

**Master of Science in Teaching Specialization in
Middle School Mathematics Education**

**Assessment #3:
Rubric-Based and Model-Based Lesson Planning
Project**

**MATH 509: Methods of Instruction in the Middle
School Mathematics Curriculum (Grades 5-8)
OR/ MATH 612: The Learning and Teaching of
Mathematics, Grades 6-9**

Problem-Solving Lesson Plan

and

Program Standards and Performance Indicators

Assessment #3
Rubric-Based and Model-Based Lesson Planning Project

Master of Science in Teaching Specialization in Middle School Mathematics Education
Problem-Solving Lesson Plan
MATH 509, MATH 612

The instructional problem-solving activity should be related to the middle school mathematics curriculum in such as *Connected Mathematics*. The focus of the lesson/activity is on students' mathematical thinking with respect to one of the following: algebraic thinking including number patterns; rational number understanding; geometric thinking, measurement, and spatial reasoning; and data analyses and probabilistic reasoning.

The written lesson plan should include the following:

1. Lesson objectives
2. Opening the lesson
3. Connecting concepts and procedures to be learned
4. Making the lesson interesting
5. Assessing students' thinking and understanding
6. Anticipating student difficulties and how to address them
7. Lesson closure
8. Connecting the lesson to the process standards from NCTM *Principles and Standards* (2000)

Master of Science in Teaching Specialization in Middle School Mathematics Education
Problem-Solving Lesson Plan: Program Standard and Performance Indicators
MATH 509, MATH 612, MATH 613, MATH 614

Lesson objectives

Dispositions

- Effective teaching
- Commitment to learning with understanding

Knowledge of Mathematics Pedagogy

- Plans lessons, units and courses that address appropriate learning goals, including those that address local, state, and national mathematics standards and legislative mandates

Opening the lesson

Dispositions

- Effective teaching
- Commitment to learning with understanding

Knowledge of Mathematics Pedagogy

- Uses knowledge of different types of instructional strategies in planning mathematics lessons

Connecting concepts and procedures to be learned

Knowledge of Mathematical Connections

- Recognize and use connections among mathematical ideas

Dispositions

- Attention to equity
- Commitment to learning with understanding

Knowledge of Mathematics Pedagogy

- Selects, uses, and determines suitability of the wide variety of available mathematics curricula and teaching materials for all students including those with special needs such as the gifted, challenged and speakers of other languages

- Plans lessons, units and courses that address appropriate learning goals, including those that address local, state, and national mathematics standards and legislative mandates
- Demonstrates knowledge of research results in the teaching and learning of mathematics
- Uses knowledge of different types of instructional strategies in planning mathematics lessons
- Demonstrates the ability to lead classes in mathematical problem solving and in developing in-depth conceptual understanding, and to help students develop and test generalizations

Making the lesson interesting

Dispositions

- Attention to equity
- Use of stimulating curricula
- Use of various teaching tools such as technology

Knowledge of Mathematics Pedagogy

- Selects, uses, and determines suitability of the wide variety of available mathematics curricula and teaching materials for all students including those with special needs such as the gifted, challenged and speakers of other languages
- Uses multiple strategies, including listening to and understanding the ways students think about mathematics, to assess students' mathematical knowledge

Assessing students' thinking and understanding

Dispositions

- Attention to equity
- Effective teaching
- Commitment to learning with understanding
- Use of various assessments

Knowledge of Mathematics Pedagogy

- Selects, uses, and determines suitability of the wide variety of available mathematics curricula and teaching materials for all students including those with special needs such as the gifted, challenged and speakers of other languages
- Uses multiple strategies, including listening to and understanding the ways students think about mathematics, to assess students' mathematical knowledge
- Uses knowledge of different types of instructional strategies in planning mathematics lessons

Anticipating student difficulties and how to address them

Dispositions

- Attention to equity
- Effective teaching
- Commitment to learning with understanding

Knowledge of Mathematics Pedagogy

- Selects, uses, and determines suitability of the wide variety of available mathematics curricula and teaching materials for all students including those with special needs such as the gifted, challenged and speakers of other languages
- Uses multiple strategies, including listening to and understanding the ways students think about mathematics, to assess students' mathematical knowledge
- Demonstrates knowledge of research results in the teaching and learning of mathematics

Lesson closure

Dispositions

- Effective teaching
- Commitment to learning with understanding

Knowledge of Mathematics Pedagogy

- Uses multiple strategies, including listening to and understanding the ways students think about mathematics, to assess students' mathematical knowledge
- Uses knowledge of different types of instructional strategies in planning mathematics lessons.

Connecting the lesson to the process standards from NCTM *Principles and Standards* (2000)

Dispositions

- Attention to equity
- Use of stimulating curricula
- Effective teaching
- Commitment to learning with understanding

Knowledge of Mathematics Pedagogy

- Selects, uses, and determines suitability of the wide variety of available mathematics curricula and teaching materials for all students including those with special needs such as the gifted, challenged and speakers of other languages
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