

George Mason University
College of Education and Human Development
Early Childhood Education

ECED 515.002 Mathematics for Diverse Young Learners
3 Credits, Spring 2020
01/21/2020 – 05/13/2020, Wednesday/ 7:20pm – 10:00pm
Thompson Hall, Room L019, Campus

Faculty

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Prerequisites

ECED 401 or ECED 501 and ECED 403 or ECED 503
Prerequisites require a minimum grade of C for undergraduate courses and B- for graduate courses.

University Catalog Course Description

Examines ways to foster development of mathematics in preschool to third-grade children. Covers construction of mathematics lessons and hands-on experiences that promote learning in children with diverse abilities and cultural and linguistic backgrounds.

Course Overview

This class focuses on scholarly inquiry, where students learn about the recursive process of scholarly inquiry through studying previous scholarship and applying it to teaching and learning. In this course, students will analyze and evaluate quantitative and qualitative research focused on a specific question related to providing instruction that enhances young learners' mathematical understandings. Students will do the following:

- Articulate a question, problem, or challenge that is generally relevant and appropriate in scope (e.g., Why is teaching patterning important? What are effective approaches to teaching patterning to diverse prekindergartners?).
- Identify ethical issues related to using existing research to inform mathematics instruction and ethical considerations when working with young children.
- Communicate knowledge about evidence-based practices gathered from peer-reviewed research articles by writing a research brief to share with classmates.

Course Delivery Method

This course will be delivered using a lecture and discussion format.

Learner Outcomes or Objectives

This course is designed to enable students to do the following:

1. Explain how previous mathematics content coursework has developed understandings of

mathematics content identified in *Virginia's Foundation Blocks for Early Learning: Comprehensive Standards for Four-Year-Olds* and the *Virginia Mathematics Standards of Learning* and explain how these standards provide a sound foundation for teaching mathematics in prekindergarten through third grade.

2. Discuss the contributions of different cultures toward the development of mathematics and the role of mathematics in culture and society.
3. Describe the role of family and community knowledge, experience, and resources in planning and implementing mathematics content in the curriculum.
4. Explain the sequential nature and vertical progression of mathematics and the multiple representations of mathematical concepts and procedures.
5. Use the five processes: reasoning mathematically, solving problems, communicating mathematics effectively, making mathematical connections, and using mathematical models and representations at different levels of complexity.
6. Plan instruction guided by the *Virginia's Foundation Blocks for Early Learning: Comprehensive Standards for Four-Year-Olds*, the *Virginia Standards of Learning for Mathematics*, and the standards identified by the National Council of Teachers of Mathematics in the following content areas: (a) number systems, their structure, basic operations, and properties; (b) elementary number theory, ratio, proportion, and percent; (c) algebra; (d) geometry; and (e) probability and statistics.
7. Evaluate, select, and adapt a variety of instructional materials, manipulatives, technologies, and teaching strategies to engage diverse young learners in mathematics.
8. Describe strategies to help young children become mathematically literate, think critically and creatively, and to see the relationships between mathematics and other content areas.
9. Construct mathematics experiences in an environment that promotes equity and responds to cultural, linguistic, and ability diversity.
10. Describe the appropriate use of calculators and technology in the teaching and learning of mathematics, including virtual manipulatives.
11. Develop informal assessment strategies to describe young children's understanding of mathematics concepts.
12. Analyze and evaluate qualitative and quantitative research literature to determine effective evidence-based practices for diverse young learners and inform instruction and use technology for learning, research, and communication.
13. Summarize and present research on evidence-based practices in teaching mathematics with diverse young children.
14. Engage in reflection, collaboration, and continuous learning to develop professionally.
15. Exhibit standards of professionalism, ethical standards, and personal integrity with children, families, and professionals in the field and in interactions with classmates, the instructor, the field experience coordinator, and others.
16. Use writing as an instructional and assessment tool to generate, gather, plan, organize, and to communicate for a variety of purposes; integrate correct written conventions (i.e., grammar, usage, mechanics, and spelling); and format using current APA style.

Professional Standards – Virginia Professional Studies Competencies, Virginia Early Childhood Special Education Endorsement Competencies, Virginia Early/Primary Education PreK-3 EPK3 Endorsement Competencies, Interstate Teacher Assessment and Support Consortium (InTASC) Standards, Council of Exceptional Children (CEC) and Division of Early

Childhood (DEC) Standards, and National Association for the Education of Young Children (NAEYC) Standards

Upon completion of this course, students will have met the following professional standards:

Virginia Early/Primary Education PreK-3 Endorsement Competencies

Methods

Knowledge and Skills: Mathematics

Required Texts

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). Washington, DC: Author.

Copley, J. V. (2010). *The young child and mathematics* (2nd ed.). Washington, DC: National Association for the Education of Young Children. ISBN: 9781928896685

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author. <http://www.nctm.org/standards/content.aspx?id=16909>

National Council of Teachers of Mathematics. (2006). *Curriculum focal points for prekindergarten through grade 8 mathematics*. Reston, VA: Author. <http://www.nctm.org/standards/content.aspx?id=270>

Van de Walle, J., Lovin, L. A., Karp, K., & Bay-Williams, J. (2018). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades pre-k-2* (2nd ed.). New York, NY: Pearson.

Virginia Department of Education. (2009). Mathematics standards of learning. http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml

Virginia Department of Education. (2016). Mathematics curriculum framework. http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml

Access Blackboard for required and optional class readings.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard (Bb), Tk20, hard copy).

Assignments	Due Dates	Points
Attendance and Participation <ul style="list-style-type: none">• Self-Evaluation	Ongoing May 4	25
Personal Journal <ul style="list-style-type: none">• Part 1• Part 2	January 29 May 4	10
Mathematics Activity Share	Variable	15
Teaching Math Through Picture Books Poster and Presentation	February 19	10
An Inquiry Into Evidence-Based Practices	March 18	15
Research Brief		10
Research Presentation		5
Mathematics Lesson Implementation and Reflection		25

• Planning the Lesson	April 1	10
• Collecting Data	April 1	5
• Reflecting on the Lesson	April 29	10
TOTAL		100

- **Assignments and/or Examinations**

Personal Journal (Part 1=5 points; Part 2=5 points)

Part 1: To initiate class experiences, students will write a critical reflection on their personal experiences as a learner of math (2 pages). They will use the following prompts to help guide their reflection process.

- Begin with your earliest memories (give examples) and reflect until the present as a graduate student in a teacher preparation program.
- Reflect on your experiences in school, out of school, in the context of your family, etc.
- What thoughts do you tell yourself about math (e.g., ANTs = automatic negative thoughts/assumptions/not truths)?
- How do you see yourself as a math learner?
- Why do you think you feel that way?
- How do you think these experiences will shape you as a teacher of math? In other words, what positive impacts or challenges on your teaching practice do you foresee from your prior experiences or self-conception?

Part 2: In conclusion of the course, students will revisit their initial thoughts in their first journal entry and reflect on how their thoughts and/or self-conception have changed, if at all (2 pages). They will use the following prompts to help guide their reflection process.

- What thoughts do you tell yourself about math (e.g., ANTs)? Have your thoughts changed? Your self conception related to math?
 - If you did in the first place, do you still have ANTs?
 - What do you do if you have an ANT?
 - How does this change, if at all, how you will work with your future students?
- How did learning about cognitive behavioral therapy (CBT) and transactional analysis (TA) impact your feelings about the course and math? Was it helpful?
- Do you view yourself as a math learner differently than you did before?
- What have you learned in the course?
- Is there a concept you learned in the course that really stuck out for you? (Include references to course readings, as necessary.)
- Is there a particular reading, handout, or material from class that you found particularly helpful or eye-opening? (Include references to course readings, as necessary.)
- Articulate the kind of early childhood mathematics teacher you plan to be. Will something you learned in the course be included in your guiding principles?

Mathematics Activity Share (15 points)

Students will choose a mathematics content area from one of the following: (a) number systems, their structure, basic operations, and properties; (b) elementary number theory, ratio, proportion, and percent; (c) algebra; (d) geometry; and (e) probability and statistics during the first class

session in which to present an activity. Three students will sign up per content area: one person will focus on PreK, one on K-Grade 1, and one on Grades 2-3. Individual students will prepare a lesson plan using the template provided. Each student in the content area group will engage a small group of classmates in a 15-minute informative and interactive center that actively engages learners in learning in the selected mathematics content area.

Before the mathematics activity share, students will post all share materials (lesson plan, resources) on Blackboard under Discussion Board. During the center, each student will include the following:

- An overview of the topic to include the key ideas or content and the importance of the topic to children's mathematics learning
- An overview of relevant state and national content standards at the appropriate grade level(s), noting consistencies (or inconsistencies, if the case may be)
- A description of classroom and behavior management strategies that would increase the effectiveness of the implementation of the activity
- Materials appropriate to the activity (bring or borrow from the instructor; have enough materials to lead the activity share approximately three times to a small group of students; materials should be visually attractive and engaging for young learners)
- Modeling of the math concept (no videos please)
- It should be evident that the student has read the course material on the mathematics topic
- Modeling how to engage in the activity chosen for math concept. Math activity should be in-line with the type of math teaching practices we are learning about in the course (e.g., hands-on with materials, not a worksheet)
- An opportunity for classmates to engage in the activity with guidance from the student leading the activity
- Modeling of the math concept and activity should be role played as if student is the teacher and classmates are young learners in the class
- Preparation for how to adapt the center activity for a range of learners
- A list of at least three resources related to teaching the topic that could include children's literature, websites, manipulatives or materials, or other teacher resources (at least one must be a relevant developmentally appropriate picture book and one must be an article from a practitioner journal (e.g., *Teaching Children Mathematics* or *Young Children*) on the topic)
- Math activity share should not exceed or fail to take up the 15-minute duration

Teaching Math Through Pictures Books Poster and Presentation (10 points)

To engage in the core math content areas of (a) number systems, their structure, basic operations, and properties; (b) elementary number theory, ratio, proportion, and percent; (c) algebra; (d) geometry; and (e) probability and statistics in an appropriate interdisciplinary context, students will choose a picture book focused on a math concept. They will make a poster (either paper or an electronic version) that includes the following information: title, author, possible math concepts explored within the text, appropriate age/grade level, relevant standards, a meaningful quote, instructions and diagram(s) for a relevant interactive activity for children, and a rationale (no more than one double-spaced page) for decisions made, including citations of at least two course readings. Students should have materials for the activity available to engage classmates during presentation. Students will present their posters to classmates during an in-class poster

session. Students will upload an electronic copy of the poster to Blackboard in addition to their rationale.

Research Brief and Presentation: An Inquiry Into Evidence-Based Practices (15 points)

In two-person partnerships, students will identify a question of interest related to the teaching of mathematical concepts to diverse young learners. Each student will conduct a literature search to identify four research articles (eight total per pair) related to the question published in peer-reviewed journals. Each student will read the articles identified in the literature search.

Student partners will prepare and share with classmates a two-page, single-spaced research brief, including the reference list, that presents the findings of four of the research studies read and analyzed. Students will follow APA style and will include the following:

- An introduction that presents the question, describes the mathematical concept that is the focus of the inquiry, and provides an overview of the research
- A paragraph summary for three research articles, including (a) a brief description of the participants, (b) a brief summary of the methods, and (c) an overview of the findings (Each student will be responsible for drafting two of the summary paragraphs. They will be responsible for reviewing and providing feedback on their partner's two summary paragraphs.)
- A conclusion that summarizes what the research says about teaching the selected mathematical concept to diverse young children
- Citations within the brief to support the evidence presented
- A bibliography, including the four articles summarized plus the additional two to four articles read

As part of the inquiry process, students will use the research synthesis to inform their mathematics implementation lesson and reflection.

Partners will present their research brief to a small group of classmates in class. Students will prepare a PowerPoint presentation to share their inquiry into evidence-based practice. Students will summarize what the research says about teaching the selected mathematical concept to diverse young children. Slides will include 1) title slide, 2) introduction to line of inquiry, 3) overview of the studies (i.e., participants, methods, findings), 4) implications for practice, and 5) references.

Mathematics Lesson Implementation and Reflection (25 points)

In the same two-person Research Brief partnerships, students will use what they learned during their inquiry into evidence-based practices to choose a developmentally appropriate math lesson for prekindergarten learners in one of the core math content areas as defined by *Virginia's Foundation Blocks of Early Learning*, the *Virginia Math Standards of Learning*, and the *National Council of Teachers of Mathematics Standards* from either the course textbooks or Virginia Department of Education or Math Innovations websites. They will evaluate the lesson in light of what the research suggests and decide what, if any, adaptations need to be made to the lesson plan.

They will implement the lesson during one of two "Afternoons of STEM Learning" at the Mason Child Development Center (CDC) to multiple groups of preschool children, making necessary

modifications and taking reflective notes. Students will bring any necessary materials for the lesson. Students will visit the CDC two consecutive times. One partner will teach the lesson while the other partner collects data during the lesson iterations. The next week, the partners will switch roles. Students will submit a written reflection in four parts.

- ***Planning the Lesson (10 points)***. The first part of the reflection will be due before the experience and will include how the lesson was selected; a list of relevant prekindergarten standards; how the lesson is supported by the research; what adaptations were made, if any, to the lesson and why; and how the students prepared to implement the lesson. Students will include plans for classroom and behavior management and building community. In this part, students will be assessed on their preparation of all of the necessary materials for the lesson, including being prepared to implement the lesson upon arrival at the CDC. Partners will write and submit this reflection collaboratively. (2 to 3 double-spaced pages)
- ***Collecting Data (5 points)***. The second part of the reflection will be due before the experience and will include (a) a statement about their ethical considerations as they planned for the data collection and (b) a plan for collecting quantitative and qualitative data. Partners will develop an observational tool or teacher's checklist for the observing partner to use to collect data about the children's engagement in the lesson (must submit tool). They also will identify work samples (may be photos) they will collect and how they will be scored and analyzed to determine children's learning of the concept. Partners will write and submit this reflection collaboratively.
- ***Reflecting on the Lesson (10 points)***. The third part will be due after the experience and will include a presentation and analysis of the qualitative and quantitative data collected, as well as a reflection on how the lesson went (what went well, what could have been done differently/better for next time), key learnings, and "aha" moments. Students will use the analyzed data and their own observations to reflect on both teacher learning (themselves) and children's learning during the lesson. Students also will reflect on their classroom and behavior management and how they built community. Students will provide specific linkages to course readings and research examined for the inquiry into evidence-based practices. They will conclude the reflection by posing a compelling question about what are the next steps to the lesson implemented for supporting children's understandings. Partners will engage in reflective discussions about their analysis of the data and the implementation of the lesson, but will submit written reflections independently. (3 double-spaced pages)

- **Other Requirements**

Attendance and Participation (25 points)

Because active participation and engagement are imperative for optimal learning, preparation for and participation in in-class and online activities will be evaluated based on the following criteria:

- Students attend class, arrive on time, and stay for the entire class period.
- Students notify the instructor by email in the case of an absence.

- Students submit a 2-3-page written reflection of the content covered (e.g., course readings, content on Blackboard) of any missed class. Reflection is due within 1 week after an absence.
- Students use laptops and personal devices for instructional purposes only.
- Students complete readings and prepare for class activities prior to class as evidenced by their ability to discuss and write about the concepts presented and examined in the texts as well as participate fully in related activities.
- Students are actively involved in in-class and online learning experiences as evidenced by (a) participating in all activities, (b) engaging in small- and large-group discussions, (c) completing written work related to the activities, and (d) supporting the participation and learning of classmates.
- Students show evidence of critical reflective thinking through in-class and online discussions, activities, and written reflections.
- Students display professional dispositions at all times while interacting with the instructor and other students.
- Students complete participation activities across the semester that complement the scheduled course topic. Instructors will periodically collect artifacts from the activities. Students in attendance and who actively engage in the learning experience will receive credit for their efforts. Graded participation activities are not announced and are implemented at the discretion of the instructor.
- Students submit attendance and participation self-evaluation.

Written Assignments

All formal written assignments will be evaluated for content and presentation. The American Psychological Association, Seventh Edition (APA) style will be followed for all written work. All written work unless otherwise noted must be completed on a word processor and should be proofread carefully. (Use spell check!) If students are not confident of their own ability to catch errors, they should have another person proofread their work. When in doubt, they should check the APA manual. Students may consult the Writing Center for additional writing support.

Students will do the following:

1. Present ideas in a clear, concise, and organized manner. (Avoid wordiness and redundancy.)
2. Develop points coherently, definitively, and thoroughly.
3. Refer to appropriate authorities, studies, and examples to document where appropriate. (Avoid meaningless generalizations, unwarranted assumptions, and unsupported opinions.)
4. Use correct capitalization, punctuation, spelling, and grammar.
5. Type the paper with double spacing, indented paragraphs, 1-inch margins all around, and 12-point Times New Roman font.

- **Grading**

A = 95-100 A- = 90-94 B+ = 87-89 B = 80-86 C = 70-79 F = <70

Incomplete (IN): This grade may be given to students who are passing a course but who may be unable to complete scheduled coursework for a cause beyond reasonable control.

All CEHD students are held to the university grading policies as described in the Academic Policies section of the current catalog, which can be accessed at <http://catalog.gmu.edu>. Those students seeking Virginia initial teaching licensure must earn a B- or better in all graduate licensure coursework.

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions at all times. See <https://cehd.gmu.edu/students/policies-procedures/>.

Class Schedule

Date	Topics	Readings & Assignments
<p>Week 1 Jan 22</p>	<p>Cognitive Aspects of Math</p> <p>Meaningful Math</p> <p>Being a Reflective, Collaborative Teacher of Mathematics Committed to Continuous Learning</p> <p>Introducing the Core Math Content Areas</p> <ul style="list-style-type: none"> • Number systems, their structure, basic operations, and properties • Elementary number theory, ratio, proportion, and percent • Algebra • Geometry • Probability and statistics 	<p>Van de Walle et al., Chapter 1 Copley, Chapter 1</p>
<p>Week 2 Jan 29</p>	<p>Relevant Learning Theories/Theorists</p> <p>Constructivist Environments to Support Mathematics Learning</p> <p>Problem Solving Approach</p> <p>Reflecting on Past and Current Experiences With Mathematics and the Implications for Teaching</p> <p>Inquiry Into Evidenced-Based Practices for Teaching the Core Math Content Areas</p> <ul style="list-style-type: none"> • Presentation by the Educational Librarian on conducting literature 	<p>Van de Walle et al., Chapter 2 Copley, Chapter 2</p> <p><u>Readings on Blackboard</u> <i>Why Do Americans Stink at Math?</i></p> <p>Due to Bb – Personal Journal Part 1</p>

	searches and ethical considerations for selecting and using research findings	
<p>Week 3 Feb 5</p> <p>NO FACE-TO-FACE CLASS ALTERNATIVE ONLINE MEETING</p>	<p>Mathematics Content Knowledge for Teaching and Learning</p> <p>Mathematics Content Standards as the Foundation for Teaching Mathematics: <i>Virginia's Foundation Blocks for Early Learning, Virginia Standards of Learning for Mathematics, National Mathematics Learning Standards</i></p> <p>Formal and Informal Assessment Strategies to Describe Diverse Young Children's Understanding of Mathematics Concepts</p> <p>Analyzing and Interpreting Data to Inform Instruction and for Progress Monitoring</p>	<p>Van de Walle et al., Chapter 3</p> <p><i>Virginia's Early Learning Foundation Building Blocks, Virginia Mathematics Standards of Learning, National Mathematics Learning Standards</i></p> <p><u>Readings on Blackboard</u> <i>Seven Must-Have Formative Assessment Practices and How to Use Them</i> <i>Implementing Portfolio Assessment</i></p>
<p>Week 4 Feb 12</p>	<p>Mathematics Instruction and Assessment to Develop the Five Processes of Mathematical Understanding</p> <ul style="list-style-type: none"> Reasoning mathematically, solving problems, communicating mathematics effectively, making mathematical connections, and using mathematical models and representations at different levels of complexity Sequential nature and vertical progression of mathematics <p>Differentiating Instruction</p> <p>Collaborating With Other Professionals</p> <p>Generating Questions to Guide Inquiry of Evidence-Based Practices</p>	<p>Van de Walle et al., Chapter 4 Copley, Chapter 3</p>
<p>Week 5 Feb 19</p>	<p>Role of Mathematics in Culture and Society</p> <ul style="list-style-type: none"> Cultures and the development of mathematics Mathematics experiences to promote equity and respond to cultural, linguistic, and ability diversity <p>Collaborating With Professional Partners</p>	<p>Van de Walle et al., Chapters 5 & 6</p> <p>Due to Bb – Teaching Math Through Picture Books Poster and Presentation</p>

	<p>Reading and Analyzing Research on Evidence-Based Practices</p> <ul style="list-style-type: none"> Understanding who the participants are, what methods were used, and what the results or findings mean 	
<p>Week 6 Feb 26</p>	<p>Collaborating with Families and Communities</p> <ul style="list-style-type: none"> Role of family and community in mathematics Using family and community knowledge, experience, and resources in planning and teaching mathematics <p>Activity Share Review: Number Sense Introduction</p> <p>Analyzing and Evaluating Research on Evidence-Based Practices</p>	<p>Van de Walle et al., Chapter 7</p> <p><u>Readings on Blackboard:</u> <i>Multicultural Mathematics Instruction</i></p>
<p>Week 7 Mar 4</p>	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> Sets Number systems and number sense Basic operations and properties Multiple representations of mathematical concepts and procedures Instructional materials, manipulatives, technologies 	<p>Van de Walle et al., Chapters 8 & 11</p> <p>Activity Share: Number Sense and Place Value</p>
<p>Mar 11</p>	<p>SPRING BREAK</p>	
<p>Week 8 Mar 18</p>	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> Basic facts Whole number place value Multiple representations of mathematical concepts and procedures Instructional materials, manipulatives, technologies <p>Using Research to Make Instructional Decisions</p>	<p>Van de Walle et al., Chapters 9 & 10 Copley, Chapter 4</p> <p>Due to Bb – Research Brief: An Inquiry Into Evidence-Based Practices</p> <p>Activity Share: Operations and Computation</p>
<p>Week 9 Mar 25</p>	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> Whole number computation Elementary number theory, ratio, proportion, and percent Multiple representations of mathematical concepts and procedures 	<p>Van de Walle et al., Chapters 12 & 15 Copley, Chapter 7</p> <p>Activity Share: Measurement</p>

	<ul style="list-style-type: none"> • Instructional materials, manipulatives, technologies <p>Measurement</p> <p>Planning and Preparing for Instruction, Classroom Management, and Guiding Behavior</p>	
Week 10 Apr 1	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> • Algebraic reasoning • Multiple representations of mathematical concepts and procedures • Instructional materials, manipulatives, technologies <p>Reflecting on Planning Instruction Preparing to Teach Mathematical Concepts and Skills to Diverse Prekindergartners</p>	<p>Van de Walle et al., Chapter 13 Copley, Chapter 5</p> <p><u>Readings on Blackboard:</u> <i>What Comes Next? The Mathematics of Pattern in Kindergarten</i></p> <p>Due to Bb – Mathematics Lesson Implementation and Reflection: Parts 1 and 2</p> <p>Activity Share: Algebra</p>
Week 11 Apr 8	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> • Fractions • Multiple representations of mathematical concepts and procedures • Instructional materials, manipulatives, technologies 	<p>Van de Walle et al., Chapter 14</p> <p><u>Readings on Blackboard</u> <i>Making Fractions Meaningful</i></p> <p>Activity Share: Fractions</p>
Week 12 Apr 15	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> • Geometry and spatial sense • Multiple representations of mathematical concepts and procedures • Instructional materials, manipulatives, technologies <p>Mathematics Lesson Implementation and Data Collection</p> <p>Reflecting on Teaching</p>	<p>Van de Walle et al., Chapter 16 Copley, Chapters 6</p> <p>Activity Share: Geometry & Spatial Sense</p>
Week 13 Apr 22	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> • Probability and statistics 	<p>Van de Walle et al., Chapter 17</p>

	<ul style="list-style-type: none"> • Data analysis • Multiple representations of mathematical concepts and procedures • Instructional materials, manipulatives, technologies <p>Mathematics Lesson Implementation and Data Collection</p> <p>Analyzing and Presenting Data</p>	<p>Copley, Chapter 8</p> <p><u>Readings on Blackboard:</u> <i>Zoos, Aquariums, and Expanding Students' Data Literacy</i></p> <p>Activity Share: Probability & Data Analysis</p>
Apr 25	GMU CDC Professional Development Day (Student volunteers present posters)	
Week 14 Apr 29	<p>Appropriate Use of Calculators, Technology, and Virtual Manipulatives</p> <p>Reflecting on the Mathematics Lesson Implementation and Implications for Filling the Role of Mathematics Teacher for Diverse Young Learners</p> <p>Strategies for Children</p> <ul style="list-style-type: none"> • Becoming mathematically literate • Thinking critically and creatively • See the relationships between mathematics and other content areas <p>Course Wrap-Up</p>	<p><u>Readings on Blackboard:</u> <i>Putting the "T" in STEM for the Youngest Learners</i></p> <p>Due to Bb – Mathematics Lesson Implementation and Reflection: Part 3</p>
May 4-5	Reading Days – No class meeting	
Week 15 May 6	Exam Period – No class meeting	<p>Due to Bb – Personal Journal-Part 2 due May 4</p> <p>Due to Bb – Attendance and Participation Self-Evaluation due May 4</p>

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

Core Values Commitment

The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: <http://cehd.gmu.edu/values/>.

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see <https://catalog.gmu.edu/policies/honor-code-system/>).

- Students must follow the university policy for Responsible Use of Computing (see <https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).
- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students **solely** through their Mason email account.
- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see <http://ds.gmu.edu/>).
- Students must follow the university policy stating that all sound emitting devices shall be silenced during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or <https://cehd.gmu.edu/aero/tk20>. Questions or concerns regarding use of Blackboard should be directed to <https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>.
- For information on student support resources on campus, see <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>.

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking: As a faculty member, I am designated as a “Responsible Employee,” and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason’s Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason’s Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

For additional information on the College of Education and Human Development, please visit our website: <http://cehd.gmu.edu>.