



STATE OF MICHIGAN
DEPARTMENT OF EDUCATION
LANSING

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MEMORANDUM

DATE: February 28, 2017
TO: State Board of Education
FROM: Brian J. Whiston, Chairman 
SUBJECT: Presentation on 2017 State of Michigan Education Technology Plan

The Michigan Department of Education staff worked with a broad group of education technology stakeholders to revise Michigan's State Education Technology Plan, last updated and approved by the State Board of Education in 2010. Because state education technology plans are no longer a requirement of the federal Enhancing Education Through Technology grant and district plans eliminated as an E-Rate requirement, education technology stakeholders have taken a different approach to the plan. Due to the rapid innovations in education technology, stakeholders will meet annually to assess progress and update the plan as necessary. The attached 2017 plan, MI Roadmap, puts forth a vision for the education technology work and will be a living document. The Technology Readiness Infrastructure Grant helped districts to successfully implement online assessments, but technologies change and bandwidth needs continue to grow. Technology is fundamental for transforming learning to prepare students for careers, college, and civic life in a digital age. MI Roadmap, is a culmination of extensive in-person and virtual planning and discussions. The goals and strategies in MI Roadmap are aligned with the Top 10 in 10 Years Strategic Goals.

Students are at the center of MI Roadmap. The plan supports a model in which learners are provided differentiated supports personalized to the individual needs of each student through the use of technology. MI Roadmap addresses the skills effective educators must continue to cultivate through professional learning, leveraging technology for equitable access. The plan also aligns existing foundational resources developed through legislative and educational investments of human and financial capital (outlined on pages 7 through 10). This will ensure that a seamless technological infrastructure is established to support teaching and learning.

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To accomplish the plan developed with strategic partners, cross-organizational collaboration and braiding of efforts is essential. Plan contributors are eager to begin implementation planning and progress monitoring. The 2017 plan, MI Roadmap, sets forth a vision for transforming education through technology in order to accelerate Michigan's realization of becoming an education destination.

MI Roadmap: Transforming Education Through Technology

Michigan Department of Education
September 2017 - 2021

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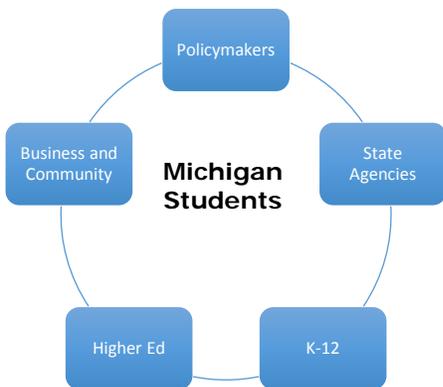
Executive Summary

Tipping Point

Educational leaders in Michigan recognize that we are at a tipping point. In eleven years since *The World is Flat* (Friedman, 2005) was published, the Internet, digital explosion, and global interconnectivity have changed the game. Yet education has remained essentially the same as it emerged from the industrial revolution. Preparing students for their future in 2016 and beyond requires a major shift in schooling. The good news: conditions are in place for a breakthrough in educational design in Michigan. The decision to move beyond the tipping point to support this transformation is reflected in the goals and strategies of *MI Roadmap: Transforming Education Through Technology (MI Roadmap)*.

From Commitment to Action

Over the past ten years, Michigan educators and policymakers have charted new paths in infrastructure and system development that now position our state to be able to accelerate efforts to transform learning. Leveraging both state and federal funds, educators have built infrastructure, designed an online assessment system, created professional learning opportunities, and developed instructional resources.



Partners in this work include those within K-12, business, higher education, professional organizations, and community partners. Across organizational boundaries, colleagues are pushing each other to design new learning paths and systems. This collective accountability is sparking new ways of thinking. It is with this level of commitment to the transformation of learning for every child in Michigan that *MI Roadmap* was created.

Foundational Elements

Michigan has helped lead the way in many elements required to transform the vision of learning. It was among the first states to launch a virtual university, adopt an online learning requirement for every high school student, support flexible school-day schedules, create nationally-recognized professional learning resources for teaching in the 21st century, design a statewide infrastructure to connect every school building, and successfully launch statewide online testing. Specifics of these elements are described within *MI Roadmap*. It is upon this foundation that we can successfully move forward.

Where Next?

The challenge at hand is to leverage the foundational systems and resources effectively to create a new learning ecosystem focused on deeper learning and personalized experiences for students who will master competencies gained both

inside and outside of the traditional school classroom. Transforming Learning (Figure 1) illustrates the process involved. Collective accountability throughout all stages is essential to success.

Figure 1. Transforming Learning



Goals

The five goals of *MI Roadmap* reflect a vision for reinventing the learning system to support personalized pathways for all Michigan students.

- ✓ **Goal One - Learning:** Learners will have engaging and empowering learning experiences in both formal and informal settings in order to learn the skills necessary to become global citizens successful in the workplace and society
- ✓ **Goal Two - Teaching:** Educators will be supported in understanding the skills necessary for students to become global citizens successful in the workplace and society; and in using instructional technology as an accelerator for student learning.
- ✓ **Goal Three - Assessment:** Learners and educators will leverage technology to productively measure competency and provide meaningful feedback to support the personalization of learning for all students.
- ✓ **Goal Four - Leadership:** Educational leaders will create transformational, equitable, technology-rich environments supporting a vision for personalized learning.
- ✓ **Goal Five - Infrastructure:** Learners and educators will have access to a robust, secure, and comprehensive infrastructure to support everywhere, all-the-time learning.

Implementation of these goals requires a commitment to learning new ways to approach the design of the school day. It necessitates a shift in the way we think about teaching, learning, and assessment. It demands new ways of collaborating with parents and the greater community; always with our students as the focus. To this end we will work.

Management Team

A team of over 35 stakeholders representing local and intermediate school districts, state government, and educational organizations across Michigan contributed to *MI Roadmap*. They, and the organizations they represent, stand with the Michigan Department of Education in support of this plan.

Introduction

MI Roadmap was created by a team of over 35 individuals (see Appendix A) representing local and intermediate school districts, state government, and educational organizations across Michigan. Planning began in December 2015. The teams studied state and national resources, examples of models, and supports for transforming learning to meet the needs of today's learners. Work groups framed goals aligned with *Future Ready*, the United States Department of Education's technology plan (2016) as well as Michigan's *Top 10 in 10 Years*. Alignment with *Top 10 in 10 Years* Strategic Goals is described in Table 1 below. Links within the plan also connect *MI Roadmap* goals and strategies to elements of the *Top 10 in 10 Years*.

Table 1: Alignment of *MI Roadmap* with Top 10 in 10 Years

Top 10 in 10 Years Strategic Goals	Alignment within <i>MI Roadmap</i>
<p>Goal 1. Provide every child access to an aligned, high-quality P-20 system from early childhood to post-secondary attainment – through a multi-stakeholder collaboration with business and industry, labor, and higher education – to maximize lifetime learning and success.</p>	<p><i>MI Roadmap</i> is focused on a vision for learning transformation supported by strong collaborative partnerships with stakeholders.</p>
<p>Goal 2. Implement with strong district and building leadership, high-quality instruction in every classroom through a highly coherent, child-centered instructional model where students meet their self-determined academic and personal goals to their highest potential.</p>	<p>Students are at the center of <i>MI Roadmap</i>, which supports a personalized learning model that will prepare all students for success in life.</p>
<p>Goal 3. Develop, support, and sustain a high-quality, prepared, and collaborative education workforce.</p>	<p>Through intentional collaboration, support, and leveraging of resources as described in this plan, educators will develop the skills necessary to prepare students for their future.</p>
<p>Goal 4. Reduce the impact of high-risk factors, including poverty, and provide equitable resources to meet the needs of all students to ensure that they have access to quality educational opportunities.</p>	<p>Equitable access for all students is a key tenet of <i>MI Roadmap</i>. Access to high quality educators, content, technology, and learning opportunities must be the right of each student, regardless of zip code or circumstance.</p>
<p>Goal 5. Ensure that parents/guardians are engaged and supported partners in their child's education.</p>	<p>Partnering with families, communities, and other stakeholders is a priority throughout the plan.</p>
<p>Goal 6. Create a strong alignment and partnership with job providers, community colleges, and higher education to assure a prepared and quality future workforce, and informed and responsible citizens.</p>	<p>The plan supports learning aligned with students' talents, skills, and interests; and supports personalized pathways developed and nurtured through experiences with higher education, community agencies, and job providers.</p>
<p>Goal 7. Further develop an innovative and cohesive state education agency that supports an aligned, coherent education system at all levels (state, ISD, district, and school).</p>	<p>Alignment of systems, resources, and efforts is crucial to the successful implementation of <i>MI Roadmap</i>. Goals and strategies challenge all</p>

	educational partners to collaborate in new ways to propel learning transformation.
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The resulting plan, *MI Roadmap: Transforming Education Through Technology*, frames a vision for teaching and learning that builds upon a strong foundation of infrastructure and high-quality learning resources developed for Michigan schools and educators. Each year, the Michigan Department of Education will conduct a review of *MI Roadmap*, collect progress measurements, and make adjustments as necessary. During the review process, feedback will be gathered from stakeholders in support of statewide collaboration focused on student learning empowered by transformational learning environments.

The Stage is Set for Learning Transformation

Transforming schools to meet the needs of today's learners is challenging, yet rewarding work. It requires a mind shift from traditional thinking about when, where, and how students learn. Such transformation also demands new levels of collaboration with parents, community, higher education, business and industry partners to create authentic learning experiences for students and the educators who guide them.

The work of transforming learning begins by shaping a crystal clear vision of the possibilities and the conditions necessary to move from vision to reality. A tenet of Michigan's *Top 10 in Ten Years* provides the rationale:

No matter where students live, they should have access to the same high-quality educational opportunities as any other student in Michigan. Likewise, teachers across the state should have equitable opportunities to learn and excel in their profession no matter where they live and teach.

Michigan must ensure that each and every child can read and do math, be a creative thinker and problem-solver, and be an informed, open-minded and engaged citizen in our society (Goals and Strategies, 2016).

Toward this end, *MI Roadmap*, Michigan's educational technology plan, directs resources and efforts. The defined goals support development of a new model of learning ecosystem with opportunities for students to master competencies gained both in and outside of the traditional school classroom. It creates conditions for students to engage in deep learning, and follow individualized pathways to learn 21st century skills that equip them for career and college readiness (Figure 1):

- use technology and tools strategically in learning and communicating;
- use argument and reasoning to do research to construct arguments and critique the reasoning of others;
- communicate and collaborate effectively with a variety of audiences; and
- solve problems, construct explanations and design solutions.

Michigan Department of Education (2016).
[Career & College Ready Michigan](#)

Figure 1: Career and College-readiness Skills



Source: [Career & College Ready Michigan](#)

Framed upon this foundation, the overarching vision is to support schools in graduating students who have personalized plans aligning their talents, skills, and interests with a viable career pathway leading to deep learning, active citizenship, and success in life.

The Foundation is Built

Intentional work in Michigan over the past several years has built a strong foundation for transforming learning. These examples describe progress spanning assessment, statewide infrastructure, online content delivery, leadership, and professional learning.

Assessment: Assessment for and of learning is critical in a transformational model that supports personalized learning. It requires a deep understanding of the types, purposes, and uses of assessments and data. Michigan leaders have set the stage for transformation by partnering to support an assessment infrastructure and technology resources to enable high performance in this area.

In 2015, the Michigan Assessment Consortium (MAC) released assessment standards articulated for policy makers, district and building administrators, teachers, students and parents. These standards, endorsed by the Michigan State Board of Education in 2016, provide a foundation for developing understanding and expertise that improves assessment practices and supports deep, transformational learning.

The Technology Readiness Infrastructure Grant (TRIG), initially appropriated in 2012-13, supported the development of a statewide online student assessment system launched in spring 2015. In two short years, 96% of the state's K-12 schools transitioned to online testing for the Michigan Student

Test of Educational Progress (M-STEP), the state's comprehensive grade-level assessment.

Statewide Infrastructure: A robust infrastructure that provides connectivity, supportive data solutions, and device acquisition is essential. It is the first step in creating equitable access. Collaborative cross-sector partnerships in Michigan have resulted in a solid framework upon which we implement this plan.

Michigan State Education Network (MISEN) – Connecting schools across Michigan in a statewide network is determined to be critical to supporting a vision for transformational learning. To this end, (MISEN) is working to create awareness, build partnerships, develop competencies, and leverage funds.

SAVE Bid Project - The Regional Education Media Center Association of Michigan coordinates a statewide competitive bidding process for large-volume bid pricing on a variety of educational resources, including devices. In 2015, the [SAVE Bid Project](#) resulted in savings of \$57 million for Michigan school districts.

Data Hubs – Capitalizing on the emerging statewide network, data hubs were created that support systems integration, standardize and streamline the process of data integration and analytics.

Data Warehouse Development – A critical component in providing personalized learning for students is access to high-quality systems that integrate local, regional, state and national assessment data with demographic and other pertinent data to provide real-time portraits of student performance and progress. Michigan's systemic support of data warehousing began with the Regional Data Initiatives grant, and expanded to the creation of [MiSchool Data](#), a statewide data portal. Integration of other critical data sources connected state budget and grant systems, personnel systems, student data, and educational databases.

Online Content Delivery: Significant progress has been made in developing and providing online curriculum resources to Michigan educators.

A partnership with Oakland Schools and Michigan Association of Intermediate School Administrators led to the creation of [Michigan Citizenship Collaborative Curriculum](#), free online curriculum for K-12 English language arts, mathematics and social studies.

The [MI Open Book Project](#) is social studies open educational textbooks by and for Michigan teachers, as of January 2017 for grades 3-12.

Michigan eLibrary (MeL) is administered by the Library of Michigan in partnership with Michigan's libraries of all types. The [Michigan eLibrary](#) provides all Michigan residents with free access to online full-text articles,

full-text books, digital images, and other valuable research information at any time via the Internet.

#GoOpen – Michigan joined the national Open Educational Resources (OER) project by launching #GoOpen in February 2016. Participation in the national collaborative will allow Michigan to support school districts and educators in transitioning to the use of high-quality, openly-licensed educational resources. Expansion of the OERs is addressed in *MI Roadmap*.

Organizational Leadership and Professional Learning: Several high-quality venues operated by educational partners exist to support leadership and learning for Michigan educators:

Michigan Association for Computer Users in Learning (MACUL) is a professional association that offers leadership and learning opportunities to support technology-enabled teaching and learning. MACUL offers 10 special interest groups, several conferences, and other resources to meet the needs of its growing roster of 20,000 members.

Michigan Association of Intermediate School Administrators (MAISA) established professional networks of leaders in early childhood, general education, and technology. These partners are working individually and together to drive leadership for curriculum, instruction, assessment, and professional learning.

Michigan Association of School Administrators (MASA) is a professional organization serving superintendents and their first-line assistants. MASA provides leadership and learning opportunities, and advocates for public policy to support an educational system that “enables students to achieve 21st century skills and demonstrate college- and career readiness” ([MASA Goal 4](#)).

Michigan Association of Secondary School Principals (MASSP), a professional association serving middle and high school principals, offers members a variety of professional learning opportunities relevant to building leadership and student learning.

Michigan Assessment Consortium (MAC) is a 501(c)(3) organization of educators committed to elevating the quality of assessment practices in Michigan. MAC has partnered with Michigan Department of Education to lead the development of [assessment standards](#) and professional learning aimed at building the knowledge of assessment for learning.

Michigan Mathematics and Science Centers Network (MMSCN) is comprised of 33 regional centers that provide leadership, curriculum support, professional development, and student services for educators around the state of Michigan. The Network also serves as a resource clearinghouse for educational materials and information, and works to foster community involvement in the areas of mathematics and science. The MMSCN is a

501(c)(3) organization that works closely with the Michigan Department of Education and other STEM organizations and professionals to support the delivery of high quality STEM education for the students of Michigan.

Michigan Virtual University (MVU) has served as Michigan's premiere online learning institution, developing and providing quality educational content for students and educators since 1998. MVU operates an online virtual school with over 200,000 enrollments since its launch (source: <http://www.mivu.org/About-Us/MVU-Facts>), as well as an online learning portal for educators. MVU also offers support for schools who are implementing blended and online learning programs.

Regional Educational Media Center Association of Michigan (REMC Association) created and supported online learning resources such as 21Things4Teachers, 21Things4Students, Blended Learning in the Classroom, and 21Things4iPads. These flexible resources support district, building, or individual professional learning in a just-in-time or scheduled format.

Technology Readiness Infrastructure Grant (TRIG) is a statewide effort that funds 10 projects focused learning, data, and access, critical foundational elements to this plan. TRIG developed [Edupaths](#), an online learning portal for educators. The goal of the Edupaths project is to provide self-paced bite-sized content supporting personalized learning for teachers. Edupaths also serves as an online portal for cataloging professional development opportunities across the state.

It is upon this strong foundation of infrastructure, resources, and supports that *MI Roadmap* is built. Schools that strategically leverage these will discover they can move further and faster on their journey to transforming learning.

The Urgency is Indisputable

Michigan students cannot wait for incremental changes in teaching practices to impact their learning. Each year, approximately 100,000 students graduate from public high schools across the state (source: www.mischooldata.org). Some possess skills to be successful in a global economy, while others do not. The zip code of each student must not be the determining factor in the learning experiences, curricula, technology, and teacher expertise available. Recent national data released by The Education Trust Midwest ranked Michigan in the bottom 10 states for literacy nationally on the 2015 4th Grade NAEP ([Michigan Achieves! 2016 Michigan State of Education Report](#)). Only 46% of Michigan 3rd Graders scored proficient in ELA, and 45% in mathematics on the 2016 M-STEP assessment (source: mischooldata.org). Michigan students, their families and communities deserve better.

MI Roadmap presents a vision for deeper, personalized learning supported by goals, objectives, strategies and activities that will transform learning through technology. In a personalized learning environment,

“Teachers focus on how individual students learn concepts and enable students to master new ideas in ways that are engaging and well-matched to students’ interests, and at a speed that best aligns with students’ abilities and skill levels.”

[Moving Michigan Farther Faster](#), 2012

Public Sector Consultants, Inc., & Citizens Research Council

The Michigan Department of Education invites stakeholders across Michigan to commit to partnering in this endeavor. Our students don’t have a moment to waste.

Goals

The goals of this plan encompass five critical areas requisite to implementing a statewide system that leads to educational transformation: learning, teaching, assessment, leadership, and infrastructure. The intersecting goals outlined below are ambitious. They demand a strategic implementation effort to which all stakeholders commit.

Learning

Technology-enabled learning expands equitable growth opportunities for every student, and assists educators in designing personalized learning pathways for students. Through authentic, deep learning experiences, students can imagine, create, solve real-world problems, and give voice to issues in a variety of contexts. They develop essential competencies for success in a swiftly changing global society. Extending learning beyond the classroom walls requires learners to develop digital literacy as they engage in regular opportunities to evaluate the accuracy, perspective, credibility, and relevance of media, data or other resources. The learning goals, strategies, and activities outlined in *MI Roadmap* help shape and support such learning environments and experiences.

Goal One - Learning: *Learners will have engaging and empowering learning experiences in both formal and informal settings in order to learn the skills necessary to become global citizens successful in the workplace and society.*

Strategy 1: *Transform learning environments by leveraging technology to create learning pathways aligned with Michigan standards for all students.*

- a) *Provide resources that allow students to experience universally-designed, individual and collaborative, formal and informal learning in technology-enabled environments within and beyond the classroom.*
- b) *Support schools in providing technology-enabled learning experiences personalized for the strengths, interests, and needs of each learner, in consideration of their family, community, and culture.*
- c) *Create a technology-enabled system wherein teachers assist students in setting and monitoring personal learning goals.*

- d) *Encourage appropriate staffing and collaboration time among teachers and media specialists/in-classroom instructional coaches.*
- e) *Update Michigan curriculum documents:*
 - a. *revise Michigan Merit Curriculum online learning experience guidance;*
 - b. *align standards with ISTE Student Standards.*

Strategy 2: *Support educators in creating environments wherein students utilize technology and tools strategically in learning, apply argument and reasoning to inform research and construct arguments, and design solutions to problems.*

- a) *Curate and provide training for a collection of digital tools and resources, including Open Educational Resources, that are available to all educators and students.*
- b) *Create resources that support educators in designing opportunities for students to:*
 - a. *regularly examine issues from multiple viewpoints, using digital tools to interact with people from varied perspectives and cultures within the local and global community;*
 - b. *learn how to evaluate the accuracy, perspective, credibility and relevancy of resources;*
 - c. *collect data or identify data sets, and use digital tools to analyze, represent, and synthesize data to extract key information, form conclusions, solve problems, and understand increasingly complex systems;*
 - d. *perform tasks or participate in multi-stage scenarios that empower authentic engagement with others and foster deeper learning;*
 - e. *learn problem solving and decision-making skills through hands-on and project-based experiences such as Hour of Code, CS First, FIRST Robotics, Bootstraps, etc.;*
 - f. *use a design process to ask questions and generate ideas to identify and/or solve problems.*

Strategy 3: *Support educators in creating environments wherein students collaborate, communicate clearly, and express themselves creatively for a variety of local and global audiences and purposes.*

- a) *Support collaborative learning opportunities for students to contribute in project teams, assuming various roles and responsibilities that help them work effectively with others.*
- b) *Share resources that assist students in demonstrating mastery of content by presenting work clearly and effectively using tools (i.e. visualizations, models, simulations, other digital artifacts) suited to their audience and purpose.*
- c) *Create partnerships that support local and global learning opportunities, and develop accompanying guidance for educators.*

Strategy 4: *Promote students' understanding of the rights and responsibilities of living, learning and working in a digital world, and the importance of demonstrating behaviors that are safe, ethical and self-aware.*

- a) *Promote positive digital citizenship and leadership within and beyond the classroom.*
- b) *Curate and promote a toolkit of digital citizenship resources that address cultivating a positive digital identity, engaging in social interactions online, respecting intellectual property rights, and understanding digital privacy.*

Teaching

If schools want to create learning environments where students excel in developing skills necessary to be productive members of a global society, their teachers must be key players in leading the transformation. Teachers must be equipped to serve as role models of learning, calculated risk taking, and commitment to growth. Investing in teacher professional learning, therefore, is critical to the success of *MI Roadmap*. Helping teachers effectively use tools and devices to support learning is only part of the picture. Unfolding a vision where students and teachers work collaboratively to create learning paths that build competencies and prepare students for success requires new methods of instructional design, curriculum development, and assessment. The goals articulated in this plan frame such a vision and outline the supports necessary to move the vision to reality.

Goal Two - Teaching: *Educators will be supported in understanding the skills necessary for students to become global citizens successful in the workplace and society; and in using instructional technology as an accelerator for student learning.*

Strategy 1: *Increase teacher competencies in designing curriculum, instruction, and assessment that integrates technology to engage students, develops student competencies, and builds a productive learning culture.*

- a) *Provide teachers access to research-supported practices for transforming learning.*
 - a. *Develop a database of research and resources about learning that prepares students for success in a digital age.*
 - b. *Curate examples of schools that are effectively integrating technology to provide multiple means of engagement, access, and expression of learning.*
 - c. *Curate resources for supporting connections with experts, classrooms around the world, virtual field trips, and other local and global experiences.*
 - d. *Organize or create training on how to achieve differentiation through use of technology.*
- b) *Provide high-quality face-to-face, online, blended learning, and instructional coaching models that support teachers in transforming instruction with technology.*

- a. Curate existing professional learning resources that support digital transformation.
- b. Partner with ISDs, professional organizations, and others to integrate digital competencies for teachers into professional development design and content.
- c. Create a digital badging system that provides teachers documentation of competencies earned.
- d. Collaborate with [GELN](#) and [REMC Association](#) to enhance a statewide database of ISD regional instructional technology coaches.
- e. Conduct bi-annual survey of educators to gauge comfort level with technology use (Project Tomorrow survey, MTRAx Digital Learning).
- c) Provide support for educators in how to access or create and use Open Educational Resources (OER) in meaningful ways.
 - a. Curate lessons on how to locate quality [OERs](#) and district support materials to integrate into existing resources.
 - b. Curate resources to provide a basic understanding of Creative Commons licensing.

Strategy 2: Design personalized learning opportunities for teachers that lead to effective use of digital tools and resources, and inspire teachers to become lifelong learners and leaders in their schools and professional communities.

- a) Identify, expand, and promote professional learning opportunities targeted to educators' [personalized](#) learning needs.
 - a. Create coherent, state-and-district-provided professional learning by expanding educator access to Michigan-developed content created by EduPaths, Michigan Virtual University, REMC Association, and other partners.
 - b. Promote organic professional learning by encouraging educators to create content for forums such as EduPaths, [Edcamps](#), and educator-led webinars.
 - c. Create a resource of current social media communities for educators, including Twitter Chats, [Voxer Groups](#), Google Plus, etc.
 - d. Promote use of social media platforms by classroom and pre-service educators to increase collaboration and dissemination of best practices.

Strategy 3: Develop a system that supports educators in personalizing instruction through technology-enabled use of student data.

- a) Ensure that all P-12 educators are able to access and utilize information supports and technologies to personalize student learning.
 - a. Create awareness of [MiSchool Data](#) and other state and local data tools that support personalized learning.
 - b. Support schools in providing professional learning for teachers in how to effectively use data to personalize learning.

- c. *Organize or create training on how to use student data to determine student needs in order to target areas for improvement.*

Assessment

The ability to understand and assess what students know and can do with their knowledge is essential for all educational stakeholders. Technology will support a shift in assessments from pencil and paper traditional test to engaging, interactive assessments that assist with providing a broader understanding of student learning. Knowing that these assessments will provide new data sets, reports, and information to stakeholders, the goals of *MI Roadmap* focus on:

1) building an understanding of assessments and data; 2) creating technology-enhanced assessments aligned to learning targets, standards, and competencies that are available to all learners; and 3) enhancing a pathway for sharing developmentally-appropriate assessments.

Goal Three - Assessment: *Learners and educators leverage technology to productively measure competency and provide meaningful feedback to support the personalization of learning for all students.*

Strategy 1: *Support districts in developing a culture of balanced assessment and ensuring stakeholders become assessment literate.*

- a) *Collaborate with professional associations to provide assessment learning opportunities targeted to the various stakeholder groups (building/district administrators, teachers, students, and policymakers).*
- b) *Develop "micro-credentialing" (i.e., badging), that allows educators to illustrate mastery and earn recognition for assessment expertise gained through professional learning.*
- c) *Promote the inclusion of assessment literacy in school improvement plans and educator personalized learning plans.*

Strategy 2: *Assist educators in developing ways to measure student mastery of standards and competencies in a personalized learning system.*

- a) *Support educators in accessing and/or creating high-quality, technology-enhanced formative practices, interim/benchmark, and summative assessments that support personalized learning.*
- b) *Develop best practices for correlating outcomes on interim and local summative assessments with state summative data.*
- c) *Assist teachers in selecting, modifying, and delivering aligned assessments, such as constructed responses, simulations, problem/project-based and performance tasks, and capstone projects in support of student learning.*

Strategy 3: *Engage educators in exploring emerging technologies that support instructional engagement and assessment.*

- a) *Support educators in utilizing the state's identified platform for Open Educational Resources (OER) to support student learning.*
- b) *Encourage teachers to provide feedback on assessments accessed through the OER platform.*
- c) *Support regional technology teams in investigating and testing emerging educational technologies for personalized learning.*

Strategy 4: *Work to ensure that districts utilize a common data standard to collaborate with and share screening, formative, interim, and summative data sets.*

- a) *Authenticate and share assessment data with stakeholders (e.g. M-STEP via student information system utilizing the dynamic report tool).*

Leadership

Strong leadership is essential to shaping a vision: transformational leaders have the ability to inspire people to change, improve and contribute to the cause (Northouse, 2001). Transformational leaders of learning in the 21st century build understanding of new learning ecosystems that shift how, when, and where learning occurs, who is engaged in supporting students, and how results are measured. They hold themselves and colleagues accountable for implementing a vision, and creating systems of support required to move the vision to reality. Strategic transformational leaders move beyond their immediate sphere to connect with regional, state, and national initiatives that align with their vision and offer financial, human capital, and other assets. They help staff identify and leverage expertise and interest directed toward common goals. The leadership goals and objectives of *MI Roadmap* aim to support transformational leadership in Michigan schools. They empower leaders to support teachers and students in the implementation of personalized learning wherein every student reaches his/her potential.

Goal Four - Leadership: *Educational leaders will create transformational, equitable, technology-rich environments supporting a vision for personalized learning.*

Strategy 1: *Create a shared vision for 21st century learning that leverages technology and other resources to support learning, teaching, and assessing.*

- a) *Model the utilization and integration of technology for leading, teaching, learning, and assessing.*
- b) *Partner with leadership organizations to implement a [transformational learning model](#), and monitor and evaluate its impact.*
 - a. *Foster relationships among state technology and instructional leaders to explore emerging educational technologies and remove barriers to*

- their use.
- b. *Facilitate professional learning that builds a shared understanding of personalized learning and the research-based frameworks that support technology-enhanced instruction (i.e. TPACK, SAMR).*
 - c. *Leverage local, regional, and statewide PLNs to support leaders.*
 - d. *Support leaders in aligning the technology shared vision with the school/district improvement plan and consolidated grant application.*
 - e. *Create a communication plan with feedback loops and resources for stakeholders.*
- c) *Create the conditions in which schools may implement a competency-based approach to learning; showcase examples of schools implementing competency-based education; and examine data to explore the impact on student learning and growth.*
 - d) *Support leaders in developing effective partnerships among stakeholders that remove barriers to accessing technology and provide resources.*
 - a. *Facilitate the development of a consistent, shared understanding of research-based personalized learning.*
 - b. *Develop a database of local, state, and global partnership opportunities to engage students.*
 - c. *Promote use of Open Educational Resources.*
 - e) *Encourage a culture of success by acknowledging leadership and growth.*
 - a. *Develop consistent criterion for identifying promising practices and transformational leadership.*
 - b. *Engage partners in developing a process for recognizing exemplary programs and individuals.*
 - c. *Celebrate success measures reflected in the annual review of MI Roadmap progress.*
 - f) *Advocate for policy and legislation that supports personalized learning.*

Strategy 2: *Develop a coherent personalized learning system for all students and educators.*

- a) *Ensure the infrastructure is in place to equip teachers to serve as educational designers and facilitators, supporting students in their personalized learning.*
- b) *Collaborate with professional associations to provide leaders with high-quality professional learning focused on transformational leadership to ensure successful implementation of the resources, practices, and procedures for personalized learning.*
 - a. *Encourage leaders to participate in professional learning designed to address the cultural shifts necessary to support increased student voice and choice in the design of learning activities, and the means of demonstrating learning.*
 - b. *Involve stakeholders in collaborative opportunities to design guidelines, policies, practices, and methods to ensure effective integration of technology to personalized student learning.*
 - c. *Collect and analyze data to drive decisions and ensure continuous improvement that supports personalized learning.*

Strategy 3: Support leaders in creating a robust infrastructure and building human capacity necessary to fully implement a vision for transformative learning enabled by technology.

- a) Assist in developing a thorough understanding of the robust infrastructure supports available, and encourage technology staff to access these resources.
- b) Develop plans for securing appropriate resources and funding to sustain technology-enabled teaching and learning.
 - a. Conduct a needs assessment/gap analysis to identify gaps and ineffective use of resources.
 - b. Develop strategies to address needs assessment/gap analysis findings, and set high expectations for transformation at all levels.
 - c. In conjunction with school improvement plans, develop an implementation timeline with associated budget; ensure year-round supports for implementation; monitor progress; and adjust plans at one-year intervals.
- c) Work with stakeholders to develop plans that address infrastructure needs, including beyond the campus to the home and the community.

Strategy 4: Ensure that educators access opportunities for personalized professional learning.

- a) Engage leaders in building understanding of new learning ecosystems that shift how, when, and where learning occurs, and in developing teacher competencies to transform learning.
 - a. Develop face-to-face, online, and blended personalized professional learning opportunities.
 - b. Provide collaborative experiences for leaders to explore and practice technology skills with other educators.
 - c. Promote free online technology skill assessment tools available through [TRIG](#), [REMC Association](#), [EduPaths](#), and [ISTE](#).

Infrastructure

Bandwidth needs are increasing exponentially, both in schools and homes, as digital tools and services expand. A robust, secure infrastructure is necessary in order for schools to transform learning through digital opportunities. Digital equity is a concern as the classroom expands to include home, community, and other out-of-school and after-school learning activities. As schools move into digital content delivery, networks must provide access, no matter where a student might be learning. Networks must be designed and implemented with adequate bandwidth and infrastructure to ensure access to high-quality digital content for teaching and learning. Powerful learning devices are also a critical component of connectivity. All educators and learners must have access to and use devices for everywhere, all-the-time transformational learning.

Over the past ten years, significant infrastructure and readiness advancements have built a foundation that supports *MI Roadmap* (see section: The Foundation is Built). Progress includes infrastructure development, data hub deployment, data warehouse support, online assessment system implementation, and online curriculum content and professional learning resource development. Since 2012, Michigan capitalized on funds legislated specifically for making schools test ready. Through TRIG activities, the consortia model, and shared governance, statewide technology initiatives made a significant impact on teaching and learning while improving efficiencies. The Michigan State Education Network (MISEN) created through TRIG, forms the backbone network for school connectivity. The Device Purchasing Program has benefited from economies of scale and forecasting, resulting in more devices for learning at increasingly lower costs to districts. This work is foundational as Michigan moves forward in providing customized, transformational opportunities for all learners.

The use of data is also critical for personalized learning and continuous improvement. Educational data, including both student and educator data, is increasingly becoming accessible. This plan addresses data safeguards and raises awareness of the importance of ensuring all stakeholders practice responsible data use behaviors.

Goal Five - Infrastructure: *Learners and educators will have access to a robust, secure, and comprehensive infrastructure to support everywhere, all-the-time learning.*

Strategy 1: *Ensure learners and educators have equitable access to technology-rich, everywhere, all-the-time learning.*

- a) *All learning institutions will have reliable, robust, and secure connectivity, meeting or exceeding the State Educational Technology Directors Association (SETDA) bandwidth targets for Internet access of at least 4.3 Mbps per user for a small district (fewer than 1,000 students), at least 3.0 Gbps per 1,000 users for medium district (1,001-9,999 students), and at least 2.0 Gbps per 1,000 users for large school districts (more than 10,000 students), and at least 10 Gbps per 1,000 users for internal wide area network (WAN) connections by 2020-2021.*
 - a. *Identify existing gaps in connectivity and provide strategic targets and supports through MISEN and other state and local initiatives to ensure that all learning sites are connected at SETDA targets.*
 - b. *Provide network management best practices to districts (e.g. Single Sign-on; Domain controller locations, etc.).*
 - c. *Disseminate best practices for technology infrastructure planning, including funding considerations for sustaining network infrastructure.*
 - d. *Expand collaboration and coordination in the E-Rate application and procurement process among school districts, consortia, ISDs, PSAs, libraries, and library systems. This is recommended as a potential State School Aid Act Section 22g District/ISD Consolidation Grant, maximizing upon economies of scale, and in accordance with the*

- Universal Service Fund (USF) trend of preference to consortia applications for discounts.*
- e. *Continue to pursue legislative support of the establishment of a State Matching Fund to be recognized by the Federal Communications Commission (FCC).*
 - f. *Explore partnership with the State of Michigan Department of Technology, Management, and Budget to create a Michigan State Master Contract (SMC) for E-Rate specific services.*
- b) *Work collaboratively with partners to ensure that learners have affordable Internet access in the home and community.*
- a. *Promote innovative methods for home access, (such as bus Wi-Fi, Wi-Fi in high poverty areas), work with providers to offer low-cost programs, and share innovative strategies.*
 - b. *Work with partner organizations and the community at large to promote subsidized Internet access options.*
 - c. *Partner with educational organizations to leverage available funding for community fiber build projects, promoting collaborative approaches to connecting communities.*
- c) *Provide secure, seamless, cost-effective access to educational networks.*
- a. *Collaborate with partners to ensure that educational institutions have robust and secure WI-FI on campus with enough access points to meet the changing capacity demands of 21st century teaching and learning.*
 - b. *Make recommendations on local intrusion prevention systems, cyber security, and creation of model policies around security breaches; and build a community of experts (Cisco certification, etc).*
 - c. *Work to ensure sustainability of district networks and provide guidance on Quality of Service (QoS) prioritization of network traffic to ensure students have the best access to OER content available.*
 - d. *Continue Geographic Information System (GIS) mapping of connectivity database to visualize inequities and target supports to districts and schools with connectivity issues.*
- d) *Support schools in providing devices to learners, educators, and leaders for everywhere, all-the-time learning.*
- a. *Encourage learning institutions to leverage collective purchasing power established through the TRIG Device Purchasing activity and REMC Association SAVE Bid.*
 - b. *Create opportunities for subsidized device programs for low-income learners, and encourage districts that have BYOD/BYOT to provide opportunities for equitable access, such as subsidized laptop programs.*
 - c. *Promote programs that allow devices to be taken home over holiday/summer breaks to promote continued learning.*
 - d. *Collect and analyze data on the number of devices going home with students over summer break.*
- e) *Develop and support a comprehensive system for technology planning for ISDs and districts, ensuring sustainability of networks and devices.*
- a. *Provide guidance to districts on lifecycle device management.*
 - b. *Promote the use of integrated asset management systems that provide real-time deployment of applications offering increased security and efficiency of learning software distribution.*

- c. *Provide recommendations on technology hardware and software management in a cycle that is timely, proactive, and environmentally responsible.*

Strategy 2: *Provide learners and educators with access to high-quality digital content supporting transformational learning experiences.*

- a) *Collaborate with partners to create a #GoOpen plan and fulfill #GoOpen commitments for open education resources (OERs).*
 - a. *Select and adopt a platform that serves as a statewide repository for Michigan's OERs that allows for commenting on the use of learning objects, and ensures interoperability with common Learning Management Systems (LMS) used in Michigan.*
 - b. *Develop within Michigan's educational community the technical capability to publish OERs to the learning registry.*
- b) *Expand use and adoption of high quality OERs within teaching, learning, and assessment.*
 - a. *Increase awareness throughout the educational community of what OERs are and their benefits.*
 - b. *Establish guidance to help teachers access, curate, refine, and share OERs, and to create professional development modules regarding the use and vetting of OERs.*
 - c. *Develop a framework for educators' inclusion of OERs in teaching and learning outcomes.*
 - d. *Develop a support system for #GoOpen districts (i.e. [#GoOpen District Launch Packet](#)).*

Strategy 3: *Support implementation of student data and privacy policies governing access to educator and learner data, and ensure that educators, students, and families understand their rights and responsibilities concerning data.*

- a) *Establish a vision for privacy protection and the responsible use of educational data.*
 - a. *Work collaboratively to develop model responsible use policies (RUP) to promote responsible use of educational data and protect student privacy.*
 - b. *Work to ensure that districts use a common data standard.*
 - c. *Provide curricula for preparing students to properly use the Internet and school-provided or personal devices at school and at home.*
 - d. *Work with in-state educator preparation institutions to ensure that the required curriculum includes education on responsible use of data with particular focus on required protections of student data.*
 - e. *Provide best practice password policies for districts to implement with their personnel and students in accordance with [nationally recognized standards](#).*
 - f. *Develop a privacy training program for educators and administrators. Require training be completed before access is provided to systems housing personal data (see [Other Operating Procedures – Passwords and Security](#)).*

Glossary

Competency-based Education (CBE) - An approach that establishes specific and challenging, learning goals for students; offers personalized support and learning opportunities to help students meet these learning goals/competencies; continuously assesses students' progress to inform instruction/support; and often offers students ownership over this learning. In a CBE model, students only earn credit when they have demonstrated that they have these competencies. CBE touches on many deeper learning aligned practices (source: Top 10 in 10 Years).

Creative Commons - An alternative to restrictions of copyright is called a Creative Commons license. This license allows a content creator to give explicit permission to those wishing to use their intellectual property or original works in a way that respects the owner's wishes and thus eliminates the need to contact the content creator for permission (source: [21Things4Teachers](#), [Be Legal & Fair](#)).

Micro-credentialing - The opportunity for student and adult learners to master learning outcomes in small segments, in a personalized manner that allows for choice in learning mode, path, and demonstration of mastery.

Michigan State Education Network (MISEN) – Michigan State Education Network (MISEN) whose goal is to connect 100% of ISDs, LEAs and PSAs with the networking capacity needed to support 21st century teaching, learning, and assessment.

MI LEARN – is an online tool that can be utilized by students and/or their parents to confidentially report bullying incidents.

Open Educational Resource (OER) - OERs are teaching and learning materials made available online at no cost to educators. The individuals or organizations who create the materials agree to retain few, if any, ownership rights (source: [Open Educational Resources Commons](#)). For information on how Michigan is implementing OER, see [Michigan #GoOpen](#).

Personalized Learning - A personalized learning model strives to meet the individual needs and interests of each student. Typically, a personalized learning model does this through continuously assessing student needs, interests and progress; designing—or co-designing with students—personalized learning opportunities and supports; and offering students ownership over this learning. Personalized learning models touch many of the deeper learning aligned practices. (Top 10 in 10 Years)

Professional Learning Network (PLN) - A group of colleagues joined together by a common interest, expertise, or skill. PLNs often connect digitally to eliminate barriers of distance and time, and to advance the expertise of their members.

Responsible Use Policy (RUP) – Policy that guides effective and efficient use of the Internet, information technology, and educational data resources.

SAMR – Substitution Augmentation Modification Redefinition Model – A model developed by [Dr. Ruben Puentendura](#) that describes a progression or continuum for technology integration from adoption to learning transformation (source: [Technology is Learning](#)).

STEM (Science Technology Engineering Math) STEM education is an interdisciplinary approach offering challenging, collaborative, goal-focused learning activities within a real-world context. STEM learning is student-driven and informed by assessment (Top 10 in 10 Years).

TPACK - Technological Pedagogical and Content Knowledge is a “framework that identifies the knowledge teachers need to know in order to teach effectively with technology. The TPACK framework builds upon [Shulman’s](#) work on pedagogical content knowledge” (source: [TPACK.org](#)).

Transformational learning involves a change or transformation experienced by the learner as a result of the learning experiences in which he/she is engaged. This is distinguished from the term **learning transformation** referenced in *MI Roadmap* which focuses on a vision of how, together with stakeholders/partners, Michigan educators will support a transformation in the way learning occurs in classrooms across the state for every child.

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