

# Elementary Mathematics Specialist Endorsement Specs - Competencies & Requirements

## Purpose

The Elementary Mathematics Specialist Endorsement may be added to a Utah Educator License with an Elementary, Early Childhood, or Special Education area of concentration. The purpose of the Elementary Mathematics Specialist Endorsement is to prepare elementary teachers to focus on mathematics teaching as a special area of interest and for leadership or coaching responsibilities in schools and districts. Elementary Mathematics Specialists are teachers, teacher leaders, coaches, or supervisors who are responsible for supporting effective mathematics instruction and student learning at the classroom, school, district, or state levels.

## Prerequisites

To be eligible for this endorsement, candidates must meet the following prerequisites:

- Have a Utah Educator License that contains an Elementary, Early Childhood, or Special Education area of concentration.
- Completed the Elementary Mathematics Endorsement

## ENDORSEMENT REQUIREMENTS:

The Elementary Mathematics Specialist Endorsement has the following 2 requirement areas:

- a) Curriculum, Instruction, and Assessment for Elementary Mathematics Leaders
- b) Elementary Mathematics Education Leadership for School Change

Each requirement may be earned by taking university courses, USBE courses, or other experiences that demonstrate knowledge, skills, and dispositions as approved by the USBE ELEMENTARY MATHEMATICS SPECIALIST.

Examples of other experiences must be approved by attaching the Evidence of Competencies for the Elementary Mathematics Specialist Endorsement Form.

If taking Utah-Based University or USBE Courses Approved by USBE:

1. Courses are to be at least 3 credits.
2. Courses are to be taken within eight (8) years of the date of this application.
3. University/USBE courses must follow the USBE course frameworks.
4. Applicants must earn a C or higher in the course(s) taken.

## Overview of Requirement Areas and Approved Competency Paths to the Elementary Mathematics Specialist Endorsement

### Requirement Area #1

Curriculum, Instruction, and Assessment for Elementary Mathematics Leaders

- 3 credit college/university course for Curriculum, Instruction, and Assessment for Elementary Mathematics Leaders.

or

- Competencies for Curriculum, Instruction, and Assessment for Elementary Mathematics Leaders including (1-5):

#### 1. Learners and Learning

Understand and utilize current research and resources related to curriculum, instruction, and assessment leadership specific to learners and learning, by knowing where to find and how to use research and resources available to teachers and leaders at local, state, and national levels.

- Extend and deepen understanding of learning trajectories with an emphasis on connections within and across strands of mathematics in grades K-6
  - e.g., area models for whole numbers connect to area models in measurement and geometry and area models in algebra.
- Understand differences in learning needs between children and adults.
  - Note: The Elementary Mathematics Education Leadership for School Change course will address the needs of adult learners.

- The emphasis here should be on collaborating with adults in curriculum, instruction, and assessment.
  - Facilitate a heightened and shared understanding of mathematical content and instructional practices through collaboration with colleagues.
    - i.e., mathematics for teaching
  - Analyze vertical alignment of standards, models, and strategies used in learning and instruction across grade levels.
  - Understand the need to establish shared responsibility for student success using MTSS Critical Component: Team-based Problem Solving.
  - Establish high expectations to ensure every teacher and student has the opportunity to meet mathematical goals.

## 2. Standards

Understand and utilize current research and resources related to curriculum, instruction, and assessment leadership specific to standards, by knowing where to find and how to use research and resources available to teachers and leaders at local, state, and national levels.

- Understand coherence by extending and deepening knowledge of mathematics progressions with an emphasis on the connectedness within and across strands of mathematics throughout grades K-8.
- Understand focus by articulating major work in grade bands, essential understandings for concepts, and critical areas within grade levels.
- Understand rigor as a balance of conceptual understanding, procedural skill and fluency, and application with equal intensity.

## 3. Curriculum

Understand and utilize current research and resources related to curriculum, instruction, and assessment leadership specific to curriculum, by knowing where to find and how to use research and resources available to teachers and leaders at local, state, and national levels.

- Understand the importance of careful sequencing and development of mathematical ideas, concepts, and skills within and across grade levels.
  - i.e., scope and sequence

- Evaluate, select, use, adapt, and determine the suitability of mathematics curricula and teaching materials.
  - e.g., textbooks, technology, manipulatives for learning goals and equitable practices pertaining to classrooms, grade levels, schools, and districts.
- Ensure that the process of selecting textbooks and other instructional materials is a collaborative process that includes careful examination of the degree to which:
  - The textbooks not only align with the standards but also coherently develop topics within and across grades.
  - Promote the mathematical practices.
  - Support effective instruction as characterized by the Mathematics Teaching Practices.
- Engage in collaborative processes to ensure that the development of curriculum maps and pacing guides are flexible and serve as resources for teachers of mathematics.
- Engage in and facilitate vertical planning and vertical articulation by working with standards and curriculum across grade levels.
- Resources: [Curricular and Instructional Resources for Mathematics](#)

#### 4. Instruction

Understand and utilize current research and resources related to curriculum, instruction, and assessment leadership specific to instruction, by knowing where to find and how to use research and resources available to teachers and leaders at local, state, and national levels.

- Gain a comprehensive knowledge of professional teaching standards and frameworks related to mathematics instruction and support the daily implementation of these standards.
  - e.g., National Council of Teachers of Mathematics (NCTM) Principles to Actions: Effective Mathematics Teaching Practices, Five Practices for Orchestrating Productive Mathematics Discussions, and/or Utah Effective Teaching Standards.
- Develop awareness of and evaluate equitable structures in mathematics instruction.
  - e.g., how to provide all students with opportunities to access learning and the negative impacts of ability grouping.
- Understand and advocate for the importance of high-quality, differentiated Tier-I instruction for all students.

- Support systemic structures within grade levels and schools to provide targeted intervention and enrichment opportunities for students in need of additional support.
- Understand the need to establish shared responsibility for students' success using MTSS Critical Component: High-quality instruction.

## 5. Assessment

Understand and utilize current research and resources related to curriculum, instruction, and assessment leadership specific to assessment, by knowing where to find and how to use research and resources available to teachers and leaders at local, state, and national levels.

- Understand the need to support and advocate for collaborative effective and purposeful use of common assessment and data analysis practices specific to mathematics.
- Evaluate, select, use, adapt, and determine the suitability of mathematics assessments for learning goals pertaining to classrooms, grade levels, schools, and districts.
- Evaluate the alignment of assessments with local, state, and national standards and progressions and recommend appropriate adjustments to address goals and to ensure connections within and across grade levels.
- Understand the need to establish shared responsibility for students' success using MTSS Critical Component: Data-based Decision Making
- Create and support structures to ensure assessments are used to strengthen teaching, inform practice, and support the learning of mathematics for all student populations.
  - e.g., offer equitable forms of assessments, support teachers in using assessment results to identify student needs, and respond to them appropriately.
- Gain sensitivity to biases which may be evidenced by context and language of assessments.
- Collaborate with school-based professionals to develop evidence-based interventions and extensions for students performing at all achievement levels.

Evidence of Competencies:

- The following form must be completed by an elementary mathematics representative: [Elementary Mathematics Specialist Competency Form](#)

## Requirement Area #2

### Elementary Mathematics Education Leadership for School Change

- 3 credit college/university course (Elementary Mathematics Education Leadership for School Change)

Or

- Competencies for Elementary Mathematics Education Leadership for School Change including (1-7):

#### 1. Leadership

- Clearly define and emulate the role of a mathematics specialist while working with various stakeholders.
  - e.g., teachers, teams, administrators, communities
- Understand when mathematics specialists are to be evaluative or non-evaluative and how to serve in collegial, non-evaluative leadership roles within schools and districts.
- Advocate for the importance of mathematics, including quality daily mathematics instruction, evidence-based resources, policy development, etc.
- Develop and maintain relationships with stakeholders by building trust, setting realistic expectations, facilitating difficult conversations, answering challenging questions, and organizing meaningful meetings.
- Learn about the use and importance of documenting professional communications, including managing and logging of professional time.
- Create and design documents specific to mathematics and use written communication skills to disseminate mathematics information.
- Communicate how effective practices for mathematics instruction align within broader contexts of school and district initiatives.
  - e.g., NCTM Effective Teaching Practices relating to Utah Effective Teaching Standards.
- Select from a repertoire of effective communication methods to professionally disseminate information about student learning, curriculum, instruction, and assessment to educational constituents—parents and other caregivers, school administrators, university departments, and school boards.
- Learn to provide feedback and respond constructively in an appropriate time frame.

## 2. Leadership and Teachers

- Implement effective strategies and approaches supporting teachers' work enabling all students to reach their full potential (EMS Handbook, p. 189).
- Understand the flexible nature of different aspects and responsibilities of a mathematics specialist's role including consulting, coaching, mentoring, etc. and know when to serve in those aspects with all teachers at varying levels of expertise.
- Learn and enact the coaching cycle including pre-conference, modeling/co-teaching/observation, and post-conference promoting reflective practices.
- Provide non-evaluative feedback to colleagues strengthening and supporting instructional practices.
- Enhance and elevate mathematics instructional practices while actively promoting and engaging in Professional Learning Communities (PLCs).
- Build leadership capacity in teachers.

## 3. Leadership and the School/District

- Use a systemic and programmatic lens to impact change.
- Collaborate to create a shared vision and develop an action plan for school and district improvement.
- Navigate and influence school and district structures and decisions at multiple levels.
- Use and understand the purpose of various types of data informing school and district mathematics initiatives.
  - e.g., needs assessment, demographic data, financial data, pathways for students.

## 4. Policies and Procedures

- Identify policies and procedures that inform the teaching and learning of mathematics and the development of mathematics leadership models.
  - Use research-based resources to inform school and district initiatives.
- Understand nuances differing between laws, policies, procedures, protocols, and practices at the state, district, and school levels that impact mathematics teaching and learning.
- Understand the differing roles of the state and district school boards and the policies that affect mathematics teaching and learning.
- Be aware of procedures for obtaining resources for school and district mathematics initiatives.
  - e.g., developing a budget, writing grants, scheduling.
- Be aware of procedures related to mathematics programs.

- e.g., assigning credit for professional learning, testing administration

## 5. Professionalism

- Articulate and exemplify skills expected of a professional.
- Take an active role as a reflective practitioner in one's own professional growth by participating in professional learning experiences that directly relate to (1) mathematics content, standards, and practices; (2) learning and teaching mathematics; and (3) leadership skills required of a mathematics specialist.
- Be engaged as a mathematics education professional by using professional organization networks, journals, research, and discussion groups to stay informed about critical issues, policy initiatives, and curriculum trends.
- Engage with colleagues, other school professionals, families, and various stakeholders to make decisions, manage conflict, promote meaningful change, and solve mathematics education issues.

## 6. Professional Learning

- Develop and enhance existing professional learning models that directly relate to learning and teaching mathematics.
- Evolve as a mathematics instructional leader by planning, developing, and evaluating professional learning models.
- Identify resources from professional mathematics education organizations such as teacher/leader discussion groups, teacher networks, and print, digital, and virtual resources/collections.
- Plan and Develop Professional Learning
  - Draw upon professional mathematics education research, effective practices and data/needs assessments to create/design professional development opportunities.
  - Recognize and use methods for assisting adult learners.
  - Plan for collaborative and continuous professional learning and work attending to scope and sequence for adult learning.
  - Design opportunities for teachers to develop and enhance their mathematical content knowledge.
- Identify Resources for Professional Learning
  - Use informational resources from professional mathematics education organizations.
    - e.g., print, digital, and virtual resources/collections
  - Consider logistical requirements while planning and delivering Professional Development.
    - e.g., funding, grants, scheduling, credit, permissions, advertisements



- Implement, Deliver, and Conduct Professional Learning
  - Facilitate, model, and promote continuous and collaborative learning opportunities for teachers.
  - Conduct high quality professional development that engages teachers in mathematics problem-solving, discourse, tasks, etc.
  - Train and prepare teachers for the implementation of new mathematics curricula and assessments.
- Evaluate Professional Learning
  - Gather post-professional development data to assess the success of the professional development.
    - e.g., surveys, observations, focus groups, interviews.

## 7. Examine Equitable Structures in the Learning of Mathematics

- Evaluate educational structures and practices that affect students' equitable access to high quality mathematics instruction, and act professionally to assure that all students have appropriate opportunities to learn important mathematics.
- Describe resources to advocate for the rights and/or needs of all students including different populations.
  - e.g., culture, socio-economical, special education, gifted and talented, English Language Learner (ELL).
- Understand how to actively engage in state, district, and school review of policies to ensure that systemic practices are not disadvantaging groups of students.
- Examine closely the impact of tracking on all student populations.
- Carefully study protocols for student placement in mathematics, availability of opportunities for “remediation and enrichment, and student outcomes, including persistence within the pre-K–12 mathematics pipeline over time” (NCTM Access and Equity in Mathematics Education, 2014).

### Evidence of Competencies:

- The following form must be completed by an Elementary Mathematics Representative: [Elementary Mathematics Specialist Competency Form](#)