

## DR. JILL A. COCHRAN

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### EDUCATION

DOCTORATE IN MATHEMATICS EDUCATION  
Texas State University » San Marcos, Texas

Graduated: Aug. 2010

TEXAS TEACHER CERTIFICATION (4-8 GENERALIST)  
iTeachTexas Alternative Certification

Completed: May 2005

BACHELOR OF SCIENCE, MATHEMATICS EDUCATION  
Southern Utah University » Cedar City, Utah

Graduated: May 2004

### EXPERIENCE

ASSOCIATE PROFESSOR

Aug. 2016 – present

Activities in addition to assistant professor include

- » Received external grant funding as PI
- » Directed the STEMTeach program, leadership team, steering committee, advisory board
- » Served on college Promotion and Tenure Committee for 3 years (1 year as executive secretary)
- » Served on college Faculty Development committee for 4 years (1 year as chair)
- » Served on ad-hoc committee regarding department chair responsibilities and compensation

CHAIR OF MATHEMATICS AND COMPUTER SCIENCE DEPARTMENT

July 2016 – July 2019

- » Performed annual evaluations of faculty and encouraged professional growth
- » Organized a standing department curriculum committee to standardize shared courses
- » Improved assessments of departmental goals
- » Expanded the STEMTeach program to include math and science students interested in teaching
- » Advocated for twice as many computer science courses as previously taught
- » Initiated a placement assessment and preparation learning for initial math courses

ASSISTANT PROFESSOR

Aug. 2010 – July 2016

Berry College » Mount Berry, Georgia

- » Taught undergraduate and graduate mathematics courses for pre-service teachers
- » Supervised mathematics education student teachers
- » Directed study broad experience in Norway
- » Continued research about teachers' philosophies about mathematics education
- » Assisted middle school teachers at the Berry laboratory school in focusing and vertically aligning the math curriculum as well as serving as a math consultant to both the elementary and middle laboratory schools.
- » Supervised undergraduate research projects related to graph theory, estimation strategies, mental math, influences on mathematical potential, 3D printing in the math curriculum
- » Served on committees for master's students, teacher education, graduate council, student scholarship, planning council

GRADUATE RESEARCH ASSISTANT

Jan. 2008 – Aug. 2010

Texas State University » San Marcos, Texas

- » Processed data about terrorists to give meaningful predictions and visualizations for analysts
- » Programmed visualizations and analyzed graph properties to identify areas of interest and leadership for both teacher networks and terrorist networks
- » Furthered graph theory research in regard to unit distance graphs

MIDDLE SCHOOL MATH & SCIENCE TEACHER

Dec. 2004 - Aug. 2007

Austin Independent School District » Austin, Texas

- » Taught seventh grade math and eighth grade science to a diverse group of students in a Title I school
- » Developed curriculum for the school and district
- » Supervised a student teacher

SUBSTITUTE TEACHER

Sept. 2004 - Dec. 2004

Austin Independent School District » Austin, Texas

## CURRENT RESEARCH

### 3D PRINTING AND GEOMETRY

- » Creating and implementing lessons in elementary and middle school classrooms that utilizing principles of 3D design and printing to teach key geometry and measurement concepts that are often difficult to appreciate using other forms of instruction.

### SECONDARY TEACHER PREPARATION

- » Exploring ways to prepare secondary pre-service math teachers to teach math conceptually and developmentally. By exploring activity-based and hands-on approaches, students connect middle and high school curricula and standards to their college level math and educational theories.

### MATHEMATICS TEACHERS' PHILOSOPHIES

- » Using advanced statistical and geometric data analysis methods, secondary teachers' philosophies about mathematics education were measured and analyzed in relation to historical and theoretically important ideologies.

## PUBLICATIONS

Clement, M. & Cochran, J. A. [submitted]. I Want to be a Teacher, but.... *The Clearinghouse*.

Clement, M. & Cochran, J. A. (2022). Supporting Beginning STEM Teachers with Zoom. *Kappa Delta Pi Record*, [anticipated publication October 2022].

Cochran, J. A. (2021). The development of 3D representations using physical manipulatives, technology-aided design and 2D drawings. *ICME 14 Conference Proceedings*.

Clement, M. & Cochran, J. A. (2020). A sharp contrast: First-year teachers with and without teacher preparation. *Delta Kappa Gamma Bulletin*, 87(1), 51-56.

Cochran, J. A. (2018). Gone fishing: science, proportions and probability in S. McMillen, E. Friedland, and P. del Prado Hill (Eds.), *Integrating Math across the K-6 Curriculum*. Reston, VA: NCTM.

Cochran, J. A., Cochran, Z. R., Dean, M., Sills, M. (2017). *A new dimension of mathematics with 3D printing & design: Grades 3 - 5*. CreateSpace [self-published].

Cochran, J. A., Cochran, Z. R., & Dean, M. (2017). *A new dimension of mathematics with 3D printing & design: Grades 6 – 8*. CreateSpace [self-published].

Cochran, J. A., Henderson, T., Ostrander, A., & Taylor, R. (2016). Domination with decay in triangular matchstick arrangement graphs. *Involve*, 10(5), 749–766.

Cochran, J. A., Cochran, Z., Dean, M. \*, & Laney, K. \* (2016). Expanding geometry understanding with 3D printing. *Mathematics Teaching in the Middle School*, 21(9), 534-542.

Cochran, J. A., Cochran, Z., Hopper, M. \* (2016). Will it print? Understanding dimensions with 3D printing. *ICME 13 Conference Proceedings*.

Cochran, J. A. (2015). Organization and visualisation for analysis of forced-choice ipsative data. *International Journal of Research & Method in Education*, 38(4), 413-429.

Cochran, J. A. (2014). Gone fishing: Science, proportions and probability. *Mathematics Teaching in the Middle School*, 20(1), 16-23.

Cochran, J. A. & Hartmann, M.\* (2013). Taking the guesswork out of computational estimation. *The Mathematics Educator*, 23(1), 60-73. <http://tme.journals.libs.uga.edu/index.php/tme/article/view/263/250>

Cochran, J. A. (2012). Proceedings from ICME '12: *International Congress on Mathematics Education: Does a Balanced Philosophy in Mathematics Education Exist?* Seoul, South Korea.

Cochran, J. A. (2010). Secondary Mathematics Teachers' Curriculum Philosophies and Experience, Ph.D. Dissertation, Texas State University-San Marcos.

\*Undergraduate student co-author

## PRESENTATIONS & COLLABORATION

INTERNATIONAL CONGRESS ON MATHEMATICS EDUCATION July 11-18, 2021  
**The Development of 3D Representations Using Physical Manipulatives, Technology-Aided Design and 2D Drawings**

SOUTHEASTERN NOYCE CONNECTIONS June 17, 2021  
Co-Presented with Mary Clement  
**Supporting Beginning STEM Teachers with Zoom**

NOYCE SUMMIT Aug. 5, 2020  
Co-Presented with Mary Clement  
**Preparing STEM Teachers for Urban and Rural School Districts in Northwest Georgia**

ASSOCIATION FOR SCIENCE TEACHER EDUCATION Jan. 9-11, 2020  
Co-Presented with John Pecore  
**Supporting Interdisciplinary Teaching in a STEM Methods Course**  
Panel Presentation moderated by Melissa Demetrikopoulos  
**Innovative Signature Field Experiences for Pre-Service STEM Teachers**

GEORGIA COUNCIL OF TEACHERS OF MATHEMATICS Oct.. 16-18, 2020  
**Teaching STEM in Math Class**

NOYCE SUMMIT July 10-12, 2019  
Co-presented with Melissa Demetrikopoulos  
**Apprenticeships and Collaborative Professional Development**

SOUTHEASTERN NOYCE CONNECTIONS June 23-26, 2019  
Co-presented with Zack Walch, Kevin Hoke, Melissa Demetrikopoulos  
**Mentor Days: Collaborative Professional Development** (Poster presentation)

ASSOCIATION OF MATHEMATICS TEACHER EDUCATORS Jan. 6-9, 2019  
**The Role of Technology in Understanding 3D Geometry**

GEORGIA COUNCIL OF TEACHERS OF MATHEMATICS Oct. 17-19, 2018  
Co-presented with Frankie Reda  
**Using Technology to Understand 3D Geometry**

GEORGIA COUNCIL OF TEACHERS OF MATHEMATICS Oct. 18-20, 2017  
**Understanding Dimensions: A Foundation for STEAM**

INTERNATIONAL CONGRESS ON MATHEMATICS EDUCATION Co-presented with Zane Cochran <b>Will it Print? Understanding Dimensions with 3D Printing</b>	July 24-31, 2016
NATIONAL COUNCIL FOR TEACHERS OF MATHEMATICS Co-presented with Zane Cochran, Mandi Dean and Kat Pugh <b>3D Printing Your Elementary Geometry Curriculum</b>	Nov. 2015
GEORGIA STEM FORUM Co-presented with Zane Cochran <b>Maker Academy: A Partnership that Builds Making Opportunities and Leadership</b>	Oct. 26-27, 2015
GEORGIA COUNCIL OF TEACHERS OF MATHEMATICS <b>Measures of Spread and Actively Learning Statistical Concepts</b>	Oct. 14-16, 2015
GEORGIA STEM FORUM Co-presented with student researcher Zane Cochran <b>Enhancing your 4-8 Geometry Curriculum with 3D Printing</b>	Oct. 21, 2014
GEORGIA COUNCIL FOR TEACHERS OF MATHEMATICS Co-presented with student researchers Zane Cochran, Mandi Dean, Kendra Laney <b>Enriching Elementary and Middle Grades Geometry Curriculum with 3D Printing</b>	Oct. 15-17, 2014
INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION Co-presented with student researcher Zane Cochran <b>Enriching Elementary Geometry Curriculum with 3D Printing</b>	July 1, 2014
GEORGIA COUNCIL OF TEACHERS OF MATHEMATICS MEETING AT ROCK EAGLE, GA <b>[Invited Talk] Gone Fishing: Connections to Proportions and Probability in a Real Scientific Context</b> <b>[Invited Talk] Engaging Elementary Students in a Math Trail with Hands-on Real Life Activities</b>	Oct. 17-19, 2013
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS NATIONAL MEETING IN DENVER, CO <b>Gone Fishing: Proportions and Probability in a Real Scientific Context</b>	Apr. 20, 2013
MATHEMATICAL ASSOCIATION OF AMERICA – SOUTHEAST SECTION MEETING IN ROCK HILL, SC Co-presented with student researcher Zane Cochran <b>The Development of Digital Manipulatives on Multiple Platforms for Enhanced Student Explorations</b>	Mar. 15, 2013
ASSOCIATION OF MATHEMATICS TEACHER EDUCATORS NATIONAL MEETING IN ORLANDO, FL Co-presented with Jean S. Lee, Sarah H. Roberts, and Scott A. Courtney (fellows in STaR program) <b>Developing Practical Images of the Standards of Mathematical Practice to Support Pre-Service Teachers</b>	Jan. 25, 2013
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS REGIONAL MEETING IN HARTFORD, CT Co-presented with student researcher Megan Hartmann <b>Computational Estimation's Importance in the Middle School</b>	Oct. 26, 2012
INTERNATIONAL CONGRESS ON MATHEMATICS EDUCATION IN SEOUL, SOUTH KOREA <b>Does a Balanced Philosophy in Mathematics Education Exist?</b>	July 10, 2012
MATHEMATICS ASSOCIATION OF AMERICA – SOUTHEAST SECTION IN MORROW, GA <b>Beginning Research with Undergraduates</b>	Mar. 2012
MATHEMATICS ASSOCIATION OF AMERICA – SOUTHEAST SECTION IN MORROW, GA <b>Neat Teaching Idea: Using Dynamic Geometry Software in a Variety of Math Courses</b>	Mar. 2012

ASSOCIATION OF MATHEMATICS TEACHER EDUCATORS IN FORT WORTH, TX Feb. 2012  
**Using Unique Campus Resources to Build a Math Trail Experience for K-12 Students: Designing a Mathematically Rich Campus Experience for 1<sup>st</sup>-3<sup>rd</sup> Graders** (Poster presentation)

MATHEMATICS ASSOCIATION OF AMERICA – SOUTHEAST SECTION AT UNIVERSITY OF ALABAMA Apr. 2011  
**Teaching Philosophies and Their Relationship to Experience**

DOCTORAL MATHEMATICS EDUCATION RECRUITING EVENT AT TEXAS STATE UNIVERSITY Feb. 2011  
**Are You Smarter than a Sixth Grader: Estimation and Fractions**

MATHEMATICS EDUCATION SEMINAR: TEXAS STATE DEPARTMENT OF MATHEMATICS Oct. 2009  
**Comparing Secondary Mathematics Teachers' Curriculum Philosophies: When Does Experience Matter?**

SANDIA NATIONAL LABORATORIES RESEARCH COLLABORATION Aug. 2009  
» Increased collaboration with several people at Sandia National Labs about unit distance graphs, social networks and clustering algorithms

COMBINATEXAS: COMBINATORICS IN THE SOUTH-CENTRAL U.S. CONFERENCE Apr. 2009  
**Finding and Visualizing Networks of Terrorism Buried in Large Data Sets**

MATHEMATICS EDUCATION SEMINAR: TEXAS STATE DEPARTMENT OF MATHEMATICS Feb. 2009  
**Curriculum Philosophies of Secondary Mathematics Teachers**

SANDIA NATIONAL LABORATORIES RESEARCH COLLABORATION Aug. 2008  
» Collaboration with select individuals at Sandia National Labs about current visualization methods used in analysis of terrorist networks, network problems, and unit distance graphs

## **GRANTS & AWARDS**

RICHARDS SCIENCE SCHOLARS GRANT – BERRY COLLEGE March 2020  
**Three Dimensional Printing in the Classroom** \$1,000  
Science Scholar: Cody Gordon, Mentor: Jill Cochran

ROBERT NOYCE TEACHER SCHOLARSHIP GRANT – NATIONAL SCIENCE FOUNDATION April 2018  
**Preparing STEM Teachers for Urban and Rural School Districts in Northwest Georgia** \$1,191,705  
PI: Jill Cochran, Co-PI: Jackie McDowell, Personnel: Eric McDowell, Todd Timberlake, Mike Morgan, Lindsey Davis

DEVELOPMENT OF UNDERGRADUATES THROUGH RESEARCH GRANT – BERRY COLLEGE May 2016  
**Understanding Dimension: The Role of Technology in Developing 3D Representations** \$620

GEORGIA POWER Jul. 2014  
**Maker Academy** \$30,000  
Co-authors: Zane Cochran and Jackie McDowell

ROBERT NOYCE TEACHER SCHOLARSHIP GRANT – NATIONAL SCIENCE FOUNDATION Sept. 2013  
**R.I.S.E. to the Call (Not funded)** \$1,437,265  
Co-Authors: Jackie McDowell, Eric McDowell, Andrew Bressett, Todd Timberlake

DEVELOPMENT OF UNDERGRADUATES THROUGH RESEARCH GRANT – BERRY COLLEGE Mar. 2014  
**3D Printing Geometry: A New Dimension in Elementary Education** \$928

TECHNOLOGY COURSE ENHANCEMENT – BERRY COLLEGE Feb. 2014  
**Technology redesign in MAT 111 – Introduction to Statistics** \$2,300

COURSE ENHANCEMENT GRANT – BERRY COLLEGE June 2012  
**Complete course redesign in MAT 340 – Methods for Middle Grades and Sec. Math Instruction \$1,000**

## **MAJOR SERVICE AND RELATED CONSULTING**

ALEKS IMPLEMENTATION FOR FIRST\_YEAR MATH PLACEMENT 2019 - 2022

- » Established process for implementation in collaboration with Student Affairs, Admissions, and Computing departments
- » Collected data from Institutional Research, Computing and department faculty to assess implementation
- » Chaired search for hire of workshop coordinator

HACKBERRY VOYAGERS – STEM FIELD TRIPS FOR ELEMENTARY STUDENTS 2017 – present

- » Designed station activities, coordinated logistics, organized up to 40 college student volunteers
- » Hosted at least 3 groups of up to 80 elementary students each year

TEACHER WORKSHOPS – FLOYD COUNTY MIDDLE AND HIGH SCHOOL TEACHERS 2015 – 2017

- » Designed program and taught with the goal of increasing the teachers' content knowledge and knowledge of technology while modeling best practices in mathematics education to middle and high school in-service teachers during monthly meetings during the spring and two weeks of training during the summer.

MATH TRAIL – MATH FIELD TRIP FOR ELEMENTARY STUDENTS 2012 – 2016

- » Designed station activities, coordinated logistics, organized up to 40 college student volunteers
- » 275 elementary students came over two days in Oct. 2012 from Floyd County Schools
- » 50 elementary students participated from Berry Elementary for two days in Nov. 2012, 2013 and 2014
- » Four groups of approximately 80 students each participated in the fall of 2016

TEACHER WORKSHOPS – FLOYD COUNTY ELEMENTARY SCHOOL TEACHERS June - July 2012

- » Designed lessons, helped coordinate instructors to introduce the new Common Core State Standards and teach best practices in mathematics education to K-5 in-service teachers over 2 weeks of workshops

TEACHER WORKSHOPS – ATLANTA ACADEMY Aug. 2011

- » Introduced elementary teachers to hands-on techniques and math workshop lessons in a 1 day workshop

TEACHER WORKSHOPS – FLOYD COUNTY MIDDLE AND HIGH SCHOOL TEACHERS June - July 2011

- » Designed lessons and team-taught them with the goal of increasing the teachers' content knowledge and introducing them to the future Common Core State Standards while modeling best practices in mathematics education to middle and high school in-service teachers over 3 weeks of workshops

## **ASSOCIATIONS**

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS  
GEORGIA COUNCIL OF TEACHERS OF MATHEMATICS  
ASSOCIATION OF MATHEMATICS TEACHER EDUCATORS  
GEORGIA ASSOCIATION OF TEACHER EDUCATORS

STAR FELLOW – A national program for promising new faculty in mathematics education Accepted 2010  
MAA-SE NEXT FELLOW – A regional program for promising new faculty in mathematics Accepted 2010

## **HONORS**

Martindale Award of Distinction  
Received 2022 » Berry College

Chancellor's Scholarship for Distinguished Mathematics Education Doctoral Student

Received 2009 » Texas State University-San Marcos

Alpha Chi National Honor Scholarship Society  
Received 2003 » Southern Utah University

USAA National Collegiate Mathematics Award: Outstanding Mathematics Major  
Received 2003 » Southern Utah University

CRLA Advanced and Master Tutoring Certificates  
Received 2002 » Southern Utah University