

## Appendix. Proposed Mathematics Teacher TPACK Standards and Indicators

<p><b>I. Designing and developing digital-age learning environments and experiences</b></p> <p>Teachers design and develop authentic learning environments and experiences incorporating appropriate digital-age tools and resources to maximize mathematical learning in context.</p> <p>Teachers...</p>	
1.	<p>identify, locate, and evaluate</p> <ul style="list-style-type: none"> <li>• mathematical environments, tasks, and experiences in the curriculum to integrate digital technology tools for supporting students' individual and collaborative mathematical learning and creativity;</li> <li>• appropriate technological resources and tools for these mathematical environments, tasks, and experiences.</li> </ul>
2.	<p>design appropriate mathematical learning opportunities that incorporate worthwhile mathematical tasks, based on current research and that apply appropriate technologies to support the diverse needs of all students in learning mathematics (considering diverse learning styles, working strategies, and abilities using digital tools and resources).</p>
3.	<p>plan strategies to facilitate equitable access to technology resources for all students in learning mathematics.</p>
<p><b>II. Teaching, learning and the mathematics curriculum</b></p> <p>Teachers implement curriculum plans that include methods and strategies for applying appropriate technologies to maximize student learning and creativity in mathematics.</p> <p>Teachers ...</p>	
1.	<p>incorporate knowledge of all students' understandings, thinking, and learning of mathematics with technology.</p>
2.	<p>facilitate technology-enhanced mathematical experiences that foster creativity and encourage all students to develop higher order thinking skills while promoting discourse among students as well as among teacher and students.</p>
3.	<p>use technology to support learner-centered strategies that address the diverse needs of all students in learning mathematics as these strategies help students become responsible for and reflect on their own learning.</p>
4.	<p>advocate, model and teach safe, legal, and ethical use of digital information and technology use by all students in learning mathematics.</p>
<p><b>III. Assessment and evaluation</b></p> <p>Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies.</p> <p>Teachers ...</p>	
1.	<p>apply appropriate technologies to assess all students' learning of mathematics, reflect upon the assessment results, and communicate those results using a variety</p>

	of tools and techniques.
2.	assess students' appropriate and ethical use of technology resources in learning and communicating mathematics.
3.	use formative assessment of technology-enhanced student learning to evaluate students' mathematics learning and to adjust instructional strategies.
4.	align the technology expectations for assessment tasks and practices with that of mathematics classroom activities and expectations.
<b>IV. Productivity and professional practice</b>	
Teachers use technology to enhance their productivity and professional practice.	
Teachers ...	
1.	evaluate and reflect on the effective use of existing and emerging technologies to enhance all students' mathematical learning.
2.	exhibit leadership by demonstrating a research-based vision of integrating technology in teaching mathematics.
3.	demonstrate and promote safe, legal and ethical use of technology for learning and exploring mathematics with students, parents, and colleagues.
4.	use technology to communicate and collaborate with parents, colleagues, and the larger community in order to nurture student mathematical learning.
5.	regularly participate and interact in ongoing professional activities, taking advantage of new and emerging digital age communication resources, to improve their technological, pedagogical, and content knowledge for promoting student creativity and learning in mathematics.