New York Center for Teacher Development, Inc.

In affiliation with University of Massachusetts Global

Course Syllabus

Course:	**EDZU 9676 Making Math Interactive**
Credit Hours:	3.0 credits / 45 hours
Instructor:	Jessica Rivera

Course Description

Do you need more teaching strategies in order to reach every math learner? Why not use interactive math lessons to meet all of your students' needs? Educators are required to help their students meet the Common Core State Standards and provide RTI for students. In addition to this, educators need to keep their students engaged while learning. This course offers elementary teachers (K-6) strategies that will help you incorporate interactive math activities into your current math curriculum. You will take with you, hands-on activities that align with the Common Core State Standards. We will collaborate through forums to find and create ways we can use differentiated instruction to integrate manipulatives, games and other strategies into daily lessons. Get your students out of their seats with these motivating math activities!

Course Goals

To Know

1. the Common Core State Standards for Mathematics.
2. a variety of materials available for providing hands-on math activities for their students.

To Understand

1. ways to differentiate instruction for their students
2. ways to support higher order thinking experiences for their students
3. the benefits of hands-on lessons/activities for their students

and To Be Able To

1. create lesson plans, appropriate to each elementary grade level, that provide hands-on activities
2. create enrichment and reinforcement activities in order to meet individual students' needs.
3. use various resources to supplement hands-on activities and manipulatives for their current math curriculum

Course Outline

I. Number Sense and Operation
    a. Identify which Common Core State Standards for Mathematics that apply to the grade level participant teaches.
    b. Explore and analyze a website for Number Sense and Operations activities.
    c. Identify ways to support higher order thinking using Bloom's Taxonomy.
    d. Explore and gather ideas on strategies for supporting higher order thinking.
    e. Create hands-on math lessons to teach a concept from the Number Sense and Operations Standards incorporating ways to support higher order thinking.
II. Geometry/Algebra
    a. Explore the internet to find computer activities for differentiation.
    b. View and analyze a lesson for evidence of differentiation and support for higher order thinking.
        i. Students will revise the lesson to make changes that include or improve these aspects of teaching.
    c. Explore and create activities for making learning vocabulary interactive.
    d. Create hands-on math lessons to teach a concept from the Geometry and Algebra Standards incorporating ways to support higher order thinking.
III. Measurement
    a. Evaluate current math curriculum for effective resources/activities that incorporate hands-on activities, higher order thinking, and differentiation.
    b. What does differentiated instruction look like?
        i. Analyze own teaching style and efficacy of differentiating instruction.
    c. Share a creative a creative approach for teaching a concept.
    d. Create hands-on math lessons to teach a concept from the Measurement Standards incorporating ways to support higher order thinking.
IV. Statistics and Probability
    a. Explore websites with lessons for probability and data.
    b. Create an activity that would differentiate instruction for learners.
    c. Post and respond wish list forum where participants discuss concepts they struggle to find effective ways to teach
    d. Explore and create activities where students can use the computer to learn data concepts.
    e. Create hands-on math lessons to teach a concept from the Statistics and Probability Standards incorporating ways to support higher order thinking.
V. Manipulatives, Game Boards, and Final Assignments
    a. Identify the benefits of manipulative use in learning concepts.
    b. Reflect on own use of manipulatives for teaching specific concepts.
    c. Take inventory of own manipulatives.
        i. Research manipulatives to supplement current inventory.
    d. Share ways to create supplemental manipulatives.
    e. Accumulate ideas and components of higher order thinking and hands-on strategies they have learned to create and try an activity with a student.
        i. Reflect on efficacy of activity

Methods of Instruction

Teachers enrolled in this course will read documents that will improve their understanding of differentiating instruction, supporting higher order thinking and making learning interactive. They will communicate with other teachers around the state and country to share successful strategies and gain insights into best practices in instruction. They will complete assignments that assess their understanding of the importance of differentiating instruction, supporting higher order thinking, and making learning interactive. They will be challenged to apply their learning immediately to their own instruction. They will think analytically about their own instruction and others' in order to improve practice in mathematics.

Students will connect with each other throughout the course within forums and various other types of online feedback options built into each class.

Methods of Assessment

In order to earn an A for this course, students must complete all of the assigned readings and assignments. They must also participate in all discussion forums, and complete all practicum tasks. This includes four lesson plans that reflect evidence of differentiating, higher order thinking and are interactive.

In order to earn a B for this course, students must complete all of the assigned readings and assignments. They must also participate in all discussion forums, and complete two practicum tasks as described above.

Instructors are online each day of the course and correspond with students through the course itself, feedback on assignments, e-mail, and by phone.

Time Validation

Assignment	Time (in hours)
Students will review and identify the Mathematics Common Core State Standards for the grade level in which they teach. They will indicate which standards are being taught in lessons shared through forums.	1.50
Students will explore and analyze a website for its efficacy in reinforcing or enriching number sense and operations concepts and state their findings through a written assignment.	1.00
Students will read resources on and identify the ways higher order thinking can be supported in the classroom using Bloom's taxonomy. Students will indicate the ways in which they will provide opportunities for higher order thinking in their lessons shared through forums.	2.00
Students will explore websites and resources in order to gather ideas for activities they can create to support higher order thinking and differentiation for math instruction.	2.00

Students will create hands-on math lessons to teach a concept from the number sense and operations standards incorporating ways to support higher order thinking and differentiation.	**1.00**
Students will explore the internet to find computer activities for differentiated instruction related to geometry and algebra standards. These activities will be incorporated into lessons for teaching these concepts.	**2.00**
Students will view and analyze a math lesson for evidence of differentiation and support for higher order thinking. Students will write about ways in which the lesson met some areas of differentiation and higher order thinking.	**1.50**
Students will revise the lesson to make changes that include or improve aspects of differentiation, higher order thinking, and being hands-on.	**2.00**
Students will read resources related to teaching content specific vocabulary and create activities to make learning vocabulary interactive for their students.	**3.00**
Students will evaluate their current math curriculum for effective resources/activities that incorporate hands-on activities, higher order thinking, and differentiation and share their findings through a written assignment.	**2.00**
Student will read resources related to differentiation instruction and identify what makes differentiated instruction effective. Students will analyze their own teaching style and efficacy of differentiating instruction through a written reflection. 2.50	
Students will share a creative approach for teaching a concept for the measurement standards through a forum.	**1.50**
Students will read resources related to measurement standards and create hands-on math lessons to teach a concept from the measurement standards incorporating ways to support higher order thinking and differentiation.	**2.00**
Students will explore the internet to find computer activities for differentiated instruction related to probability and data. Students will then use websites they have found to be effective to create an activity related to probability and data standards that would differentiate instruction for learners.	**4.00**
Students will read resources related to the benefits of using manipulatives for teaching concepts and reflect on their own use of manipulatives for teaching concepts.	**2.00**
Students will take inventory of the manipulatives they have to use for math instruction in their classroom and share through a written assignment.	**2.00**
Students will use suggested resources to research ways to supplement their current manipulative inventory. Students will then read resources related to manipulative use, math games, and game boards and identify ways strategies/ideas can be used for classroom application.	**5.00**
Students will share ideas they found for creating math manipulatives through a forum.	**1.00**
Students will accumulate all ideas and components of higher order thinking and hands-on strategies they have learned in order to create and try an activity with a student.	**5.00**
Students will reflect on the efficacy of the activity through a written assignment. They will identify what worked well and what did not, using a formative assessment. Students will identify the ways in which they can revise the activity in order to achieve a better learning outcome.	**2.00**
Total Time	**45.00**