RUTGERS
Graduate School of Education

Learning and Teaching
Graduate School of Education
Rutgers, The State University of New Jersey
10 Seminary Place
New Brunswick, NJ 08901-1183

http://gse.rutgers.edu/

Ph: 848-932-0800
Fax: 732-932-7552

Teaching Mathematics in Elementary 2

15:251:562:04

Online via Zoom https://zoom.us/j/91918213784

Wednesdays 1:10 - 4:10 pm

2 Credits

Instructor: Carolyn Q. Hickey	Email: carolyn.hickey@gse.rutgers.edu
Phone #: 908.625.1685	Room: n/a
Office Hours: by arrangement	Prerequisites or other limitations: Admission to the program
Mode of Instruction: ___ Lecture _x_ Seminar ___ Hybrid ___ Online ___ Other	Permission required: _x_ No __ Yes

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentations: https://ods.rutgers.edu/students/documentation-guidelines. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: https://ods.rutgers.edu/students/registration-form.

Learning goals:

Students will develop:

- knowledge of the mathematics in the early elementary grades;
- detailed knowledge about the development of children's mathematical thinking;
- ways to build instruction based on the development of students mathematical thinking;
- a repertoire of pedagogical techniques and routines related to the above including forms of assessment as well as how to leverage instructional materials for these goals; and
- an understanding of equity and access inside and outside of the mathematics classroom and modifications for various learners.

Continue to reflect on your role as a mathematics teacher within a community.

Course catalog description:

This course focuses on the details of children's mathematics thinking, as well as on how to use student thinking to ground learning about the teaching of mathematics. As we address student thinking and instructional practices we will also discuss ways to accommodate various learners and critical aspects of the teaching and learning of mathematics and: equity (racial, ethnicity, SES, gender, language, (dis)ability), the use of mathematical and pedagogical tools for meeting the needs of all students. We will use the state content standards, readings, student work, classroom video, curricula, practicum placements, instructional scenarios, as well as designing and implementing lessons to examine these issues. The course will help you think about implementing mathematics instruction that is conceptually focused.

RUTGERS

New Jersey Teaching Professional Standards addressed in this course:

Standard 1. Learner Development	The teacher understands how learners grow and develop, recognizing that patterns of learning and development vary
Standard 2. Learning Differences	The teacher uses understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.
Standard 3. Learning Environments	The teacher works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self motivation.
Standard 4. Content Knowledge	The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches, particularly as they relate to the Common Core Standards and the New Jersey Core Curriculum Content Standards and creates learning experiences that make these aspects of the discipline accessible and meaningful for learners to assure mastery of the content.
Standard 5. Application of Content	The teacher understands how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues.
Standard 6. Assessment	The teacher understands and uses multiple methods of assessment to engage learners in examining their own growth, to monitor learner progress, and to guide the teacher's and learner's decision-making.
Standard 7. Planning for Instruction	The teacher plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.
Standard 8. Instructional Strategies	The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways
Standard 9. Professional Learning	The teacher engages in ongoing individual and collaborative professional learning designed to impact practice in ways that lead to improved learning for each student, using evidence of student achievement, action research, and best practice to expand a repertoire of skills, strategies, materials, assessments, and ideas to increase student learning

Council for the Accreditation of Educator Preparation (CAEP) Standards:

Standard 1. Content and Pedagogical Knowledge	The provider ensures that candidates develop a deep understanding of the critical concepts and principles of their discipline and, by completion, are able to use discipline-specific practices flexibly to advance the learning of all students toward attainment of college- and career-readiness standards.
Standard 2. Clinical Partnerships and Practice	The provider ensures that effective partnerships and high-quality clinical practice are central to preparation so that candidates develop the knowledge, skills, and professional dispositions necessary to demonstrate positive impact on all P-12 students' learning and development.
Standard 3. Candidate Quality, Recruitment, and Selectivity	The provider demonstrates that the quality of candidates is a continuing and purposeful part of its responsibility from recruitment, at admission, through the progression of courses and clinical experiences, and to decisions that completers are prepared to teach effectively and are recommended for certification. The provider demonstrates that development of candidate quality is the goal of educator preparation in all phases of the program.
Standard 4. Program Impact	The provider demonstrates the impact of its completers on P-12 student learning and development, classroom instruction, and schools, and the satisfaction of its completers with the relevance and effectiveness of their preparation.

Standard 5. Provider Quality Assurance and Continuous Improvement	The provider maintains a quality assurance system comprised of valid data from multiple measures, including evidence of candidates' and completers' positive impact on P-12 student learning and development. The provider supports continuous improvement that is sustained and evidence-based, and that evaluates the effectiveness of its completers. The provider uses the results of inquiry and data collection to establish priorities, enhance program elements and capacity, and test innovations to improve completers' impact on P-12 student learning and development.

Common Cores State Standards for Mathematics (CCSSM): http://www.corestandards.org/math

Course materials:

Carpenter et al. (1999). (**CM**) Children's Mathematics: Cognitively Guided Instruction (2nd Edition). Heinemann. (ISBN: 978-0-325-05287-8)

Coggins et al. (2007). (**EL**) English Language Learners in the Mathematics Classroom. Corwin Press (1st or 2nd Edition). (ISBN: 978-1-4833-3178-2)

Featherstone et al. (2011). (**ST**) Smarter Together: Collaboration and Equity in the Elementary Classroom. Reston, VA: National Council of Teachers of Mathematics. (ISBN: 978-0-87353-656-1)

Other readings will be available electronically ***on our Canvas site.***

Attendance (*this policy is separate from the participation grade*):

- You are allowed ONE absence, which I will assume is for a good reason. Beyond that, your final grade will be reduced as indicated (unless, of course, you have a doctor's note or other documentation indicating a bona fide reason): 2 absences—reduction of a half grade; 3 absences—reduction of 1 full grade; 4 absences—failing grade in course.
- Again, if it is an excused absence, you are responsible for contacting me, providing the necessary documentation, and making up for the class in order to earn participation points.

Class Participation (20 points):

- You are expected to participate in class. Each week you will have readings and you will need to be prepared to discuss the content of the readings with classmates and in online discussions. It's important that you formulate and ask questions. Aside from relating to the course texts, we will be working on collaborative activities in pairs and small groups. There will be individual tasks, such as contributing to Threaded Discussions, as well. Your engagement in the course determines how successful the class will be and how much you will learn.
- You can earn a maximum of 2 points each class for in-class participation - evidenced by completed assignments, engagement with your peers and contributions to group activities.
- We only have 30 hours this semester to explore how children think mathematically, as well as explore effective ways to promote mathematical thinking and learning! We need to make the most of this limited time together.

RUTGERS

Assessment of Student Work II (50 points):

The goal of the project is to show exact knowledge of student thinking and trajectories of mathematics learning, and to use this knowledge to adapt instructionally.

The assignment will be broken into multiple parts over the course of the semester:

1. Analyze and modify an example of a chapter pretest for a particular math topic/content area to improve its ability to capture student mathematical understanding.
2. Examine 6 student work samples and identify:
    - evidence of knowledge in student work,
    - the students' placements on the continuum of learning,
    - goals and objectives for learning (based on math content & practice standards),
    - specific instructional interventions for moving the student forward in their mathematics understanding.,
    - instructional plans (including questioning),
    - group-worthy activities for each breakout pair or triple

Video Analysis Assignment (30 points)

The assignment will be broken into multiple parts over the course of the semester:

- You will analyze an instructional video,l focusing on particular pedagogical elements for effective mathematics instruction and student learning.
- In addition, you will make specific instructional recommendations for transforming the classroom into one that engages in more substantive mathematical learning and a more equitable classroom space.

The goal of these assignments is to provide evidence of your growing knowledge of instructional practices, how to engage students in ways consistent with the NJ State Standards for Mathematical Practice, and ways to design mathematics tasks for developing understanding. Additionally, you are to show knowledge of instructional practices that take a resource (as opposed to a deficit perspective) of students' experiences, how to support multiple forms of student participation in mathematics, and attention to student interactions than can be shaped by issues of power such as race, gender, language, and status.

Grading policy:

A = 100-90%	B+= 89-87%
B = 86-80%	C+= 79-77%
C = 76-70%	D = 69-60%

If you need ANY special accommodations during the course, please see me after the *FIRST* class.

RUTGERS

F < 60% **Course**

Academic Integrity

The highest standards of academic integrity are expected of all students. The failure of any student to meet these standards may result in suspension or expulsion from the university and/or other sanctions as specified in the academic integrity policies at Rutgers University.

Violations of academic integrity include, but are not limited to: cheating, fabrication, tampering, plagiarism, stealing, or facilitating such activities. The university academic integrity policies are available at the link below: http://academicintegrity.rutgers.edu

Schedule (subject to change depending on clinical internships, pacing, and student learning):

Class Date	Topic and Standards	Readings that are DUE for class	Graded Assignments TBD
Jan. 20 Week 1	Fair Sharing Developing Number Sense of Fraction	Canvas: Empson EL: Ch 4	
Jan. 27 Week 2	Understanding Fractions	Canvas: Empson Ch 3 Canvas: Siebert & Gaskin	
Feb. 3 Week 3	Fractions: Equivalence and Order Addition & Subtraction	Canvas: Empson Ch 6	Modification of Pre Assessment Example
Feb. 10 Week 4	Fractions and Decimals Grouping Students	Canvas: Empson Ch 7 Canvas: Whitten	
Feb. 17 Week 5	Group-worthy Tasks Multiplication & Division	ST: Ch 4 & 7 Canvas: Taylor-Cox	Evidence of Students' Understanding & Placements on the Continuum
Feb. 24 Week 6	Questioning as a Technique Formative Assessments	EL: Ch 7 CM: Ch 9 Canvas: Barton	Video Analysis
Mar. 3 Week 7	Mathematical Discussions Decimals	Canvas: Parrish CM: Ch 10	Goals, Objectives and Instructional Interventions for Student growth
Mar. 10 Week 8	Geometry & Measurement Inclusivity	EL: Ch 1 & 6 Canvas: Treahy	Video Analysis
Mar. 17	Spring Break		
Mar. 24 Week 9	Technology & Media	Canvas: Chappell & Thompson	Plans and Activities
Mar. 31 Week 10	Equity & Status	Canvas: Martin ST: 5 & 6	Video Analysis