Institutional Self-Assessment Tool

Transitioning Learners to Calculus in Community Colleges[1]

This Institutional Self-Assessment Tool contains a validated set of practices identified by the TLC3 research team[1] as having the potential to influence the success of underrepresented racially minoritized (URM) students in the STEM math pathway.[2] The practices are grouped into five domains:[3] mathematics placement, STEM mathematics courses, instruction (both mathematical and relational), student support, and institutional responsibility. With this tool, colleges can self-assess the degree to which they have implemented these practices and identify next steps to enhance their efforts to support URM students in the STEM math pathway.

The self-assessment tool can be completed by individuals working alone, or it can be used to engage in collective sense-making by bringing together key stakeholders (e.g., faculty, staff, students) to have a conversation. The tool is meant to be respectful of the context of your college, recognizing that the enactment of these practices and how information flows within your college depends on institutional factors including your student population and your mission, history, culture, climate, and resources. We encourage you to engage honestly with this tool, to frequently ask yourself "why" or "why not" as you complete it, and to consider which URM student populations you have in mind when completing this self-assessment tool to support URM students in the STEM math pathway.

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[1] The Transitioning Learners to Calculus in Community Colleges (TLC3) PI team consists of Helen Burn, Vilma Mesa, J. Luke Wood, Eboni Zamani-Gallaher and Soko Starobin. Other personnel include Reka Barton, Darielle Blevins, Claire Boeck, Anne Cawley, Frank Harris, III, Gabrielle Gerhard, and Chauntee Thrill.

[2] STEM is an acronym that stands for Science, Technology, Engineering and Mathematics. In two-year colleges, students transition into the STEM math pathway through a college's mathematics placement process. Required coursework can range from developmental mathematics up to or through precalculus, calculus I or calculus II.

[3] The domains and practices were developed based on mixed-methods research comprising a National Survey of Community College Mathematics Chairs (https://occrl.illinois.edu/docs/librariesprovider4/tlc3/tlc3-math-chairs-survey-summary.pdf) and case studies of mathematics programs in four Minority-Serving Institutions: a Predominantly Black Institution, a Hispanic Serving Institution, an Asian American, Native American and Pacific Islander Serving Institution, and a Tribal College.

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1. Mathematics Placement

Processes used to determine the first course URM students need to take in the STEM math pathway course sequence.

	To what extent has your college implemented this practice?	Are the majority of your URM students aware of this practice?	What next steps are needed to enhance your efforts around this practice?
1.1 Mulitple measures used for placement, including high school transcripts	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
1.2 Advising about the placement process and results is given to students	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
1.3 Policies and practices ensure highest possible placement (e.g. retesting, test prep resource, adjustments afer term begins)	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	

2. STEM Math Pathway Courses

The sequence of courses that URM students interested in pursuing STEM majors must take at the two-year college. Math courses in the pathway can range from developmental mathematics through precalculus and calculus.

	To what extent has your college implemented this practice?	Are the majority of your URM students aware of this practice?	What next steps are needed to enhance your efforts around this practice?
2.1 The course sequence and required course materials in the STEM math pathway are optimized for timely progress	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
2.2 Courses are designed to transfer to baccalaureate institutions	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
2.3 Data on student outcomes in STEM math pathway courses, disaggregated by race/ethnicity within gender, are reviewed at least annually by mathematics faculty	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	

3a. Instruction, Mathematical

Refers to instructional practices that support the development of procedural flexibility, conceptual understanding, and the communication of mathematical ideas, and that contribute to the development of a positive mathematical identity.

	What proportion of your faculty (full- and part-time) are doing this practice for URM students?	Are the majority of your URM students experiencing this practice?	What next steps are needed to enhance your efforts around this practice?
3a.1 Student active involvement in problem solving is central to mathematics instruction	○ All ○ Most ○ Some ○ None	○ Yes ○ No ○ Unsure ○ Not applicable	
3a.2 Students are invited to discuss or share their thinking about mathematics with each other	○ All ○ Most ○ Some ○ None	○ Yes ○ No ○ Unsure ○ Not applicable	
3a.3 The relevance of mathematics is made explicit to students during class or in class materials	○ All ○ Most ○ Some ○ None	○ Yes ○ No ○ Unsure ○ Not applicable	
3a.4 The mathematical content and tasks are challenging in terms of cognitive demand	○ All ○ Most ○ Some ○ None	○ Yes ○ No ○ Unsure ○ Not applicable	

3b. Instruction, Relational

Refers to instructional practices that can positively impact URM students in mathematics classrooms.

	What proportion of your faculty (full- and part-time) are doing this practice for URM students?	Are the majority of your URM students experiencing this practice?	What next steps are needed to enhance your efforts around this practice?
3b.1 Authentic care and welcomeness to engage are expressed to students	○ All ○ Most ○ Some ○ None	○ Yes ○ No ○ Unsure ○ Not applicable	
3b.2 What students find helpful or hindering in their college and math courses is well known and understood by mathematics faculty	○ All ○ Most ○ Some ○ None	○ Yes ○ No ○ Unsure ○ Not applicable	
3b.3 Student questions and concerns are validated and addressed in a timely fashion	○ All ○ Most ○ Some ○ None	○ Yes ○ No ○ Unsure ○ Not applicable	
3b.4 Performance monitoring techniques are used consistently (e.g. feedback on learning, reminders about deadlines, etc.)	○ All ○ Most ○ Some ○ None	○ Yes ○ No ○ Unsure ○ Not applicable	

4. Student Support

Refers to out-of-class supports for URM students in the STEM math pathway.

	To what extent has your college implemented this practice?	Are the majority of your URM students aware of this practice?	What next steps are needed to enhance your efforts around this practice?
4.1 Current grade standing is available to students throughout the term	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
4.2 Dedicated space is available on campus for students to gather and work together on mathematics	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
4.3 Math tutoring and instructor office hours are available and easily accessible to students	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
4.4 Relevant support services are highlighted in syllabi and during instruction (e.g. tutoring, disability services, transfer advising, wellness center)	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	

5. Institutional Responsibility

Refers to a value system that suggests the institution takes ownership of and assumes responsibility for the success of URM students.

	To what extent has your college implemented this practice?	Are the majority of your URM students aware of this practice?	What next steps are needed to enhance your efforts around this practice?
5.1 Permanent base funding is provided by the college to bolster and support the success of URM students in the STEM math pathway	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
5.2 High-quality and ongoing professional learning focused on inclusive teaching strategies, implicit bias, and racial micro-aggressions is provided to full- and part-time mathematics faculty	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	
5.3 Targeted efforts are undertaken by the college to provide resources for students facing food, health, and housing insecurities (e.g. food pantry, free walk-in clinic, emegency financial assistance)	○ Fully implemented ○ Being implemented ○ Being proposed ○ Not implemented	○ Yes ○ No ○ Unsure ○ Not applicable	