

Area of Research Specialization

Problem solving; Conduct disorders and delinquency; Comprehensive services in children’s mental health; teaching quality

Publications:

Books


Book chapters


Journal Articles and Other Publications (‘ indicates refereed)


Technical Reports


National Presentations from 1995

presented at the annual conference of the National Association of School Psychologists, Atlanta, GA.


societal demands and needs. Workshop presented at the annual convention of the California Psychological Association, La Jolla, CA.

Dissertations Directed


Grants and Awards:

5. Holliday, G., Gutierrez, M., Fine, M., Cowger, C., Short, R., Frisby, C., & Worthington R.
(1998). Community-university partnership program planning grant. MU Interprofessional Initiative, Kauffman Foundation ($15,000)


Awards

2005 Fellow, American Psychological Association

2004 High Flyer Award for Excellence in Teaching, University of Missouri College of Education

2002 Distinguished Alumnus, Texas State University-San Marcos