




MiSTEM Advisory Council 2023 Annual Report



Required by Section 99s
of Public Act 144 of 2022



“When more students have access to STEM curriculum, they gain the skills needed for high-demand, high-skilled careers of the future.”

– Susan Corbin

Director of the Michigan Department of Labor
and Economic Opportunity

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Letter From the Advisory Council Chair

The **MiSTEM Network** is charged with transforming STEM learning in the state and making quality STEM learning experiences accessible across Michigan, thereby helping to grow in students the critical skills that they practice with STEM learning – including critical thinking, collaboration and creativity. As chair of the MiSTEM Advisory Council and director of the Office of Sixty by 30, I believe that STEM education is vital for growing the ability of our young people to succeed in the future – whatever career path they might choose. On top of that, when they discover a love for STEM fields, they may find themselves on an excellent pathway to a prosperous and in-demand career right in their own backyard. A vital STEM workforce will help drive successful, growing communities across our state as we all work together to reverse population decline.

Even if a child is more interested in a non-STEM career, high-quality STEM learning experiences are still extremely valuable. They have been shown to lead to increased performance in overall schoolwork and higher graduation rates. Great STEM learning allows student curiosity to drive the learning, helping students see themselves as lifelong learners.

STEM education is a vital component of school learning and workforce development, and we believe it can lead to more equitable outcomes across Michigan. We cannot accept that STEM learning is only for some children because the far-reaching benefits of STEM learning are for every child. The MiSTEM Network builds authentic, locally led support for STEM experiences through 16 regional directors who work within and across their communities to advance the MiSTEM pillars:

- Empower STEM Educators
- Integrate Business and Education
- Ensure High-Quality STEM Experiences
- Create a STEM Culture

We hope you will be inspired by and support the work of countless professionals across the state in creating a culture of STEM that strengthens Michigan now and for generations to come.

Sarah Szurpicki

Director of the Office of Sixty by 30

A 2022 public awareness survey found that **Michiganders overwhelmingly support investment in STEM education (77%)**, but most **(64%)** believe that STEM topics are difficult to learn and/or are only for students with a disposition for math and science.

Advisory Council Members

The MiSTEM Advisory Council is charged with setting a strategic vision for STEM in Michigan and moving that vision to action through the MiSTEM Network. The Michigan Legislature relies on this Council to make recommendations to advance STEM education in Michigan.

- Sarah Szurpicki, Chair
- Daniel Williams, Vice Chair
- Gail Alpert
- Lee Graham
- Heidi Maltby-Skodack
- David Rowe
- Former Rep. Adam F. Zemke
- Delsa Chapman
- Sen. Dayna Polehanki
- Rema Reynolds Vassar
- Christian Velasquez
- Wendy Winston
- Rep. Brad Paquette

The MiSTEM Advisory Council was created in 2015 under MCL 388.1699s and organized under the Department of Labor and Economic Opportunity per Executive Order No. 2019-13. The Council is made up of 11 voting members serving at the pleasure of the governor and four ex-officio legislators appointed from the House of Representatives and Senate.

Specifically, the council is tasked with the following:

- Recommend and advance a statewide strategy for delivering STEM education opportunities to K-12 students in Michigan.
- Strengthen the STEM ecosystem and address inequities through grants that meet the objective criteria set forth in legislation.
- Activate and support the MiSTEM Network to improve and promote innovation and collaboration in STEM education.



MiSTEM Network, Mission and Vision

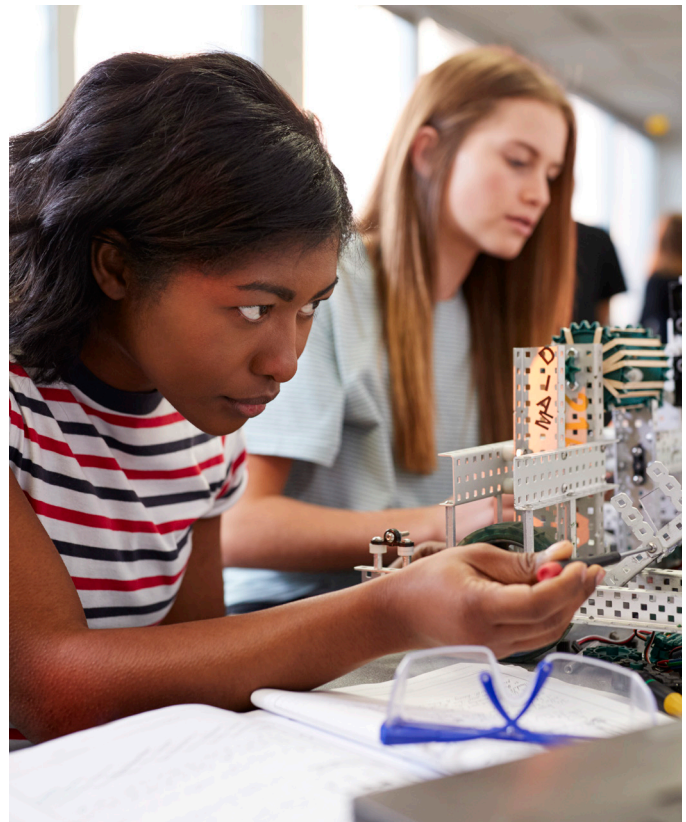
Our Vision:

Michigan is home to a generation of innovators who create more inclusive and prosperous businesses and communities.

Our Mission:

Be the catalyst for equitable access and engagement in authentic STEM experiences in every community in Michigan.

- Established by the MiSTEM Advisory Council, the MiSTEM Network was created to make STEM learning more accessible across the state, bringing people and practice together to implement innovative learning experiences beyond the physical classroom.
- Through 16 regional hubs across Michigan, the Network unites education, business and community partners to create pathways for all students to consider and pursue high-wage, high-demand careers.
- Together, the MiSTEM Advisory Council and MiSTEM Network have set forth a guiding mission and vision, clearly defining our unique place in the Michigan STEM ecosystem and our collaborative purpose.



MiSTEM Pillars



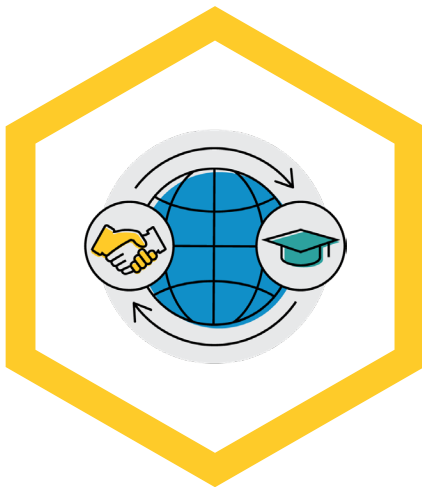
Create a STEM Culture

This culture inspires, informs and mobilizes all community members toward economic and educational success.



Empower STEM Educators

Educators need research-based professional learning, resources and networks of support to provide robust STEM learning experiences for students.



Integrate Business and Education

Bring together STEM-savvy leaders to co-design real-world learning experiences.



Ensure High-Quality STEM Experiences

High-quality experiences engage all learners to improve their educational outcomes and enjoyment of school.



2023 Highlights

Executive Director Megan Schrauben Takes MiSTEM to Washington, D.C.

Schrauben traveled to D.C. last summer for the signing of the CHIPS and Science Act. While there, Schrauben and Zachary Weber (deputy director of federal affairs under Gov. Gretchen Whitmer) met with congressional staffers. They discussed our leadership in STEM ecosystems – which are specifically mentioned in the CHIPS Act – and the importance of national investment in rural areas to advance STEM teaching.

They also discussed the intersection of the Inflation Reduction Act and the CHIPS Act, with Schrauben demonstrating how the MiSTEM Playbooks address numerous goals: community-led innovative solutions for energy and climate, advancing STEM teaching and growing a statewide STEM strategy and network. The future of STEM in Michigan is exciting, and our congressional representatives saw that we are ahead of most other states and poised to lead. If we continue to bring together partners galvanized around authentic, community-based learning opportunities, our youth will be ready for the future.



Six Sault-Area Girls Win Higher Orbits MAMA Series, Design Science Experiment That Will Be Launched Into Space!

A partnership among the Michigan Aerospace Manufacturing Association's Michigan Launch Initiative, the Chippewa County Economic Development Corp., Lake Superior State University, space education nonprofit Higher Orbits and MiSTEM Region 14 will send local students' science projects to the International Space Station. After attending a Higher Orbits summer camp in 2022, six girls came together to create Team Space Shell 6 and design a winning experiment to measure cellular respiration yeast growth. Three of the students are in seventh grade and three are freshmen. Space employment opportunities are growing in the Eastern U.P., and programs like Higher Orbits expose kids to problem-, project- and place-based learning (3P) experiences that are relevant to their community.

MiSTEM Region 14 Director Kevin St. Onge gave an interview to the Soo Leader about the value of Higher Orbits, stating, **"They can utilize the skills learned from this contest to go into any tech field. It is an engaging program that gives students insight into an industry that is growing, one they probably don't have a lot of experience with."**



Photo Credit: Sara Eisinger for the Soo Leader

Sault Ste. Marie Area Public School students Evelyn Weber, Taylor Meilstrup, Zahraa Mahmud, Cierra Aikens, Siri Olson and Claire Parks competed in the three-day Higher Orbits event at Lake Superior State University.



\$2.7M to Expand STEM Programs

In February, Gov. Whitmer announced \$2.7 million to support the expansion of K-12 STEM education with awards of \$900,000 each to the Kalamazoo Regional Educational Service Agency (RESA), Grand Valley State University and Washtenaw Intermediate School District (ISD):

- Kalamazoo RESA to elevate mathematics as the language of STEM.
- Grand Valley State University to expand access to and highlight the importance of high-quality computer science experiences.
- Washtenaw ISD to ensure students have literacy in science and engineering as a 21st-century skill.

The governor stated, **"STEM education opportunities are critical as we prepare young Michiganders for high-tech, high-skill careers that will serve as the backbone of Michigan's economy. These investments are critical to ensure our schools have the funds to help each and every Michigander reach their full potential."**

Freshwater Literacy Gets a Boost of \$200,000 State and Federal Funds

Through a collaboration among the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) Office of the Great Lakes, the U.S. EPA Great Lakes Restoration Initiative and LEO's MiSTEM Network, a combination of state and federal dollars were made available to fund at least 10 grant proposals. The grants will be used to engage students in real-world problem-solving related to Michigan's Great Lakes and prepare them for careers in a variety of STEM fields.

"A healthy, prosperous future for our state and region relies on educating new generations of Michiganders in water science and stewardship," said EGLE Director Phil Roos. These programs will be highlighted in the 2022 Great Lakes Restoration Initiative Congressional Report.

Lieutenant Governor Champions FIRST Robotics in Saginaw


Michigan Lt. Gov. Garlin Gilchrist II made headlines when he [visited the FIRST Robotics](#) state championships at Saginaw Valley State University. Gilchrist, who participated in FIRST Robotics while growing up, said to the press, **"It's about more than the technology. It's about the teamwork, collaboration and friendly competition."**

Gail Alpert, president of FIRST in Michigan, emphasized the resemblance of each FIRST Robotics team to a small business. She passionately works toward establishing a robotics team in every high school statewide.

According to Alpert, these teams not only acquire STEM skills; they also learn how to collaborate. Alpert's involvement with STEM education goes beyond FIRST in Michigan, as she is a member of the MiSTEM Advisory Council. In this role, Alpert works with the MiSTEM Network to execute various events and initiatives throughout Michigan.



Photo Credit: Tess DeGayner/Midland Daily News
Lt. Gov. Garlin Gilchrist II visits the FIRST Robotics state championships.



Impact by the Numbers:

Measuring MiSTEM Regional Allocation Grants

1.

67,635 Students Served, 399% Increase

MiSTEM serves students both directly, with hands-on, relevant learning opportunities, and indirectly, with educator professional development that impacts student learning. The 2022-23 school year activities included in-school problem-, project- and place-based (3P) learning, career development, family education, informal programming in the classroom and much more. **In total, 240 out of Michigan's roughly 900 public school districts participated, with 4,465 educators taking part.**

2.

18,680 Educators/Student Participants From Underrepresented STEM Groups, 203% Increase

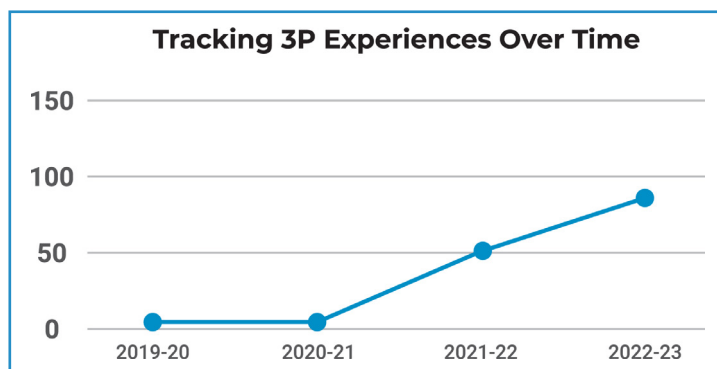
The National Science Foundation reports that STEM workers have median wage and salary earnings 60% higher than those working in non-STEM occupations. For all racial and ethnic groups, STEM workers had higher median wage and salary earnings than their counterparts who worked in non-STEM jobs. Because STEM represents a pathway to prosperity for so many families in our state, a central focus of MiSTEM's statewide strategy is equity for groups that are underrepresented in STEM fields.

Note: Percent increases represent the difference from 2021-22 to 2022-23 in SAMPI Tracking Tool Data.

3.

59% Increase in 3P Experiences

3P experiences are problem-, project- and place-based learning opportunities that are relevant to students and communities. 3P is a transformational way of teaching and learning STEM.



MiSTEM has continued to ramp up these activities from one or two reported in 2019-20 and 2020-21 to 51 in 2021-22 and 81 in the current year.

Transforming STEM Experiences Together: 3P in Action

Michigan Tech Mind Trekkers

This year, three MiSTEM regions partnered with Michigan Works!, local businesses and postsecondary institutions to host four career exploration fairs for middle/high school students. The fairs featured STEM demonstrations by college students intended to inspire younger students to pursue STEM careers. In total, 2,032 students participated, including more than 20% from underrepresented groups. MiSTEM regional grant and community partner donations were leveraged to fund the events and student transportation.

Michigan Geospatial Technologies Talent Consortium

MiSTEM is partnering with higher education institutions, regional businesses through Michigan Works! and other workforce development agencies, and the Michigan Communities Association of Mapping Professionals (MiCAMP) to provide geographic information systems (GIS) coursework and internships. Twenty-one students have completed six-week summer internships working with city governments, businesses and MiCAMP. Projects have focused on GIS maps for municipal projects, drone flight information and websites. All students are from underrepresented groups in STEM.





Impact by the Numbers:

Measuring MiSTEM Advisory Council Grant Programs

1.

1,965 Teacher Participants, 1,075 Schools Served

MiSTEM Advisory Council Grant programs worked with educators in all 16 MiSTEM Regions. Eleven grantees provided educator professional development or STEM-based curricular training, either in person or virtually, for approximately 1,965 educators across the state representing 1,075 schools.

2.

84,489 Students Impacted

All programs served students either indirectly through educator professional development and curriculum implementation, or directly through classroom- and project-based experiential learning STEM programming. Across all grant-funded programming, 84,489 students were impacted through educator professional development and 671 students were served directly with classroom- and project-based STEM programming.

3.

Overall Program Growth

Almost all regions commented on the growth of their program in terms of reach and participation. Six programs reported reaching more regions and serving more educators and students.

"This grant resulted in an increase in the number of elementary teachers trained to teach science."

– Kevin St. Onge, for Cereal City Science

"We now have participation in each of our six counties and have more than doubled the teachers and students impacted."

– Scott Heister, for TEN80

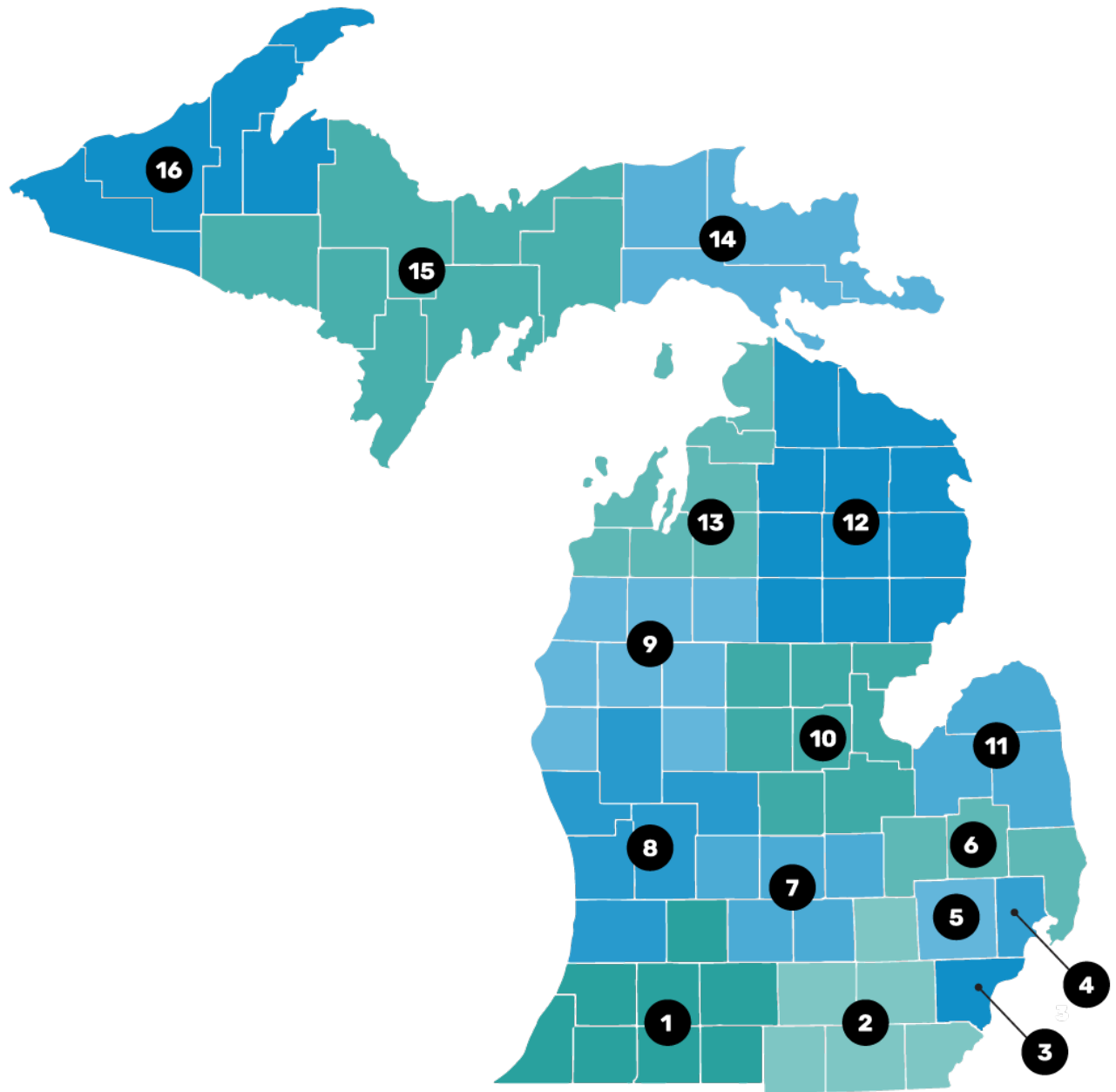
4.

\$994,040 in Leveraged Funding

Programs also leveraged their grants by receiving \$994,040 in external funding sources with 36 organizations. Business/industry partners provided the majority of external funding with \$516,500, followed by community-based organizations/nonprofits that provided \$173,556.

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Regional Networks



Region 1

Southwest Region

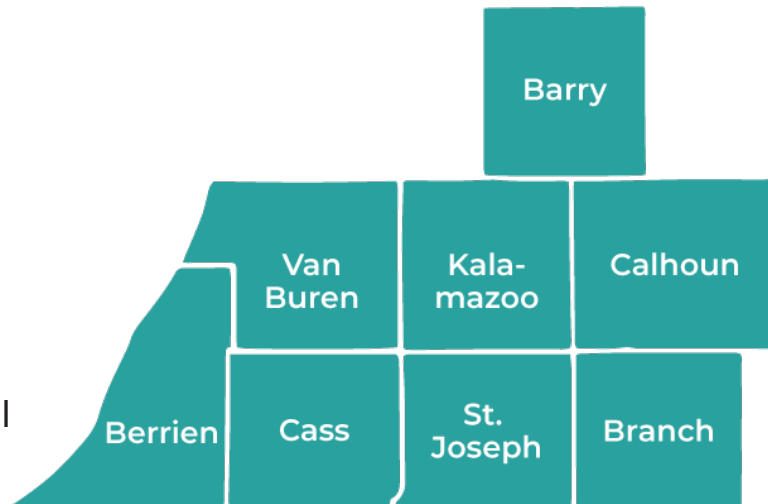
Dr. Diane Owen-Rogers

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Region 2

Southeast Region

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Region 3

Wayne Region

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Region 4

Macomb Region

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School District



Region 5

Oakland Region

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Region 6

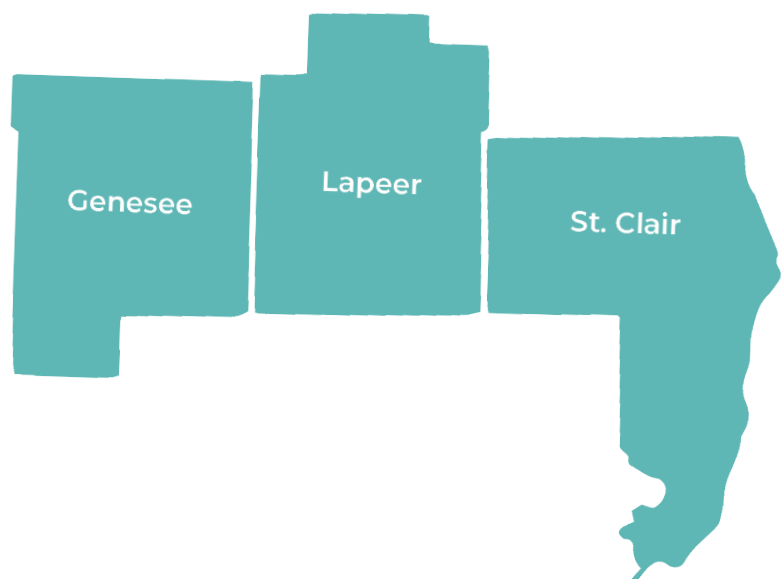
I-69 Region

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Intermediate School District



Region 7

Mid-Michigan Region

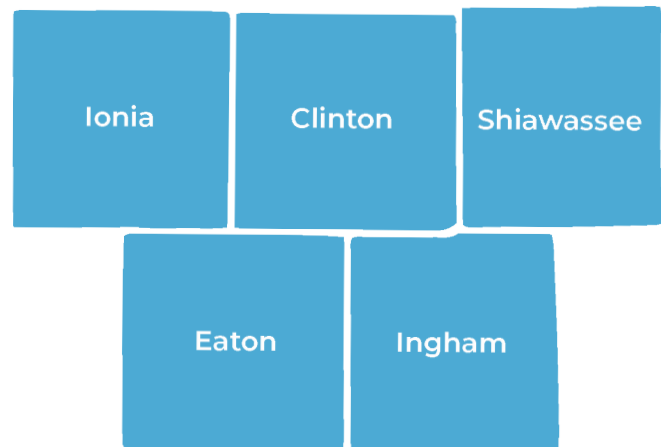
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Region 8

Greater West Michigan Region

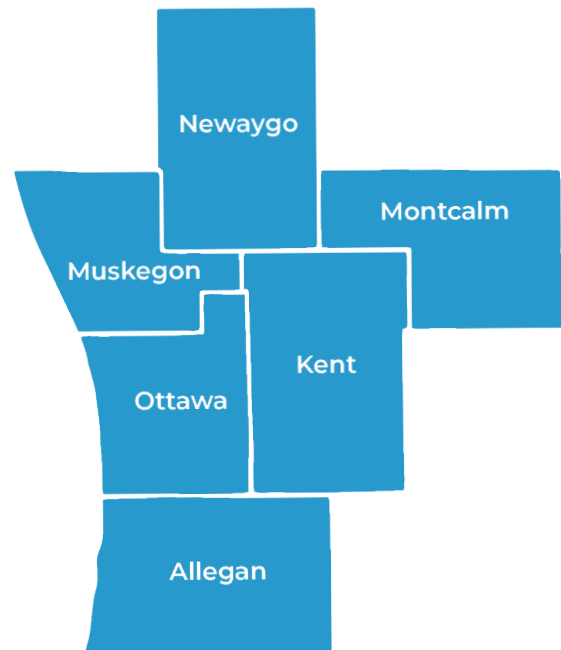
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Region 9

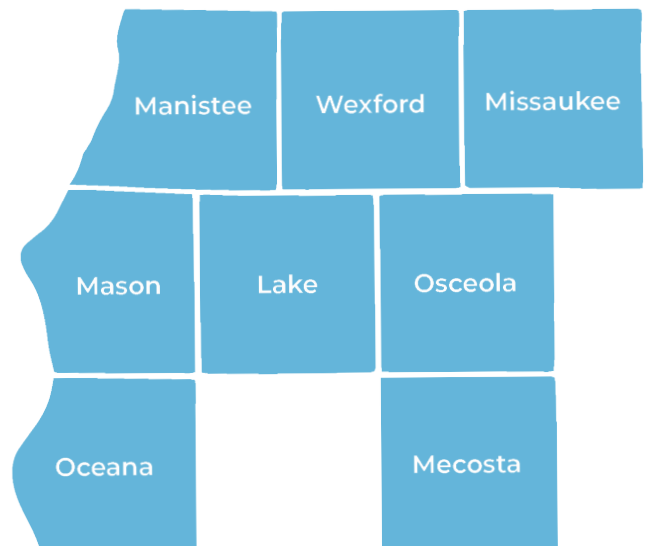
West Central Region

Brian Dotson

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Educational Service District



Region 10

East Central Michigan Region

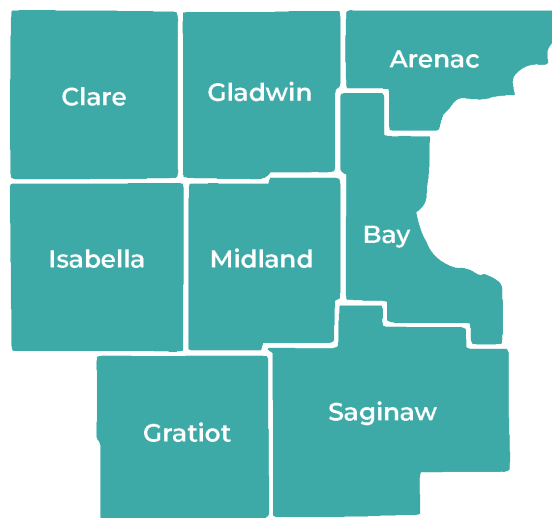
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State University



Region 11

Upper Thumb Region

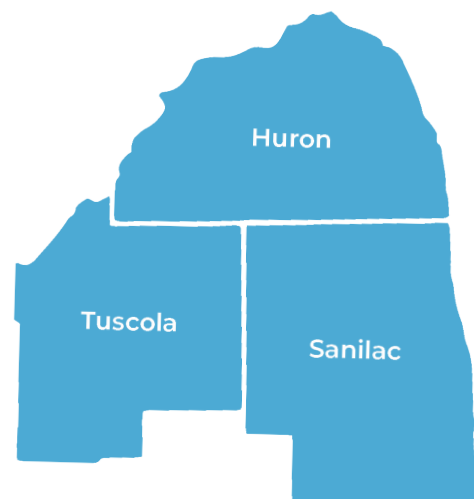
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Region 12

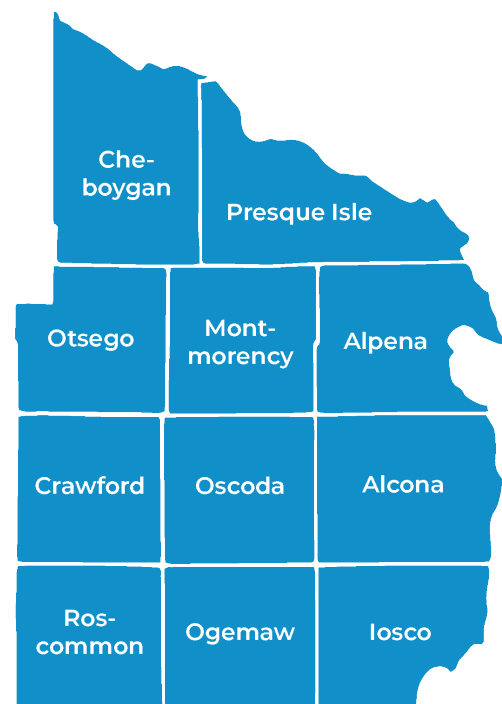
Northeast Michigan (NEMi) Region

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Region 13

Northwestern Lower Michigan Region

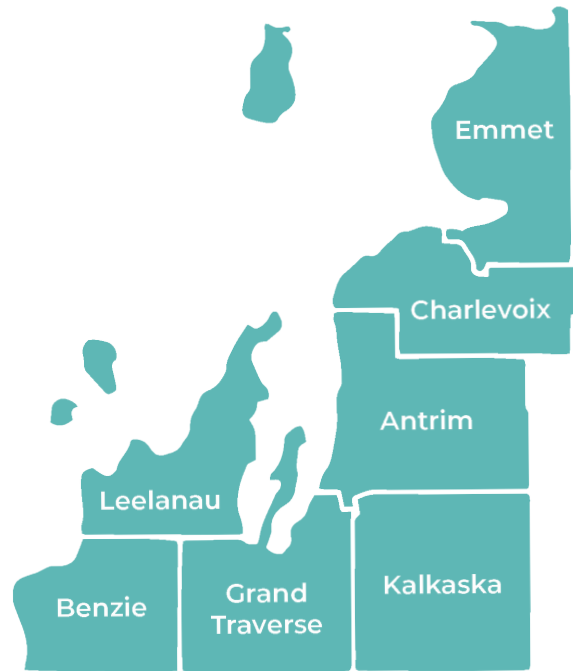
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Region 14

Eastern Upper Peninsula Region

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"MiSTEM is powered by a diverse and committed network of community leaders. The network is the reason we are successfully transforming STEM experiences across Michigan."

– Sarah Szurpicki, Director of the Office of Sixty by 30

Region 15

906-Central Region

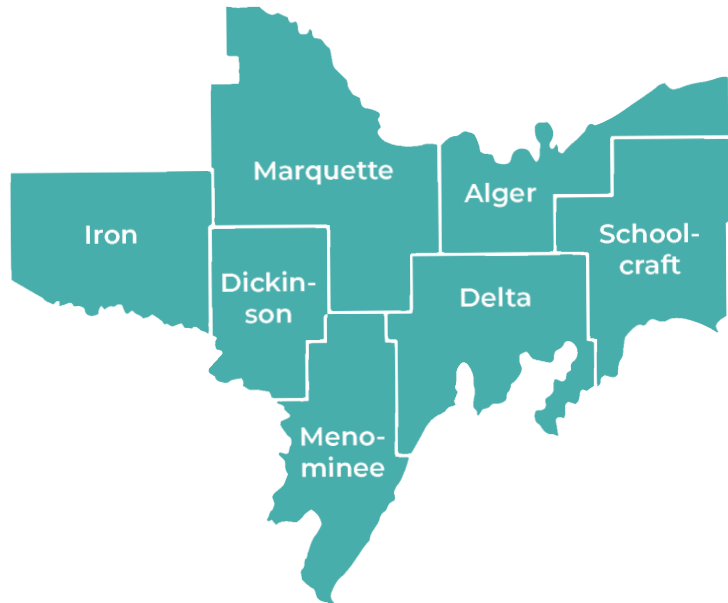
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Region 16

Western Upper Peninsula Region

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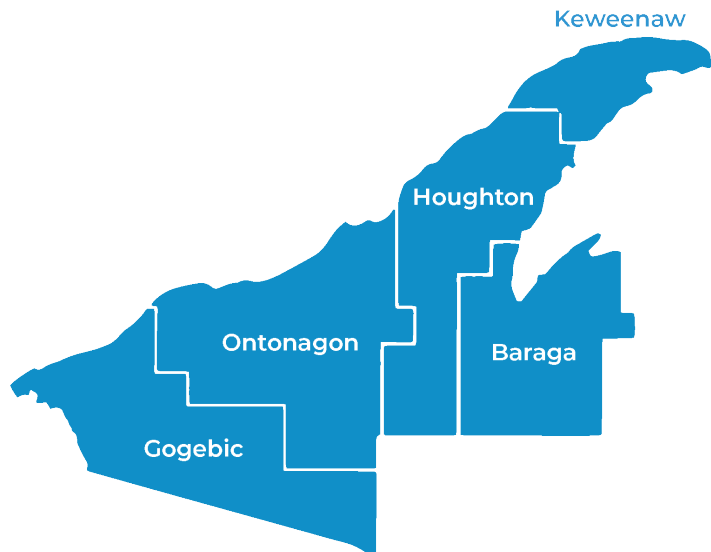
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"The MiSTEM Network implements a statewide strategy focused on equity, innovation and prosperity. Each community's expression of 3P learning reflects authentic, real-world experiences that are relevant to teachers, students, business and partners."

– Megan Schrauben, Executive Director of MiSTEM Network



www.michigan.gov/MiSTEM