Indiana, Pennsylvania 15705

Teacher Education

Minimal Teaching Field Outcomes and Performance Indicators for Cooperating Teachers' and Student Teachers' Reference

MATHEMATICS EDUCATION

LEARNER/CONTENT:

Outcome 1: **Demonstrates a sound knowledge of mathematical concepts, procedures, and connections.**

Performance Indicators:
-Recognizes mathematics as a network of interconnected concepts and procedures.
-Recognizes connections between mathematics and other disciplines and connections of mathematics to the real world.
-Recognizes relationships between ideas and concepts.

Outcome 2: **Demonstrates a sound understanding of mathematics as a process including problem solving, reasoning, and communication.**

Performance Indicators:
-Uses a variety of problem solving strategies such as patterns, tables, working backwards, reasoning, communication, similar problems, and guess and check.
-Draws and validates own conclusions using critical thinking and estimation.
-Communicates mathematics in written, oral, or pictorial form at different levels of formality.
-Uses mathematical reasoning to pose, explore, and validate conjectures and arguments.

COMMITMENT:

Outcome 1: **The teacher candidate creates a learning environment that fosters the development of each student's mathematical power.**

Performance Indicators:
-Respects and values students' varied ideas, ways of thinking, and mathematical dispositions.
-Displays sensitivity to, and draws on, students' diverse background experiences and dispositions.
-Develops perspectives on the contributions of women, minorities, and other cultures to mathematics.

COMMITMENT/COLLABORATION:

Outcome 1: **The teacher candidate shows potential for professional growth.**

Performance Indicators:
-Exhibits a positive attitude toward professional responsibilities.
-Reflects on learning and teaching individually and with colleagues.
-Discusses with colleagues issues in mathematics and mathematics teaching and learning.
-Collaborates with cooperating teachers, supervisors, and community members in the school setting.
-Appreciates the value of lifelong learning about the teaching profession, and is aware of professional organizations and journals as a resource for learning.

CONTENT/COMPETENCE:

Outcome 1: **Poses learning activities which are both appropriate for the student and mathematically sound.**

Performance Indicators

-Poses learning activities based on students' abilities, learning styles, interests, experiences, and which draw on their diverse backgrounds.
-Poses learning activities that allow students to discover mathematical concepts, procedures, and the interconnection between concepts and procedures.
-Poses learning activities that allow students to make connections and develop a coherent framework for mathematical ideas.
-Poses learning activities which appropriately use the power of technology to facilitate the students' mathematical discovery.

Outcome 2: **Facilitates mathematical discourse in the classroom.**

Performance Indicators:

-Poses questions and tasks that elicit, engage, and challenge each student's thinking.
-Encourages students to question the teacher and one another.
-Encourages students to make conjectures, and to explore examples and counter examples to investigate their conjectures.
-Listens carefully to students' ideas.
-Asks students to clarify and justify their ideas orally and in writing.
-Decides when to provide information, when to clarify an issue, when to model, when to lead, and when to let a student struggle with a difficulty.

Outcome 3: **Promotes students' confidence, flexibility, perseverance, and inventiveness in doing mathematics.**

Performance Indicators:

-Provides opportunities and time for all students to be active participants in doing mathematics.
-Encourages students to use mathematics to explore real world phenomena.
-Demonstrates the value of mathematics in society and other disciplines.
-Encourages student inventiveness when engaged in mathematical tasks.
-Helps students to recognize that mistakes and blockages are part of the process in learning and doing mathematics.

Outcome 4: **Exhibits a variety of assessment methods to determine students' understanding of and disposition to do mathematics.**

Performance Indicators:

-Evaluates students' journals, portfolios notebooks, essays, and oral reports.
-Evaluates students' homework, quizzes, and test papers.
-Evaluates classroom discussions using checklists.
-Evaluates group work, clinical interviews, and performance testing.
-Encourages students' self-assessment.
-Employs self-assessment when developing lesson plans, delivering lessons, and assessing students.
-Designs assessment activities that are consistent with instruction.

Outcome 5: **Demonstrates depth of knowledge about mathematics curriculum design.**

Performance

Indicators:

-Utilizes long range planning for topics in which various concepts and techniques are greatly dependent on each other.
-Plans learning experiences consistent with the structure of mathematics.
-Plans learning experiences consistent with present learning theory.
-Develops appropriate broad aims and goals, and specific objectives of instruction.
-Selects an appropriate scope of instructional goals.

Outcome 6: **Makes appropriate use of available technology.**

Performance Indicators:

-Uses technology as a tool for making mathematical explorations more efficient and accessible.
-Recognizes appropriate occasions to use as well as not use technology in solving problems.
-Is able to discern which type of technology is appropriate for different situations.
-Makes estimates and conjectures about problems before using technological tools to solve or assist with investigating them.
-Judges the reasonableness of results obtained from use of technological tools.
-Designs activities that use technology to promote discourse among students.

MATH.COM
Reviewed 03/01/04 LM