



APLU Science and Mathematics Teacher Imperative

MATHEMATICS TEACHER EDUCATION PARTNERSHIP

Guiding Principles for Secondary Mathematics Teacher Preparation Programs (REVISED DRAFT – October 16, 2014)

Secondary mathematics teacher preparation programs should effectively prepare teacher candidates who have the potential to promote mathematical excellence in their future students leading to college and career readiness as described in the Common Core State Standards for Mathematics and other standards promoting college and career readiness of K-12 students. The *guiding principles* describe a shared vision to be explored and refined by the MTE-Partnership and others involved in preparing secondary mathematics teachers by:

1. building a national consensus on what effective secondary mathematics teacher preparation programs need to do in order to develop teacher candidates who promote mathematical excellence in their future students;
2. enhancing communication among the partners involved in a secondary mathematics teacher preparation program in order to clarify program goals, to assess the effectiveness of the program, and to guide program development and revision;
3. serving as the framework for an emerging national research and development agenda related to secondary teacher mathematics preparation; and
4. helping to organize the identification, development, and dissemination of resources supporting effective secondary mathematics teacher preparation programs.

These guiding principles are based on: (a) recommendations from documents such as the *Mathematical Education of Teachers II* (METII) (Conference Board of the Mathematical Sciences, 2012), *Principles to Actions: Ensuring Mathematical Success for All* (National Council of Teachers of Mathematics, 2014), and *Council for the Accreditation of Educator Preparation 2013 Standards for Accreditation of Educator Preparation*; (b) research on mathematics teacher preparation; and (c) the practical wisdom of those engaged in mathematics teacher preparation. The development of the document incorporated extensive input from members of the MTE- Partnership, stakeholders in the preparation of teachers, and other leaders in the field of mathematics teacher education, resulting in a working draft released in August 2012. This is a “living document” intended to capture the growing understandings of the Partnership and the field, most recently updated in October 2014.

The guiding principles are separated into three sections focusing on:

- I. Partnerships
- II. Teacher Candidate Knowledge, Skills, and Dispositions
- III. Program Structures

I. Partnerships

Guiding Principle 1. Partnerships as the Foundation

The preparation of effective secondary mathematics teachers engages a comprehensive partnership—institutions of higher education (including faculty members focused on mathematics, mathematics education, and teacher preparation), schools and districts (including mathematics teachers and administrators), and other stakeholders such as state departments of education—focused on preparing teacher candidates who promote student success in mathematics, as described in the Common Core State Standards for Mathematics (CCSS-M) and other college- and career-ready standards.

Indicators of the guiding principle include:

- 1-A. **Shared Goals and Vision:** All partners involved in the secondary mathematics teacher preparation program work together to develop and promote a common vision and goals for how to best prepare teacher candidates who can promote student success in mathematics, as described in the *Common Core State Standards for Mathematics (CCSS-M)* and other college- and career-ready standards.
- 1-B. **Mutual Learning:** All partners involved in the secondary mathematics teacher preparation program are committed to learning from and with each other in continuing to better achieve their respective missions and to continually improve the program.
- 1-C. **Shared Engagement and Responsibility:** The secondary mathematics teacher preparation program actively engages its partners in the design of the program, and together they share responsibility for the success of the program and its candidates.

Guiding Principle 2. Commitments by Institutions of Higher Education

Institutions of higher education demonstrate institutional support for secondary mathematics teacher preparation, with an emphasis on providing the necessary resources to support the program and promoting shared responsibility and accountability within their institutions and with other partners involved in the program.

Indicators of the guiding principle include:

- 2-A. **Institutional Focus:** The infrastructure of the institution of higher education supports a focus on secondary mathematics teacher preparation that emphasizes shared responsibility and accountability across the institution.
- 2-B. **Disciplinary Partnerships:** The mathematics faculty, mathematics teacher education faculty, and general teacher education faculty (and the departments and colleges within which they are employed) at institutions of higher education work as partners in preparing mathematics teacher candidates.

- 2-C. **School Partnerships:** Faculty members (including mathematicians and mathematics educators) at institutions of higher education actively engage inservice mathematics teachers and administrators from partnering schools and districts in the design and implementation of the secondary mathematics teacher preparation program.
- 2-D. **Institutional Support for Faculty:** Policies and practices at institutions of higher education provide encouragement, support, and rewards for faculty members who provide leadership in mathematics teacher preparation.

Guiding Principle 3. Commitments by School Districts and Schools

The schools and districts actively partner with institutions of higher education in secondary mathematics teacher preparation across the teacher development continuum from recruitment to initial preparation to induction into the field and beyond.

Indicators of the guiding principle include:

- 3-A. **Institutional Commitment:** Partnering school districts and schools participate in secondary mathematics teacher preparation as an integral part of their mission of supporting the mathematical success of all students.
- 3-B. **Focus on Important Mathematics:** Mathematics teachers and other personnel in partnering schools and districts ensure that as teacher candidates progress through the program, they experience effective educational practices that promote mathematical excellence in all students as described in CCSS-M and other college- and career-ready standards.
- 3-C. **Support and Recruitment of Mentor Teachers:** Partnering school districts and schools work with their other partners to actively recruit, develop, and support inservice master secondary mathematics teachers who can serve as mentors across the teacher development continuum from preservice to beginning teachers and beyond.

II. Teacher Candidate Knowledge, Skills, and Dispositions

Guiding Principle 4. Candidates' Knowledge and Use of Mathematics

The secondary mathematics teacher preparation program ensures that teacher candidates have the knowledge and understanding of mathematics necessary to promote student success in mathematics as described in the Mathematical Education of Teachers II (MET II), CCSS-M, and other college- and career-ready standards.

Indicators of the guiding principle include:

- 4-A. **Mathematical Habits of Mind:** The secondary mathematics teacher preparation program ensures that teacher candidates engage in the mathematical practices

and processes as outlined in MET II, CCSS-M, and other college- and career-ready standards, while engaged in learning important mathematics content in both their mathematics content courses and teacher education courses.

- 4-B. **Knowledge of the Discipline:** The secondary mathematics teacher preparation program ensures that teacher candidates have an understanding and appreciation of mathematics as a discipline, as described in MET II, CCSS-M, and other college- and career-ready standards.
- 4-C. **Specialized Knowledge of Mathematics for Teaching:** The secondary mathematics teacher preparation program ensures that teacher candidates possess the specialized mathematical knowledge, skills, and dispositions needed to effectively teach secondary mathematics, as described in MET II, CCSS-M, and other college- and career-ready standards.
- 4-D. **Nature of mathematics:** The secondary mathematics teacher preparation program ensures teacher candidates understand, and are able to convey to their students that mathematics is a living and evolving human endeavor that relies on logic and creativity, and it is valuable for citizenship, for the workplace, as well as for its intrinsic interest.

Guiding Principle 5. Candidates’ Knowledge and Use of Educational Practices

The teacher preparation program ensures that teacher candidates have the knowledge, skills, and dispositions needed to implement educational practices found to be effective in supporting student success in mathematics as defined in the CCSS-M and other college- and career-ready standards.

Indicators of the guiding principle include:

- 5-A. **Design of Instruction:** The teacher preparation program ensures that teacher candidates can design mathematics units and lessons, selecting tasks and activities that actively engage all students in developing mathematical practices and processes, while engaged in learning important mathematics content as described in CCSS-M and other college- and career-ready standards.
- 5-B. **Instructional Methods:** The teacher preparation program ensures that teacher candidates are able to create an effective mathematical learning environment and to implement a range of instructional strategies that are differentiated to promote engagement, understanding, and motivation to learn for *all* students.
- 5-C. **Assessment and Reflection:** The teacher preparation program ensures that teacher candidates can assess the ongoing learning of their students using both formative and summative assessments, and appropriately and ethically use data from those assessments to promote the success of all students as well as to reflect on their own professional growth.

- 5-D. **Use of Instructional Technology:** The mathematics teacher preparation program ensures that teacher candidates can integrate the use of appropriate technology—including tools specific to mathematics and more general tools—to engage *all* students in learning mathematics in a manner reflecting the technologically rich world within which they live.
- 5-E. **Attention to Diversity:** The teacher preparation program ensures that teacher candidates recognize that all students in their classes—including low-performing students; gifted students; students of different racial, ethnic, sociolinguistic, and socioeconomic backgrounds; English language learners; students with different sexual orientations; and students with disabilities—have the potential to make important contributions, and that they maintain high expectations for all students.

Guiding Principle 6. Professionalism, Advocacy, and Leadership

The teacher preparation program ensures that teacher candidates demonstrate their commitment to continuing their growth as teachers of mathematics and their emerging leadership by being capable and effective advocates for excellence in mathematics teaching and learning and by holding themselves and their colleagues responsible for the mathematical success of all students.

Indicators of the guiding principle include:

- 6-A. **Integrity:** The teacher preparation program ensures that teacher candidates' actions are ethical, open, honest, and forthright.
- 6-B. **Intellectual Spirit:** The teacher preparation program ensures that teacher candidates demonstrate a sense of responsibility to construct, generate, and share their knowledge about mathematics and mathematics education and its relevance.
- 6-C. **Sense of Justice:** The teacher preparation program fosters a sense of agency in its teacher candidates so that through their actions, behaviors, and advocacy, candidates demonstrate a dedication to equitable pedagogy that promotes democratic principles by holding high expectations for *all* students, while recognizing and honoring their diversity.
- 6-D. **Stewardship and Leadership:** The teacher preparation program ensures that teacher candidates recognize the roles of collaboration, advocacy, and professional responsibility in their emerging roles of teacher and leader, by identifying and acting on needs based on thoughtful reflection and professional care.

III. Program Structures

Guiding Principle 7. Clinical Experiences

The teacher preparation program provides clinical experiences to ensure that teacher candidates are able to demonstrate practices found to be effective in supporting student success in mathematics as defined in the CCSS-M and other college- and career-ready standards.

Indicators of the guiding principle include:

- 7-A. **Embedded, Early, Sequential, and Intensive Clinical Experiences:** The teacher preparation program provides teacher candidates with intentional and appropriate clinical experiences that begin early in their program and become increasingly intense as they progress through the program, focused on learning and demonstrating effective mathematical and educational knowledge.
- 7-B. **Well-Supervised Clinical Experiences, Aligned with Program Goals:** The teacher preparation program provides supervision of clinical experiences based on a partnership between knowledgeable university faculty and master teachers of mathematics, who share a common vision of mathematics teaching and learning.

Guiding Principle 8. Student Recruitment, Selection, and Support

The teacher preparation program actively recruits high-quality and diverse teacher candidates into the program, and monitors and supports their success in completing the program.

Indicators of the guiding principle include:

- 8-A. **Effective Recruitment Strategies:** The teacher education program has developed and sustained an infrastructure in cooperation with schools to recruit teacher candidates from a range of contexts and settings.
- 8-B. **High Admission Standards:** Institutional and/or program policies and practices ensure that secondary mathematics teacher preparation is highly selective, admitting teacher candidates with demonstrated academic skills and dispositions likely to lead to success in mathematics teaching at the secondary level.
- 8-C. **Supporting Candidate Success:** The teacher preparation program provides academic support for teacher candidates' continued growth as they progress through the academic pipeline – from recruitment into the program to completion of the program and beyond – based on effective monitoring of their progress.
- 8-D. **Promoting Diversity in Teacher Candidates:** The mathematics teacher education program actively recruits teacher candidates representative of the

broad diversity of students who they will teach and provides them with the support necessary for their success.

Guiding Principle 9. Beginning and Inservice Teacher Support

Institutions of higher education in partnership with schools and districts support the development of secondary mathematics teachers as they enter the field and continue their professional growth.

Indicators of the guiding principle include:

- 9-A. **Mentoring Beginning Teachers:** The mathematics teacher preparation program provides mentoring and support mechanisms to encourage the continued growth of new teachers in their first three years and beyond, based on a partnership between institutions of higher education and schools.
- 9-B. **Supporting Continued Teacher Growth:** The mathematics teacher preparation program promotes the development of professional learning communities among higher education and K-12 faculty and administrators to support the growth of secondary mathematics teachers across the professional continuum, including recruitment, initial preparation, induction into the field, continuing professional development, and teacher leader development.

Guiding Principle 10. Tracking Success

The secondary mathematics teacher preparation program tracks the success of its program completers in order to better understand the needs of beginning secondary mathematics teachers and to improve the success of the program in producing effective secondary mathematics teachers.

Indicators of the guiding principle include:

- 10-A. **Tracking Success of Beginning Teachers:** The mathematics teacher preparation program tracks and assesses the effectiveness of program completers as they begin their teaching careers, and uses that data to improve the program and increase retention of beginning teachers in their first three years and beyond.
- 10-B. **Mutual Improvement:** All partners involved in the secondary mathematics teacher preparation program are committed to using evidence to continuously improve what they do, to learn from the improvement efforts of others, and to contribute to broader efforts to improve secondary mathematics teacher preparation.