# Annual Program Report

# Master of Education Mathematics Education

# University of Alaska Southeast School of Education

# 2015-2016 Academic Year

**Program Coordinator**
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## Program Overview

### Introduction

The M. Ed. in Mathematics Education is a twelve course, 36-credit, program of study. Candidates progress through three Program Gates. These Program Gates list the Candidate Performance Assessments for the program Master of Education Mathematics Education program. Seven core courses emphasize math content and pedagogy. The other courses required for this program emphasize professionalism, leadership, technology, and research. Candidates take one additional elective course with emphasis on pedagogy. Course descriptions of the required courses follow.

### Seven required content courses

**EDMA 608 Mathematical Problem Solving: An Overview for K-8 Teachers**
Examines underlying concepts of problem solving. Identifies problem-solving strategies that can be introduced into K-8 classrooms. Instruction models appropriate teaching practices for K-8 classroom. Licensed teachers enrolled in this course will have practice developing instruction and assessment plans that are research and standards based and that support a curriculum that is organized around a problem-solving approach.

**EDMA 614 Numeration and Operations: Math Content and Pedagogy for K-8 Teachers**
Provides the content for K-8 teachers to understand numbers, the ways of representing numbers, relationships among numbers, number systems, meanings of operations and how they relate to one another. Current instructional and assessment practices in mathematics that are research and standards based and which lead to number sense, reasonable estimation strategies, and efficient computational skills for K-8 students will be emphasized.

**EDMA 654 Algebra and Functions: Content and Pedagogy for K-8 Teachers**
Content for K-8 teachers to help them understand the underlying principles and concepts of algebra and functions. Emphasis is on building algebraic thinking through an examination of patterns, relationships, and functions. Multiple representations of functions using tables, graphs and verbal rules will be developed. Current instructional and assessment practices in mathematics that are research and standards based and that lead to algebraic reasoning for K-8 students will be examined.

**EDMA 655 Geometry and Measurement: Content and Pedagogy for K-8 Teachers**
Content for K-8 teachers to help them understand and use the underlying principles of geometric and spatial sense and the levels of geometric learning. A variety of physical models, manipulatives, and software that can be used in K-8 classrooms will be examined and used. Current instructional and assessment practices in geometry that are research and standards based and that lead to visualization and spatial reasoning for K-8 students will be examined.

**EDMA 656 Data Analysis, Statistics, and Probability: Content and Pedagogy for K-8 Teachers**
Content to help K-8 teachers understand the basic concepts data analysis, statistics and probability. Descriptive and inferential statistics will be used to analyze data, and make predictions and decisions. Experimental and theoretical probability will also be examined. Current research and standards based instructional and assessment practices in the areas of collecting, displaying and analyzing data, and experimental and theoretical probability that lead to

data analysis, inferential reasoning and real world applications for K-8 students will be examined.

**EDMA 657 Concepts of Calculus and Trigonometry: Content and Pedagogy for K-8 Teachers**
Examines the underlying concepts of calculus and trigonometry. K-8 teachers will connect the underlying concepts of calculus and trigonometry to the mathematical concepts in the typical K-8 math curriculum. Current instructional and assessment practices in mathematics that are research and standards based and which promote student understanding of the basic concepts on which trigonometry and calculus are founded are emphasized.

**EDMA 658 Technology for Teaching and Learning Mathematics**
Provides teachers with the knowledge and skills to apply technology to help students understand math content. The use and selection of technology applications to help meet local, state and national standards for the teaching and learning of mathematics will be emphasized. Applications include, but are not limited to: virtual manipulatives, calculators, spreadsheets, software tutors, web applications, modeling software, and GPS. Licensed teachers will practice developing instruction and assessment to integrate technology into a problem based constructivist mathematics curriculum.

**Additional required courses**

**EDET 628 Technology in Instructional Design**
The focus of this course is to build on basic computing skills and their use within current educational practice of meaningful integration of technology into the classroom environment. Students will create a standards based instructional unit modeling appropriate uses of technology to support learning, develop a variety of techniques to use technology to assess student learning of subject matter, and research best practices related to applying appropriate technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.

**EDET 636 The Impact of Technology on Student Learning**
Techniques, tools, and strategies for predicting and assessing the effectiveness of technology tools and interventions on student learning. Access to a classroom for at least two days per week for three weeks is required in order to complete the portfolio assignment. Requires reliable Internet and ability to download software applications for evaluation.

**EDET 668 Educational Technology Leadership**
Provides a reflective overview of issues relating to school leadership policy and practice in the field of educational technology. Encompasses the wide range of responsibilities of the school technology leader as a collaborative member of a leadership team. Topics include organizational change, decision making, community partnerships, legal and ethical issues, coaching and mentoring, and teamwork. A web-based course; requires Internet and e-mail.

**EDMA 698 Masters Portfolio**
Either a research paper or project jointly approved by the student's graduate committee. The student research paper/project should coincide with the student's professional objectives. The portfolio should document the required knowledge and ability to apply the standards set by the conceptual framework of the UAS School of Education. Students creating a portfolio should request portfolio criteria from the School of Education or their graduate advisor. An oral defense of either the paper/ project or the portfolio may be required by the student's graduate committee.

## Program Student Learning Outcomes

**SOE Student Learning Goals with additional sub-goals from Math Education Program (MEP)**

SOE Goal 1: Teachers articulate, maintain, and develop a philosophy of education that they also demonstrate in practice.

SOE Goal 2: Teachers understand how human development affects learning and apply that understanding to practice.

SOE Goal 3: Teachers differentiate instruction with respect for individual and cultural characteristics.

SOE Goal 4: Teachers possess current academic content knowledge.

- MEP i. Problem Solving
- MEP ii. Reasoning and Proof
- MEP iii. Mathematical Communication
- MEP iv. Mathematical Connections
- MEP v. Mathematical Representation
- MEP vi. Number and Operations
- MEP vii. Different Perspectives on Algebra
- MEP viii. Geometries
- MEP ix. Data Analysis, Statistics, and Probability
- MEP x. Measurement
- MEP xi. Calculus
- MEP xii. Discrete Mathematic
- MEP xiii. Connections Across the Curriculum

SOE Goal 5: Teachers facilitate student learning by using assessment to guide planning, instruction, and modification of teaching practice.

- MEP i. Connections Across the Curriculum
- MEP ii. Assessment to Plan, Evaluate and Strengthen Instruction

SOE Goal 6: Teachers create and manage a stimulating, inclusive and safe learning community in which students take intellectual risks and work independently and collaboratively.

- MEP i. Critical Thinking and Problem Solving
- MEP ii. Active Engagement of Learners

SOE Goal 7: Teachers work as partners with parents, families and the community.

SOE Goal 8: Teachers develop and maintain professional, moral, and ethical attitudes, behaviors, relationships, and habits of mind.

- MEP i. Collaboration with Colleagues and Community
- MEP ii. Commitment to Professional Growth

SOE Goal 9: Teachers use technology effectively, creatively, and wisely.

## Student Learning Outcomes Assessment

The School of Education Student Learning Outcomes are assessed utilizing the following portfolio rubric. The candidate completes a professional portfolio in the capstone course, EDMA 698 Masters Portfolio.

**Mathematics Education Master of Education Degree Program**
***PROFESSIONAL PORTFOLIO RUBRIC***

| | Not Met - 1 | Met- 2 | Target - 3 |
|---|---|---|---|
| **SOE Goal #1 Philosophy** | | | |
| Statement | Reflects developing understanding of basic relationships and dependencies among curricular content and processes of elementary education, behavioral guidance and effective instruction. | Reflects understanding of basic relationships and dependencies among curricular content and processes of elementary education, behavioral guidance and effective instruction and reflects a commitment to the professional codes of ethical conduct. | Demonstrates deep understanding of basic relationships and dependencies among curricular content and processes of elementary education, behavioral guidance and effective instruction; reflects a commitment to the professional codes of ethical conduct; and includes citations of references that place it in a larger educational context. |
| Evidence | Philosophy statement demonstrates developing knowledge of strategies for reflecting on candidate's practice and influence on K-8 students' learning. | Philosophy statement demonstrates knowledge of strategies for reflecting on candidate's practice and influence on K-8 students' learning. | Philosophy statement demonstrates knowledge of strategies for reflecting on candidate's practice and influence on K-8 students' learning and provides supporting references. |
| **SOE Goal #2 Development** | | | |
| Statement | Knowledge of major concepts, principles, theories and research related to development of children and youth is general; reflected understanding is minimal. | Understanding of major concepts, principles, theories and research related to development of children and youth is demonstrated. | A clear depth of understanding of major concepts, principles, theories and research related to development of children and youth is demonstrated. |
| Evidence | Connections between concepts, principles and theories and teaching strategies/ learning approaches are vague or unidentified. | Use of development concepts, principles, theories and research to construct appropriate learning opportunities is documented and demonstrated. | Applied concepts, principles, theories and research related to development of learning opportunities reflect depth of knowledge and understanding. |
| **SOE Goal #3 Adaptation for Diverse Students** | | | |
| Statement | Shows developing knowledge of how individual experiences, disabilities, prior learning, language and culture influence learning; of strategies used to provide equitable learning and mutual respect; and of developmental differences and how to seek outside resources when | Demonstrates understanding of how learning is influenced by individual experiences, disabilities, prior learning, language and culture; strategies used to provide equitable learning and mutual respect; and developmental differences and how to seek outside | Demonstrates and documents clear understanding of how learning is influenced by individual experiences, disabilities, prior learning, language and culture; of strategies used to provide equitable learning and mutual respect; and of developmental differences and how to seek outside |

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| | necessary. | resources when necessary. | resources when necessary. |
| Evidence | Some ability to apply knowledge to provide differentiation for student needs is demonstrated. | Ability to apply knowledge to provide differentiation for student needs is documented and demonstrated. | Skilled sensitivity to apply knowledge of differentiation for student needs and create a classroom atmosphere conducive to respect and acceptance is documented and demonstrated. |

| | **Not Met - 1** | **Met- 2** | **Target - 3** |
|---|---|---|---|
| **SOE Goal #4 Math Content and Instruction – Problem Solving** | | | |
| Statement | Reflects limited knowledge of the concepts of problem solving, how to teach and assess them. | Reflects how to develop and assess student knowledge and skills in problem solving and demonstrates some ability to help students connect problem solving concepts to local community and real world. | Reflects how to develop and assess student problem solving knowledge and skills, accommodating learning styles and abilities, and helps students connect problem solving to the local community and the real world. |
| Evidence | Demonstrates developing ability to use knowledge of the concepts of problem solving to facilitate student learning in math. | Demonstrates ability to use pedagogical knowledge and assessment to facilitate students' knowledge of the concepts of problem solving effectively. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) in the teaching of problem solving and making it relevant for all students. |
| **SOE Goal #4 Math Content and Instruction - Reasoning and Proof** | | | |
| Statement | Reflects limited knowledge of the role of reasoning and proof in the teaching of mathematics. | Reflects how to develop and assess student ability to reason mathematically. Some ability to help students make and investigate mathematical conjectures. | Reflects how to develop and assess student knowledge and skills to reason mathematically. Accommodates learning styles and abilities, and helps students apply mathematical reasoning to real world situations. |
| Evidence | Demonstrates developing ability to facilitate students' mathematical reasoning. | Demonstrates ability to use pedagogical knowledge and assessment to facilitate students' mathematical reasoning. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to foster students' ability to reason mathematically and apply mathematical reasoning to real world situations. |
| **SOE Goal #4 Math Content and Instruction - Mathematical Communication** | | | |
| Statement | Reflects limited knowledge of how to foster student ability to communicate mathematically. | Reflects how to develop and assess student knowledge and skills to communicate mathematically and demonstrates some ability to help students express themselves mathematically. | Reflects how to develop and assess student knowledge and skills to communicate mathematically, accommodates learning styles and abilities to help them express themselves mathematically. |
| Evide | Demonstrates developing ability to foster students mathematical communication. | Demonstrates ability to use pedagogical knowledge and assessment to facilitate students' mathematical communication and | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to facilitate students' mathematical communication and |

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| nce | | foster their ability to express themselves mathematically. | foster their ability to express themselves mathematically. |
| **SOE Goal #4 Math Content and Instruction - Mathematical Connections** | | | |
| Statement | Reflects limited knowledge of the connections between mathematical ideas and how to apply mathematics beyond the classroom. | Reflects how to develop and assess student knowledge of the connections between mathematical ideas and ability to apply mathematics beyond the classroom. | Reflects how to develop and assess student knowledge of the connections between mathematical ideas. Incorporates learning styles and abilities while fostering the application of mathematics beyond the classroom. |
| Evidence | Demonstrates developing ability to use knowledge of the connections between mathematical ideas and how to facilitate student application of mathematics beyond the classroom. | Demonstrates ability to use pedagogical knowledge and assessment to facilitate students' knowledge of the connections between mathematical ideas and ability to apply mathematics beyond the classroom effectively. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to build student knowledge of the connections between mathematical ideas, accommodating learning styles and abilities while fostering the application of mathematics beyond the classroom. |

| | **Not Met - 1** | **Met- 2** | **Target - 3** |
|---|---|---|---|
| **SOE Goal #4 Math Content and Instruction – Mathematical Representation** | | | |
| Statement | Reflects limited knowledge of how to use mathematical representation to support and deepen students' mathematical understanding. | Reflects how to develop and assess students' mathematical knowledge and skills through the use of mathematical representation. | Reflects how to develop and assess students' mathematical knowledge and skills through the use of mathematical representation. Incorporates students' learning styles while fostering their ability to reason mathematically. |
| Evidence | Demonstrates developing ability of how to use mathematical representation to facilitate student learning in mathematics. | Demonstrates ability to effectively use mathematical representation to facilitate student learning in mathematics. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to effectively use mathematical representation to facilitate student math learning. |
| **SOE Goal #4 Math Content and Instruction – Number and Operations** | | | |
| Statement | Reflects limited knowledge of number and operations. | Reflects how to develop and assess student knowledge and skills of number and operations. Demonstrates some ability to foster student understanding of number and operations. | Reflects how to develop and assess student knowledge and skills of number and operations. Incorporates learning styles and abilities while fostering students' understanding of number and operations. |
| Evidence | Demonstrates developing ability to facilitate student understanding of number and operations. | Demonstrates ability to use pedagogical knowledge and assessment to facilitate students' knowledge of number and operations effectively. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to facilitate students' knowledge of number and operations effectively. |
| **SOE Goal #4 Math Content and Instruction – Different Perspectives on Algebra** | | | |
| S | Reflects limited knowledge of the | Reflects how to develop and assess | Reflects how to develop and assess |

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| tatement | mathematical concepts underlying algebra. | student knowledge and skills of the mathematical concepts underlying algebra and demonstrates some ability to represent mathematical relationships. | student knowledge and skills of the mathematical concepts underlying algebra and how to represent mathematical relationships. Incorporates learning styles and abilities to foster perspectives on algebra. |
| Evidence | Demonstrates developing ability to facilitate student understanding of patterns and relationships. | Demonstrates ability to use pedagogical knowledge and assessment to effectively facilitate students' exploration and analysis of patterns and relationships in a variety of contexts. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to facilitate students' exploration and analysis of patterns and relationships in a variety of contexts. |
| **SOE Goal #4 Math Content and Instruction – Geometries** | | | |
| Statement | Reflects limited knowledge of geometric modeling, structures and shapes. | Reflects how to develop and assess student knowledge and skills of geometric modeling, structures and shapes and demonstrates some ability to foster exploration and analysis of geometry. | Reflects how to develop and assess student knowledge and skills of geometric modeling, structures and shapes and demonstrates some ability to foster exploration and analysis of geometry. Incorporates learning styles and abilities to foster spatial visualization and geometric relationships. |
| Evidence | Demonstrates developing ability to facilitate student understanding of geometry and geometric relationships. | Demonstrates ability to use pedagogical knowledge and assessment to effectively facilitate students' knowledge of geometry and geometric relationships. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to effectively facilitate students' knowledge of geometry and geometric relationships. |

| | **Not Met - 1** | **Met- 2** | **Target - 3** |
|---|---|---|---|
| **SOE Goal #4 Math Content and Instruction - Data Analysis, Statistics, and Probability** | | | |
| Statement | Reflects limited knowledge of the concepts and practices related to data analysis, probability and statistics. | Reflects how to develop and assess student knowledge of the concepts and practices related to data analysis, probability and statistics, and ability to apply them. | Reflects how to develop and assess student knowledge and skills of the concepts and practices related to data analysis, probability and statistics. Incorporates learning styles and abilities to help students investigate and apply statistical methods. |
| Evidence | Demonstrates developing ability to facilitate student knowledge of the concepts and practices related to data analysis, probability and statistics. | Demonstrates ability to use pedagogical knowledge and assessment to effectively facilitate students' knowledge of the concepts and practices related to data analysis, probability and statistics. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to effectively facilitate students' knowledge of the concepts and practices related to data analysis, probability and statistics. |
| **SOE Goal #4 Math Content and Instruction - Measurement** | | | |
| Statem | Reflects limited knowledge of measurement concepts and tools and how to foster student understanding and application of them. | Reflects how to develop and assess student knowledge and skills in the understanding and application of measurement concepts and tools. | Reflects how to develop and assess student knowledge and skills in the understanding of measurement concepts and tools. Incorporates learning styles and abilities, and helps |

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| ent | | | students apply measurement concepts and tools to the local community and the real world. |
| Evidence | Demonstrates developing ability to facilitate student learning of measurement concepts and tools. | Demonstrates ability to use pedagogical knowledge and assessment to effectively facilitate students' understanding and application of measurement concepts and tools. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to effectively facilitate students' understanding and application of measurement concepts and tools. |
| **SOE Goal #4 Math Content and Instruction - Calculus** | | | |
| Statement | Reflects limited understanding of the basic calculus concepts and their applications. | Reflects how to develop and assess student knowledge of the basic calculus concepts and their applications and demonstrates some ability to foster student understanding of those concepts. | Reflects how to develop and assess student knowledge and skills of the basic calculus concepts and their applications and incorporates learning styles and abilities to foster understanding. |
| Evidence | Demonstrates developing ability to use knowledge of the basic calculus concepts and their applications to foster student mathematical understanding. | Demonstrates ability to use pedagogical knowledge and assessment to effectively facilitate students' understanding and application of the basic calculus concepts. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to effectively facilitate students' understanding of basic calculus concepts and applications, and make those concepts relevant. |
| **SOE Goal #4 Math Content and Instruction - Discrete Mathematic** | | | |
| Statement | Reflects limited knowledge of the fundamental ideas of discrete mathematics. | Reflects how to develop and assess student knowledge and skills of the fundamental ideas of discrete mathematics and demonstrates some ability to foster student application of those concepts. | Reflects how to develop and assess student knowledge and skills of the fundamental ideas of discrete mathematics and incorporates learning styles and ability to foster applications of those ideas to solve problems. |
| Evidence | Demonstrates developing ability to use knowledge of the fundamental ideas of discrete mathematics to foster student mathematical understanding. | Demonstrates ability to use pedagogical knowledge and assessment to effectively facilitate students' understanding and application of the fundamental ideas of discrete mathematics. | Demonstrates clearly candidate's pedagogical competence (instruction and assessment) to effectively facilitate students' understanding and application of the fundamental ideas of discrete mathematics and to make those ideas relevant. |

| | **Not Met - 1** | **Met- 2** | **Target - 3** |
|---|---|---|---|
| **SOE Goals #4 and #5 Connections Across the Curriculum** | | | |
| Statement | Plans and reflections reflect developing understanding of the use of connections from content areas to build student learning. | Plans and reflections demonstrate understanding of the use of connections from content areas to build student learning. | Plans and reflections demonstrate command of the use of connections from content areas to build student learning effectively. |
| Evi | Lesson plans and reflections show a developing understanding of | Lesson plans and reflections show an understanding of how content | Lesson plans and reflections consistently show ability to connect |

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| dence | connecting content across the curriculum. | connects to other subjects. | content all areas of the curriculum. |
| **SOE Goal #5 Assessment to Plan, Evaluate and Strengthen Instruction** | | | |
| Statement | Plans and reflections reflect developing understanding of how to use assessment to plan, evaluate and strengthen instruction. | Plans and reflections demonstrate understanding of how to use assessment to plan, evaluate and strengthen instruction. | Plans and reflections demonstrate command of the use of assessment to plan, evaluate and strengthen instruction. |
| Evidence | Lesson plans and reflections show a how assessment is used to plan, evaluate and strengthen instruction. | Lesson plans and reflections show assessment is used to plan, evaluate and strengthen instruction. | Lesson plans and reflections show assessment is regularly used to plan, evaluate and strengthen instruction. |
| **SOE Goal #6 Classroom Management: Critical Thinking and Problem Solving** | | | |
| Statement | Demonstrates developing knowledge of strategies and choices of resources to develop cognitive processes of critical thinking, problem solving and performance skills. | Demonstrates knowledge of strategies and choices of resources to develop cognitive processes of critical thinking, problem solving and performance skills. | Demonstrates knowledge of advantages and limitations of strategies and choices of resources to develop cognitive processes of critical thinking, problem solving and performance skills. |
| Evidence | Demonstrates some attempt to use strategies and good choices of resources to develop cognitive processes of critical thinking, problem solving and performance skills. | Demonstrates use of strategies and wise choices of resources to develop cognitive processes of critical thinking, problem solving and performance skills. | Demonstrates skillful use of strategies and wise choices of resources to develop cognitive processes of critical thinking, problem solving and performance skills. Provides a plausible rationale for choice of strategies and instructional materials. |
| **SOE Goal #6 Classroom Management: Active Engagement of Learners** | | | |
| Statement | Demonstrates developing knowledge of effective classroom management, human motivation and behavior. Demonstrates knowledge of some strategies to foster active engagement, self-motivation and positive social interaction. | Demonstrates knowledge of effective classroom management, human motivation and behavior. Demonstrates knowledge of strategies to foster active engagement, self-motivation and positive social interaction. Strategies to promote positive relationships, cooperation and purposeful learning are also reflected. | Demonstrates clear knowledge of effective classroom management, human motivation and behavior. Demonstrates knowledge of a variety of strategies to foster active engagement, self-motivation and positive social interaction. Strategies to promote positive relationships, cooperation and purposeful learning are also well represented. |
| Evidence | Lessons reflect some consideration of classroom management, human motivation and behavioral guidance. Evidence of attempts to foster active engagement, self-motivation and positive interaction are present. | Lessons reflect effective use of strategies to foster active engagement, self-motivation and positive social interaction. | Lessons reflect effective use of strategies to successfully foster active engagement, self-motivation and positive social interaction. A variety of strategies are demonstrated. |

| | Not Met - 1 | Met- 2 | Target - 3 |
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| **SOE Goal #7 Collaboration with Parents and Families** | | | |
| Statement | Reflects a developing knowledge of the importance of establishing and maintaining a positive collaborative relationship with families to promote learning. Statement demonstrates a developing knowledge of strategies to promote family involvement. | Demonstrates knowledge of the importance of establishing and maintaining a positive collaborative relationship with families to promote learning. Statement demonstrates knowledge of multiple strategies to promote family involvement. | Demonstrates knowledge of the importance of establishing and maintaining a positive collaborative relationship with families to promote learning. Statement demonstrates extensive knowledge of multiple strategies to promote family involvement. |
| Evidence | Demonstrates candidate awareness of the need for positive collaboration with families. Evidence reflects something that promotes family involvement. | Demonstrates candidate values positive collaboration with families. Evidence reflects some variety in strategies to promote family involvement. | Demonstrates candidate values positive collaboration with families. Evidence reflects a wide variety of strategies to promote family involvement. |
| **SOE Goal #8 Professionalism: Collaboration with Colleagues and Community** | | | |
| Statement | Demonstrates developing awareness that collegial activities contribute to productive learning environment. Awareness of importance of using larger community to enhance student learning. | Demonstrates some use of collegial activities to contribute to productive learning environment. Some use of larger community to enhance student learning and wellbeing. | Demonstrates use of collegial activities to contribute to productive learning environment. Use of larger community to enhance student learning and wellbeing is also demonstrated. |
| Evidence | Demonstrates awareness that collegial activities contribute to productive learning environment and the importance of using larger community to enhance student learning. | Demonstrates some use of collegial activities to contribute to productive learning environment and of larger community to enhance student learning and wellbeing. | Demonstrates use of collegial activities to contribute to productive learning environment and of larger community to enhance student learning and wellbeing. |
| **SOE Goal #8 Professionalism: Commitment to Professional Growth** | | | |
| Statement | Demonstrates nominal commitment to activities that support professional growth. | Demonstrates an understanding and commitment to the process of professional growth activities. | Demonstrates an understanding and commitment to professional growth and relates the process to improvement of teaching and learning. |
| Evidence | Suggests nominal commitment to activities that support professional growth. | Documents professional growth activities outside of program requirements. | Documents professional growth activities outside of program requirements and sharing of professional knowledge with colleagues |
| **SOE Goal #9 Technology** | | | |
| State | Knowledge of technology is evident and applied somewhere in teaching. | Knowledge and skill in using technology to make learning more effective and efficient is evident. | Demonstrates knowledge and skillful use of technology to facilitate learning. Technology is used effectively as a tool to support content learning. |

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| ment | | | |
| Evidence | Demonstrates developing ability to use technology as a tool in learning. | Demonstrates ability to use technology as a tool in learning. | Demonstrates skillful ability to use technology as a tool to improve learning. |

## Student Learning Outcomes Assessment Data --- AY 2015 – 2016

The following table lists the rubric scores of the candidates' professional portfolio in the capstone course, EDMA 698 Masters Portfolio. These candidates all graduated in the Academic Year 2015-2016.

### Portfolio Rubric Scores for Math Education M.Ed. Candidates by SOE Student Learning Goal

| SOE Goal | Not Met *(1 pts)* | Met *(2 pts)* | Target *(3 pts)* | *Mean* | *Mode* | *Stdev* |
|---|---|---|---|---|---|---|
| 1: Teachers articulate, maintain, and develop a philosophy of education that they also demonstrate in practice. | 0 | 2 | 4 | 2.667 | 3.000 | 0.471 |
| 2: Teachers understand how human development affects learning and apply that understanding to practice. | 1 | 4 | 1 | 2.000 | 2.000 | 0.577 |
| 3: Teachers differentiate instruction with respect for individual and cultural characteristics. | 0 | 3 | 3 | 2.500 | 2.000 | 0.500 |
| 4: Teachers possess current academic content knowledge. | 0 | 4 | 2 | 2.333 | 2.000 | 0.471 |
| 5: Teachers facilitate student learning by using assessment to guide planning, instruction, and modification of teaching practice. | 1 | 4 | 1 | 2.000 | 2.000 | 0.577 |
| 6: Teachers create and manage a stimulating, inclusive and safe learning community in which students take intellectual risks and work independently and collaboratively. | 1 | 4 | 1 | 2.000 | 2.000 | 0.577 |
| 7: Teachers work as partners with parents, families and the community. | 0 | 3 | 3 | 2.500 | 3.000 | 0.500 |
| 8: Teachers develop and maintain professional, moral, and ethical attitudes, behaviors, relationships, and habits of mind. | 0 | 5 | 1 | 2.167 | 2.000 | 0.373 |
| 9: Teachers use technology effectively, creatively, and wisely. | 0 | 4 | 2 | 2.333 | 2.000 | 0.471 |

## Evaluation of Student Learning Outcomes

Six candidates graduated in the Academic Year 2015-2016 having met the program requirements and completing the professional portfolio in the capstone course, EDMA 698 Masters Portfolio. The previous table shows the attainment of the SOE Student Learning Goals based on assessment of their professional portfolios. The table does not indicate which students received which scores on the rubric.

If a candidate received a score of "Not Met", indicating they did not demonstrate a satisfactory level of attainment on a goal, they were required to work with in instructor or their advisor to demonstrate they overcame that deficiency prior to graduation. If a candidate were to receive more than one "Not Met" score on their portfolio, they would not receive a "passing" score on their portfolio and would not graduate during the semester they took their last course in the program. None of the candidates received more than one such score, so all graduated on time.

The majority of scores indicate that the candidates in the Mathematics Education M.Ed. program attained an acceptable level of mastery on nearly all of the SOE Student Learning Outcomes as evidenced by their scores on the portfolio rubric.

## Plans to Improve Student Learning

While all of the candidates in the Master of Education Mathematics Education program successfully completed all program requirements and demonstrated an acceptable level of overall mastery of the SOE Student Learning Goals, the three scores of "Not Met" that three different students received indicate that those three goals should be more strongly stressed in the coursework candidates must complete. These goals: SOE Goal 2, SOE Goal 5, and SOE Goal 6, will be better discussed in the appropriate courses and during the discussion conducted for the portfolio course.

SOE Goal 2 concerns how a strong understanding of human development is very important in the design of lessons for the presentation of mathematical concepts to ensure student understanding. In order to improve candidate understanding, this goal must be addressed in all the discussions dealing with pedagogy in the program courses.

SOE Goal 5 concerns assessment and it use for guiding the planning, instruction, and modification of teaching practice. These uses for assessment should be a regular part of any teacher's methodology. To improve candidate understanding, this goal must also be addressed in all discussions on assessment in the program courses.

SOE Goal 6 concerns how to manage a classroom to allow students to best understand mathematics. It is critical students feel safe and that the classroom becomes a learning community. This type of classroom encourages students to take risks and explore during the learning of mathematics. To improve candidate understanding of this goal, it must be addressed in the appropriate pedagogical discussions in the program courses.

The program coordinator will contact all instructors of the program courses with pedagogical contents so that they can include more discussion and instruction on these goals.