

Michigan Standards for the Preparation of Teachers of Lower Elementary (PK-3) and Upper Elementary (3-6) Education: Mathematics

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Purpose

The purpose of this presentation is to ensure Education Preparation Providers have access to critical information regarding PK-3 and 3-6 grade band standards and the implications for programs.

Goal 3

Develop, support, and sustain a high-quality, prepared, and collaborative education workforce.



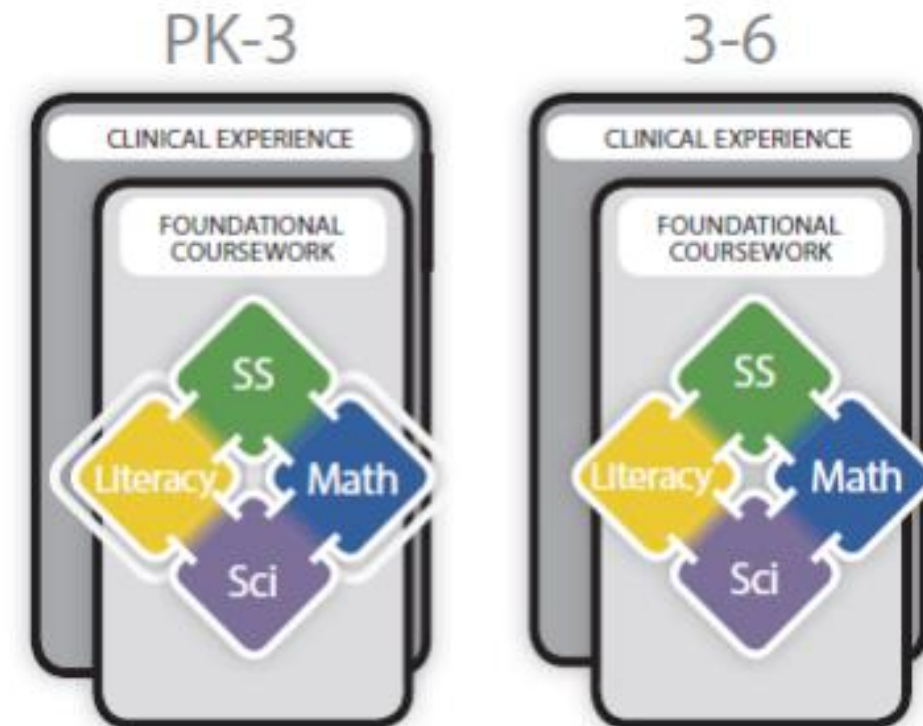
Project Goals



Michigan stakeholders have developed a **students-first** certification **system** that prepares effective educators to use **differentiated supports** and meet the needs of the **whole child**.

Three Dimensions of Teacher Preparation

1. Knowledge
 - a) Content
 - b) Content Knowledge for Teaching
 - c) Pedagogical
2. Foundational/ Professional coursework
3. Clinical experiences



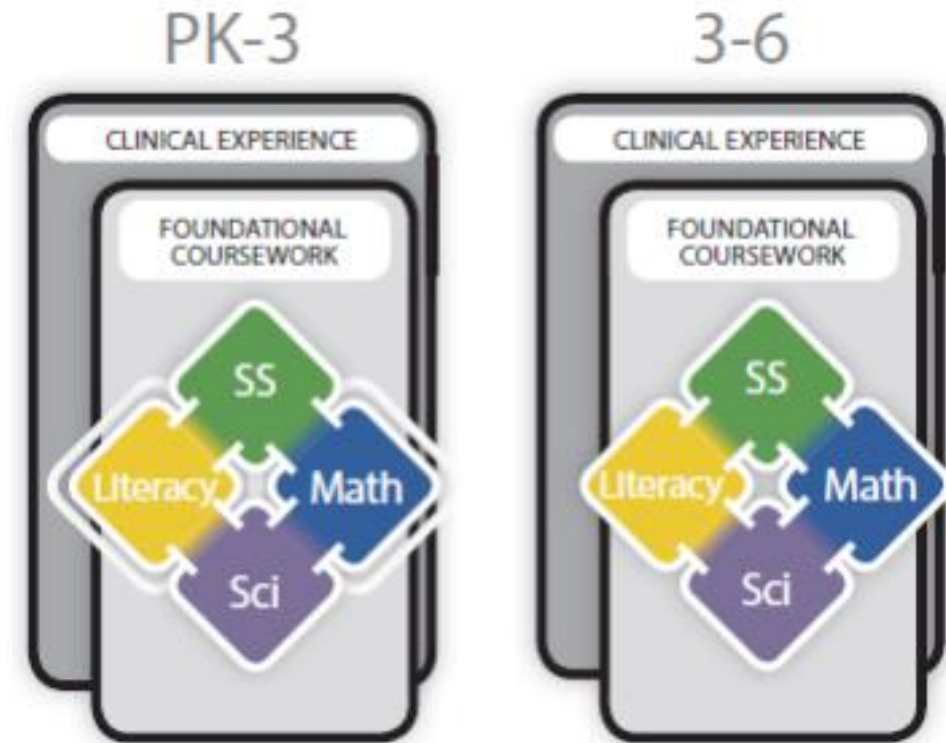


MDE's Vision: Cohesive, Connected Preparation

Overview of Standards

5 Sections

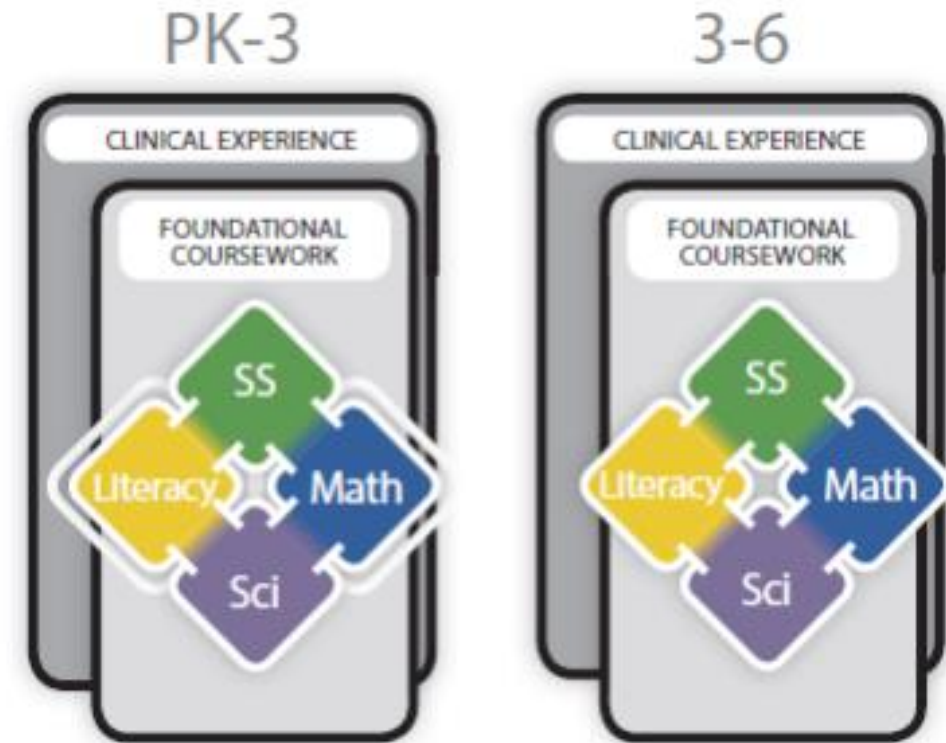
1. Professional
2. Literacy
3. Mathematics
4. Science
5. Social Studies



Overview of Standards

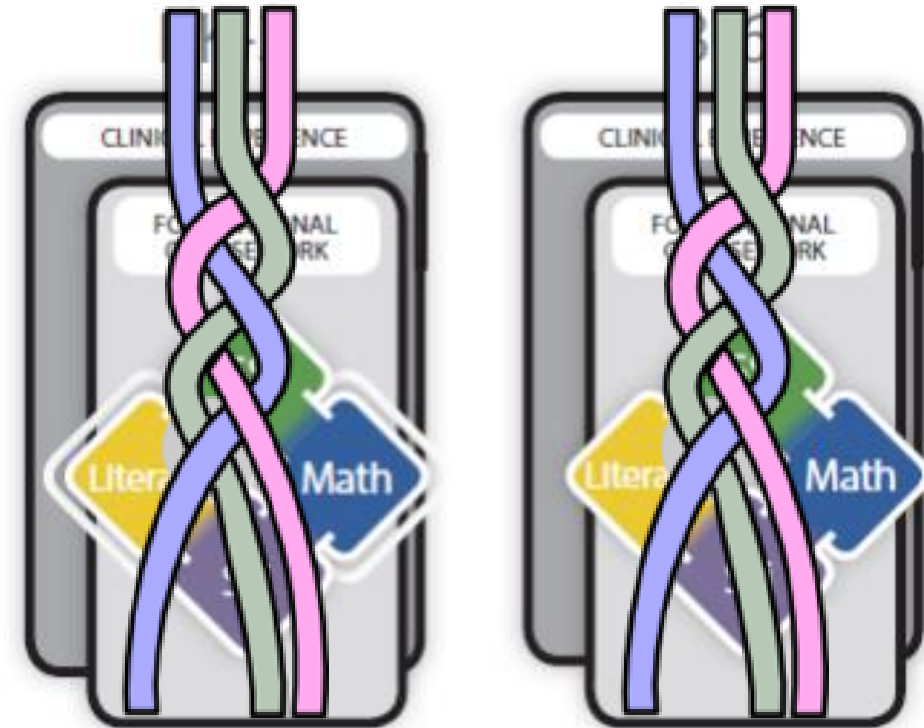
5 Sections

1. Professional
2. Literacy
3. Mathematics
4. Science
5. Social Studies



Program Design

1. Credit *Recommendations*
 - a) PK-3: 12 x 2, 6 x 2
 - b) 3-6: 9 x 4
2. Administrative Rule Minimums
 - a) 20 SH “theoretical & practical knowledge”
 - b) 6 SH literacy
 - c) 6 SH student teaching



Program Application Table

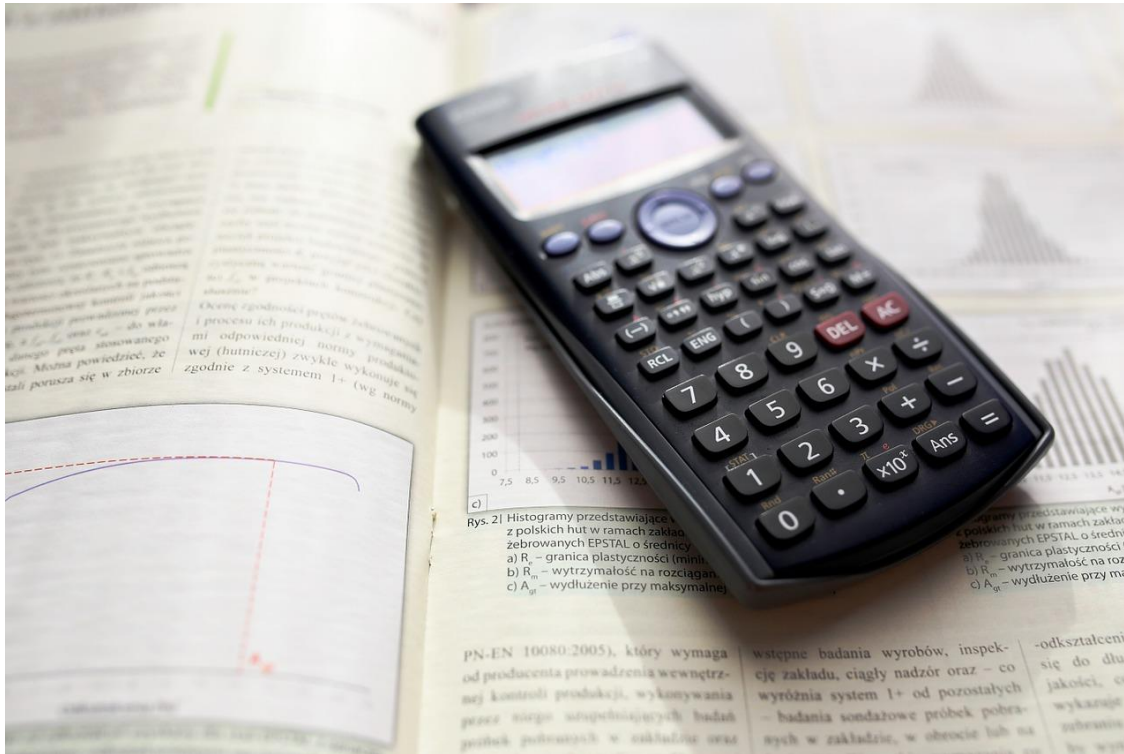
Table 2: Coursework, Standards, and Core Practices (add a new row for each course and provide total semester hours for each program option in the bottom row)

Course Title and Number	Standards & Core Practices	Credits: Initial	Credits: Additional
ex. EDUC 300: Foundations of Literacy	L1.a, L3.a-g, L.7(all), L.8(all) Core Practices: 1, 7, 12, 15	3	3

Program Application Narrative

Describe the sequence of courses and learning experiences in this program that support candidate mastery of the Mathematics Standards (M). Describe how the program will prepare candidates to teach all of the content included in the Early Childhood Standards of Quality PK and K-6 Michigan Academic Standards: Mathematics, for this grade band. Describe the sequence of clinical experiences in this discipline that allow candidates to demonstrate appropriate mastery of these standards and core teaching practices:

Highlights of Revised Teacher Preparation Standards



Math

- Mathematics-specific teaching practices
- Mathematical knowledge for teaching

Concerns about previous mathematics standards

- Topical descriptions lead to treatments of content disconnected from the work teachers do
- Content traditionally at the “older” end of the grade band
- Impossible to cover all required mathematics in allotted time, regardless the number of courses (mile-wide-inch-deep problem)
- Need to strategically prepare entry-level teachers

Our approach

1) Identify **high-leverage mathematics topics** for elementary teaching.

2) Identify **strategic tasks of teaching**

- Frequent
- Matter for learning
- Mathematically demanding to do.

Identify mathematical standards that teachers need for 2) when teaching 1).

Criteria for high-leverage topics

1. Foundational to school mathematics.
2. Occupies significant space in the school curriculum and is taught in some form across several grade levels.
3. Fundamental for student learning and often leads to persistent student difficulty.
4. Often known only superficially by beginning teachers or requires significant unpacking of beginning teachers' established mathematical knowledge.

High-leverage topics

GRADES PK-3

1. Attribution
2. Counting and whole number representation
3. Early fraction representation
4. Whole number operations

GRADES 3-6

1. Whole numbers and operations
2. Fractions, decimals, and operations

Strategic tasks of mathematics teaching

1. Unpack mathematical content and identify mathematical competence.
2. Talk (perform) mathematical explanations and support students' mathematical explanations.
3. Choose, interpret, and talk (perform) with representations.
4. Elicit, interpret, support, and extend students' mathematical thinking

Finding the Standards

<http://tinyurl.com/EPIStandards>



State Board of Education & Superintendent

Top 10 in 10

Academic Standards

Career and Technical Education

Early Learners and Care

Educator Services

Educator Certification

Certification
Guidance

Contact Information

Data & Reports

Educator Forms

Educator Lookup

Educator
Preparation
Providers

Law, Rule, Policy

Permits and
Placement

SPEECH and DEED

MDE / EDUCATOR SERVICES / EDUCATOR CERTIFICATION / EDUCATOR PREPARATION PROVIDERS

Specialty Program Standards

Specialty Program Standards

- Agriscience and Natural Resources (HX) (PDF)
- American Sign Language (FS) (PDF)
- Anishinaabemowin Language and Culture (FN) (PDF)
- Bilingual Education (all Y codes) (PDF)
- Biology (DA) (PDF)
- Business, Management, Marketing, and Technology (GQ) (PDF)
- Central Office Administrator (PDF)
- Chemistry (DC) (PDF)
- Early Childhood-General and Special Education (ZS) (PDF)
- Earth/Space Science (DH) (PDF)
- Economics (CA) (PDF)
- Educational Technology (NP) (PDF)
- **Elementary Education (PDF)**
 - Lower Elementary PK-3 Education Preparation Standards (PDF)
 - Upper Elementary 3-6 Education Preparation Standards (PDF)
- English (BA) (PDF)
- English as a Second Language (NS) (PDF)
- Family and Consumer Sciences (KH) (PDF)
- Geography (CB) (PDF)
- Health and Physical Education (MC) (PDF)
- History (CC) (PDF)
- Industrial and Technology Education (TE) (PDF)
- Integrated Science - Elementary (DI) (PDF)
- Integrated Science - Secondary (DI) (PDF)
- Language Arts (BY) (PDF)
- Library Media (ND) (PDF)

Overlaps and differences

PK-3

Strategic tasks of teaching

Focus on whole numbers and operations

Intensified focus on counting

Focus on attributes (spatial reasoning/geometry)

3-6

Strategic tasks of teaching

Focus on whole number and operations

Intensified focus on fractions, decimals, proportional thinking, and operations with fractions

Implications for Programs

Program Implications:

Institutions can:

- Be flexible in program design
- Think beyond coursework to fieldwork
- Strategically design assignments

Resources and Connections

What resources are available to EPIs to support these standards?

- Association of Mathematics Teacher Educators. (2017). *Standards for Preparing Teachers of Mathematics*. Available online at <http://amte.net/standards>.
- National Research Council. (2009) *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC, US: National Academies Press. Available online at <https://www.nap.edu/catalog/12519/mathematics-learning-in-early-childhood-paths-toward-excellence-and-equity>.
- General Education Leadership Network/MAISA. *Essential Practices in Early and Elementary Mathematics*. Available soon.

Test Development

Volunteer for MTTC development committees at <http://www.mirecruit.nesinc.com/>.



Contact Information

For more information regarding the Proposed Michigan Standards for the Preparation of Teachers of Lower Elementary (PK-3) and Upper Elementary (3-6) Education, please contact:

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