

## Cambridge-Isanti Schools Principal Named 2016 Science And Mathematics Principal of the Year



Minnesota Elementary School Principals' Association (MESPA)

Mark Ziebarth, principal of Isanti Intermediate School and School for All Seasons (SFAS) in Isanti, MN, has been named the 2016 Science and Mathematics Elementary and Middle Level Principal of the Year.

The award recognizes the vital importance of fostering lifelong science literacy and honors the key role principals play in developing a culture that encourages and celebrates student interest in math and science.

In reviewing applications for this year's award recipient, the award committee looked for evidence of the nominees' support of professional development and coaching for the teachers in their schools, active partnerships with other organizations, efforts to apply math and science standards to curriculum and provide support materials, support of out-of-school as well as in-school experiences, inclusion of

families, and evidence of other creative ways of fostering interest in math and science.

"As principal, Mr. Ziebarth has taken the lead in moving SFAS and the district into the world of Science – Technology – Environment – Arts – Math (STEAM) education," wrote Randy Pauly, principal of Isanti Middle School, in his letter of recommendation. "During the 2012-13 school year, Mr. Ziebarth led the district task force which recommended the adoption of the STEAM philosophy for the district's year round program. Our year round program began implementing the STEAM model during the 2013-14 school year. Now in its third year of implementation, the program continues to build on its early success, deepening the STEAM experience for students and staff under Mr. Ziebarth's leadership."

Ziebarth has been instrumental in meeting the needs of STEAM teachers in his schools by adding eight days of professional development. The additional professional development days enable the staff to deliver aligned STEAM instruction and to partner with community organizations, including the City of Isanti to develop Legacy Park into an environmental learning resource. "Our schools have developed a strategic plan with the input of our parents and community that emphasizes the importance of critical thinking and problem-solving," said Ziebarth. "Science and mathematics provide great tools for helping us carry out our strategic plan to prepare students for the world that awaits them. We have also had great success integrating science and math in all areas of our curriculum by being intentional and making it

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## Reward and Celebration at District 191!



State Education Commissioner Brenda Cassellius met with students during a tour of Gideon Pond Elementary.

Burnsville-Eagan-Savage School District 191

### Marion W. Savage Elementary School is among 22 Celebration Schools for 2015

Students and staff members at Marion W. Savage Elementary School in Savage have cause to celebrate! The school has been named a 2015 Celebration School by the Minnesota Department of Education (MDE).

More than 150 Celebration Eligible schools in the state of Minnesota applied for this distinction and, from those submissions, just 22 were chosen for recognition.

"Your school's selection is a reflection of the quality application you submitted that tells the story of your efforts to improve student achievement," said Dr. Brenda Cassellius, MDE commissioner. "I appreciate your tireless dedication to the students you serve and believe that if we work together, every Minnesota school can be excellent."

She hopes that Celebration Schools will share effective practices with other schools across the state. By learning from one another, schools can replicate what works and close achievement gaps among students.

Using the results of the State's Multiple Measurements Rating (MMR) and Focus Rating (FR), Title I schools can fall into five groups. Reward Schools are the top 15 percent followed by the next 25 percent highest which are Celebration Eligible schools that can apply to be Celebration Schools.

"Congratulations to Principal Jeff Nepsund and all staff members at Marion W. Savage Elementary School," said Superintendent Joe Gothard. "Your hard work and dedication have resulted in this outstanding state recognition. All of us in One91 are proud of you and your students."

Nepsund says that his teachers have effectively used data to target instruction and provide

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Vincent Williams is an assistant principal intern in Fargo, North Dakota. Williams earned both his B.S. and M.S. from Minnesota State University Moorhead. Listen to what he has to say about MSU Moorhead: [www.youtube.com/MSUMoorhead](http://www.youtube.com/MSUMoorhead)

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# NBCT Teachers February 2016

## Big Lake School District



**Kim Bowen**

**Big Lake High School  
Science/Adolescence and Young Adulthood**

This is my 23rd year teaching science at Big Lake High School. I have earned Bachelor of Science degrees in Chemistry and Chemistry Education and also have a Master's degree in Teaching and Learning. In addition to my teaching duties, I have been the head softball coach for 21 years.



**Jennifer Gritman**

**Big Lake Middle School  
Exceptional Needs Specialist/Early Childhood through Young Adulthood**

I have been teaching special education for seven years. I taught one year at Sartell Middle School, three years at Foley High school, and three years at Big Lake High School. I am excited to be working with the staff and students at Big Lake Middle School.

I hold a Bachelor's of Science Degree and a Master's of Science Degree.



**Brittany Gronewold**

**Big Lake High School  
Social Studies-History/Adolescence and Young Adulthood**

Mrs. Wedlund grew up in Anoka, Minnesota and graduated college in the spring of 2010. In the fall of 2010, she began teaching at Big Lake High School and has been a part of the Social Studies Department ever since. In her time at BLHS, Mrs. Wedlund has taught courses such as World History, World Geography, Current Issues, and Economics.



**Jennifer Spaulding**

**Big Lake High School  
English Language Arts/Adolescence and Young Adulthood**

I graduated in 2004 with a degree in Communications/Arts & Literature. Currently, I teach Freshman English, EXCEL Freshman English, Creative Writing, and Advanced Composition.

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# NBCT Teachers February 2016

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## Minneapolis Public Schools



### Norma Gibbs

#### Whittier International Elementary English As A New Language/Early and Middle Childhood

Norma Gibbs is the new principal of Whittier International Elementary. Norma has been with Minneapolis Public Schools since 1991 as both a reading, special education, and English Learner teacher, and as an administrator. She previously served as District Program Facilitator and coordinated programming for English Learners with Special Needs.

Norma Gibbs holds a Bachelor's and a Master's degree in Italian. She earned a Master's of Education with a focus on Learning Disabilities and an Education Specialist degree in Educational Leadership.



### Linnea Hempel De Valdez

#### Southwest High School English As a New Language/Early Adolescence through Young Adulthood

I earned my BA with a major in German and a minor in English from Ripon College, Ripon, WI. After graduation, I moved to Bonn,

Germany and taught linguistics and an exciting unit on the American suffragists in the English Department at the University of Bonn. It was a fabulous first teaching experience, which led to my decision to return home and earn my Masters in Education in Second Languages and Cultures from the University of Minnesota. I have been teaching in Minneapolis Public Schools for 25 years, 18 of which have been at Southwest High School.

I enjoy collaborating with my colleagues to support ELs' success in core subjects, but, above all, knowing our immigrant students and guiding them to realize their dreams is most rewarding.

### Evangelina Stanslaski

#### Windom Dual Immersion School English As A New Language/Early and Middle Childhood.

My name is Evangelina Stanslaski. I teach at Windom Dual Immersion School in Minneapolis. I grew up in Mexico. I graduated from college with a B.S. in Education, a K-5 Elementary, and a 6-8 Math license. I also hold a license in Bilingual Education. I have been employed by Minneapolis Public Schools since 1998, performing at different capacities and as a teacher since 2004.



Teaching has been a very rewarding career.

As a teacher for over 10 years, I have found that every student has the potential to learn. That learning can be maximized if given a safe, caring, and stimulating classroom environment where students, teachers, and parents become equal partners in teaching and learning. In addition to the reward of seeing students learn and grow, teaching has provided me with an opportunity to continually learn as well. Learning from parents, colleagues, the community, and students, has really helped me to grow professionally and as a person..

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Nicholas Albee, a senior at Andover High School, stands at one of the new standing desks in Richard Wilkie's social studies class. Albee said he prefers the standing desks and would like to see more classrooms offer them.

#### Anoka-Hennepin School District

Richard Wilkie wasn't looking to create a grand experiment when he added a handful of standing desks to his social studies classroom at Andover High School (AndHS). He just thought it might be interesting to try something different.

"I just wanted a different type of stimulus for my classroom," he said. "I will say this: You're not falling asleep in a stand-up desk."

Wilkie, who has been teaching for 27 years, said he read several articles last year by teachers who had alternative classroom settings and was intrigued by the idea.

"I think it gets repetitious moving from

## Andover High School Gets Innovative; Changes Up Classroom with Standing Desks

room to room and sitting in a desk all day," said Wilkie, who originally considered replacing desks with bean bag chairs because they would be "just different enough" on a daily basis to put students in a different mindset when they walk in.

"I also thought it would make it easier for doing different group interactions we have in class," he said.

However bean bag chairs come with their own set of issues, and soon after Wilkie began researching alternative seating, the Anoka-Hennepin School District received a donation of 10 standing desks from the American Heart Association. Five of them ended up in Wilkie's classroom.

AndHS senior Nicholas Albee said he's glad they did. Not only does he prefer the standing desks, he wishes more classrooms had them.

"I think they're awesome," he said. "It's really nice standing in the day when you're mostly sitting. I like moving around a little bit. There are some days when I don't want to stand, but those days are very rare."

Reactions from other students have been mixed, Wilkie said. Some go directly to the standing desks, including one student who likes that they put her directly at eye level with the screen during presentations so she doesn't have to crane her neck. Others still prefer sitting in one of the 30 regular desks.

AndHS Principal Becky Brodeur said the students who do like them say they help keep them more focused and make them less likely to zone out because their bodies are more engaged. And when you're sitting for six hours a day, it's nice to have options, she said. "I

think it's good to have the flexibility to be able to choose what desk works best for them," she said.

Feedback from parents has been universally positive, Wilkie said. "Some of them have them in their workplace, and they really appreciate them," he said.

Wilkie said he wasn't looking for hard data on the desks to see if they made students perform better or if they helped improve test scores.

"I was thinking about it more just for engagement, because I really feel like when you sit it's more relaxing. And I don't know if it's healthy to sit for six hours a day," he said. "I don't know if standing in all their classes would be good either, so I think some variety is good."

But the benefits of standing desks do have some data to back them up: According to studies by Texas A&M University, standing desks appear to have positive impacts on both childhood obesity and student engagement.

The desks stand on four wheels and are adjustable to a variety of heights. They come equipped with a hook for backpacks, slots to

hold books, and even a drink holder.

"They're really nice. They move around easily, they raise up and down, they're well built," Wilkie said. "They do lower to the point where you could put a chair in front of them, too, so if someone had to sit for some reason they still could."

At \$500 apiece, they aren't cheap, Brodeur said. But she is keeping an eye out for grants that may help secure some more in the future.

"I'd like to see them in more classrooms," she said.

Wilkie said he'd like to eventually have his entire classroom full of standing desks.

"I'm anxious to see what my room would look like with all stand-up desks in here," he said. "I would be in favor of having every student in a stand-up desk if I could."

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From the *Teaching Today MN™* Educational Blog  
[teachingtodaymn.wordpress.com](http://teachingtodaymn.wordpress.com)

### Giving Students Space to Learn

"Giving Students Space to Learn", the theme for the Dream Flight USA STEM Shuttle, is in a sense a description of what the shuttle program is all about. The 45-foot-long converted motor coach, designed on the outside to spur the imaginations of space travel, is in reality a mobile classroom. The mission of the Dream Flight USA Foundation is simple: To motivate students to learn.

### Ideas to help students find their "girl power"

Fourth-grade teacher Lindsey Petlak writes in this blog post about an after-school club she developed to help girls boost their confidence and explore their "girl power." Using "Alice in Wonderland" as a theme, she describes activities that helped her students explore friendships and express feelings.

## 2016 Science And Mathematics

### Principal of the Year Continued from Page 1

a priority. Our goal is for every student to see themselves as a scientist and a mathematician."

In addition to the impact on the staff, Isanti Intermediate and School for All Seasons students have greatly benefited from Principal Ziebarth's efforts. In 2014, the percent of SFAS 5th graders scoring at the proficient level on the MCA science test increased by 15% from the previous year. "A strong background in science and mathematics allows our students to be better prepared for the jobs that await them in the future," said Ziebarth. "The problem-solving and critical thinking that is involved in math and science are essential skills for success in this century. Both subjects are an important part of our lives!"

Ziebarth summed up his emphasis of science and math in his schools by saying, "Keeping the natural curiosity children have

about the world around them alive and well is essential. Making math and science more meaningful, and engaging by integrating it throughout the curriculum is an important step in helping us achieve this. I want all students in Minnesota to be good at math and science! A growth mindset is important!"

As the 2016 Science and Mathematics Elementary Principal of the Year, Ziebarth was recognized during the MESPA Institute Principal Honors Celebration on Thursday, February 4, 2016, in Bloomington, MN.

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# Employing Social Media in Teaching

## Social Media to Promote Art

Jessica McMahon

Prior Lake-Savage Area Schools

Tasha Guswiler, the art teacher at Glendale Elementary, sees inspiration everywhere. Her artist's eye brought her to start using and sharing through social media. Today she excitedly tells me about a link she found on Twitter. The dancer Misty Copeland recreated images from the impressionist Edgar Degas. "I'm going to share those photos with my classes later today." All this, from a quick glance at Twitter.

That's what Guswiler loves about social media: it's quick and easy to get information out; everything is right there. Guswiler made her learning goal to use Instagram and Twitter to post student work this year. She's an expert social media user for social reasons, but she wanted to expand her use at school. Guswiler, who posts as @mrsuslovesart on Instagram and Twitter, tries to post at least once a week. She found that it was hard to keep track of which students were on the Do Not Photograph list, so she only posts pictures of kids' work, rather than the kids themselves. A glance at her feed shows colorful images that show the care that students take in her class.

Currently, her Instagram account is mostly followed by former students, and the Twitter account is mostly Prior Lake-Savage staff. A future goal is to get more parents to follow her. She'd love for the student work to be seen by families of those that created it.

Social media are not a big time commitments, but it does take mindfulness. You have to think about posting regularly. By posting to Instagram, you can easily link to Twitter as well.

Her advice to those who are new to Instagram is to get out and take tons of pictures, from different viewpoints. By taking many pictures, you can figure out what you like best, and post only that. She also recommends getting out of your comfort zone. She managed to post a selfie with the new superintendent of Prior Lake-Savage Area Schools, Dr. Teri Staloch, the first time she met her. That might not have been possible without a bit of bravery. Dr. Staloch still remembers Guswiler, and stops by her classroom whenever she can. "Social media is a great way to make friends and connections" states Guswiler.

## Using Twitter in American Government

Teacher Alan Andersen is trying to meet the students where they're at. High school students use social media without even having to think about it. It's their natural place to go to when sharing information and connecting with others. Andersen decided Twitter would be a fun way to increase student engagement with course content.

Andersen has begun to use Twitter in his American Government class. It gives a chance for students to connect with what others are thinking. It started with the State of the Union (SOTU) address in January. Students watched a recording of the SOTU during class while



playing SOTU Bingo. Students filled in a bingo board with phrases they thought they'd hear from the president, and marked them off if they heard them. Andersen decided to add Twitter into the mix. Students were able to tweet their opinions about what they were hearing, giving them a voice in what they heard.

The interest in Twitter has continued. Students used it to help decide which presidential candidate most closely matches their viewpoint. They took a CNN Matchmaker quiz to help determine which candidate fits with student beliefs, then researched that candidate in more depth. Students then tweeted out about issues they agree with, using the hashtag #PLSASgov. Some students didn't seem very

surprised with the results, while others didn't agree with the candidate chosen for them. It gave all students a great way to think about their own set of values, and how those align with the candidates.

As the year progresses, Andersen hopes to use Twitter to pull in students and make the course content come alive for his students. Watch the hashtag #PLSASgov to see what's happening.

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# Reward and Celebration at District 191! Continued from Page 1

intervention or enrichment based on learning needs of students.

"As a result in math, for example, many grade levels were able to accomplish the goal of 100% of the students making academic growth and 80% of the grade level being 80% proficient or higher on several math units," he said.

"Staff members here go above and beyond for our students and families," Nepsund said. "This recognition verifies that what we've been doing is making a difference. Our focus continues to be on success for all students."

## State commissioner tours Gideon Pond in recognition of Reward School status

Strong instructional strategies and a school-wide focus on student success are evident at Gideon Pond Elementary School in Burnsville, according to Commissioner Brenda Cassellius of the Minnesota Department of Education (MDE) who visited the school on Jan. 5.

She was there to recognize the school for being a Reward School, among the top 15

percent of Minnesota schools that qualify for federal Title 1 funding.

This year, 119 schools earned the Reward School designation based on results of the Multiple Measurements Rating (MMR), the state's measurement of school performance. Only 14 schools — including Gideon Pond — have achieved that designation for a fifth consecutive time.

In her visits to Reward Schools, Cassellius

has found that Reward Schools share similarities. For example, relationships are strong between staff members and students and their families. All adults in the schools feel like every student is theirs so they feel responsible and work together to support the success of every student. Most Reward Schools also have Positive Behavioral Intervention and Supports (PBIS) in place. The program sets clear schoolwide expectations for behavior and creates a respectful and supportive

climate that positively impacts student achievement.

"It became clear in her visits that Gideon Pond displays these Reward School characteristics like strong relationships and PBIS," said Principal Chris Bellmont. "Our students and staff members can be proud of the consistent success they have achieved for the past five years that makes our school a leader in Minnesota."

Cassellius is encouraging other schools in the state to tour Reward Schools to see the strategies that make them so successful.

While at Gideon Pond, Cassellius met with a group of students and also with instructional staff members. Three students took her on a tour of the school that includes visits to classrooms, the media center and the lunchroom.

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# The Students Are Coming

## Fergus Falls and White Bear Lake High Schools Show a Renewed Commitment to a Manufacturing Curriculum

By Tom Mason

Manufacturers who worry about where they are going to find the next generation of skilled employees, might well look to Fergus Falls and White Bear Lake for an idea. The two school districts have unveiled ambitious high school programs designed to help students think about careers in manufacturing.



### White Bear Lake

White Bear Lake's two senior high school campuses this fall featured tech classes with \$250,000 in manufacturing-related equipment thanks to a grant from the Greater Twin Cities United Way. The grant also includes funds for an outside career counselor for students who spe-

cializes in manufacturing-related advice and help students reach out to local manufacturers.

Students are using the equipment in a two-semester course called Manufacturing and Applied Engineering. A later offering will be Precision Manufacturing. Both will be taught by long-time tech instructor Delroy Nyren, a tireless advocate for expanding tech education who is

largely credited with building a coalition of local business partners who made the grant possible.

Nyren modestly deflects credit for the grant, but its seeds were likely sown several years ago when he approached the district's then-assistant superintendent David Law (now superintendent at Anoka-Hennepin) for a new tech course, with a startup cost of "something like \$30,000," he remembers.

The district's already tight budget could not absorb the costs, Law told him. But he wanted to hear more about Nyren's vision for broadening White Bear's tech curriculum in ways that would have more relevance to the post high school work market.

"Let's investigate this deeper," he told Nyren. He convened a meeting with a department liaison and curriculum leader and "just let me kind of spill my guts on what I was thinking." In the end he gave me some latitude. Law gave Nyren broad latitude to reach out to local manufacturers and other educators, even encouraging off-campus meetings during the school day.

Nyren used social media to connect with educators nationwide. He found one working model through email conversations with an

educator in Wheeling, Illinois. He then pulled together a 12-person advisory board that included local manufacturers such as Wilson Tool among others.

One participant was Jim Stephan from a 25-year old manufacturing company with about 100 employees. He says part of his early discussions with Nyren included the need for new employees with skills, but also who had the right behavioral competencies.

"We can train most people on anything, but you can't train the BCs, adds Bob DuFresne. "That's got to come from schools and home. That's the first thing that we interview for, is do they have the right BCs, behavioral competencies."

Stephan said he knew Nyren and his partners were hitting the right public chords when they organized a manufacturing symposium on White Bear Lake's south campus in December of 2014.

"We didn't know how many people were going to show up," he says. "There could have been twenty – but there were several hundred.

**Continued on Page 15**

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# The Students Are Coming

## Fergus Falls and White Bear Lake High Schools Show a Renewed Commitment to a Manufacturing Curriculum

By Tom Mason

Manufacturers who worry about where they are going to find the next generation of skilled employees, might well look to Fergus Falls and White Bear Lake for an idea. The two school districts have unveiled ambitious high school programs designed to help students think about careers in manufacturing.



Ribbon cutting ceremony for the new Manufacturing Learning Lab at Fergus Falls High School.

### Fergus Falls

Twenty-five high school sophomores who arrived for the first day of classes in Fergus had signed up for the first year of a STEM curriculum (science, technology, engineering, and mathematics). They are taught, in part, around

a dramatically renovated Manufacturing Learning Lab – the old “shop” -- that includes \$317,000 worth of new welding equipment, 3D printers, and lathes. Their classes include fabrications, physical science, principles of engineering, math and a language arts class, which is tailored to technical reading and

writing.

The lab has already proven to be the envy of teachers and school board members for a variety of reasons, but perhaps mostly because the whole project was funded privately.

The idea of the Lab was conceived about 18 months ago when local manufacturers Evan Westra and Mike Westergard formed a working group designed to find solutions to the worsening skills gap that threatened their ability to compete

“It’s tough to find people,” Westra says. “My motivation is to get young people to be able to go into the trades.”

They knew that the state of the shop at Fergus Falls High School at the time gave students exactly the wrong impression of modern manufacturing. The large dimly lit shop contained equipment that had been accumulating dirt and grime since it was first acquired in the 1960s.

Westra’s first inclination was to get his group to volunteer to help re-paint and clean up the facility. “The plan was to see if we can get some people together, raise a couple

of bucks, and basically do a 5S project at the school.”

He and Westergard pitched their idea at their local Rotary and “their answer was basically ‘no.’” We don’t want to paint, they said, but what do we really want to do?

At this point fellow Rotarian Kim Embretson got involved. Embretson is a development specialist at a regional arm of the McKnight Foundation. A specialist in fundraising more than manufacturing technology, he concluded the shop needed more than a paint job.

“Let’s not just spruce it up,” he said. “Let’s do something that would ‘wow’ the kids. More than just providing some technical guidance, he thought the facility should inspire students to consider careers in modern manufacturing.”

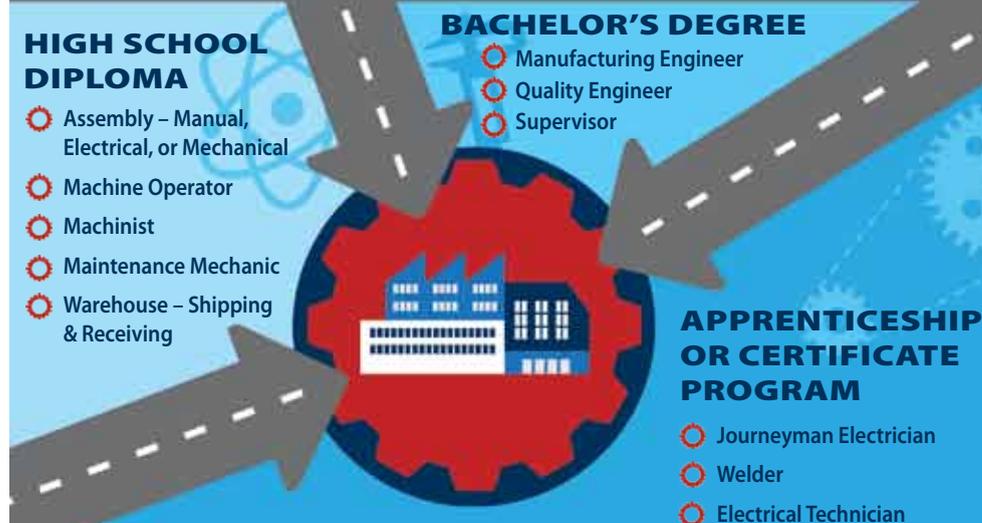
Westergard knew that new equipment would show students that modern manufacturing “isn’t working in grease and dirt, and dingy conditions. It is pretty modern and cutting edge, and a lot it is computer based.”

Continued on Page 15

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# Apple Valley High School's Fab Lab

Jim Lynch  
E3 STEM Program Manager  
Apple Valley High School

Envision an old high school woods workshop newly renovated to house a high tech lab that includes 3D printers, laser engravers, CNC routers, CNC plasma cutters and more. This sleek new design space where students will imagine new inventions and products has been outfitted with a large Samsung touchscreen display, a state of the art audio-visual system and more. It is just missing one key ingredient, furniture! This is where we found ourselves in the spring of 2015 with our new Fabrication (Fab) Lab at Apple Valley High School in Apple Valley Minnesota. It was at this point that engineering & technology instructor Kerry Blaine asked the question “*Why in the world would we buy furniture when we can build it in our new lab?*” That one really good question sparked a series of actions leading the production of student designed tables.

This is the story of the evolution from that initial question to 12 new fab lab student design tables in our fab lab. I am the Program Manager for a federally funded STEM Grant at Apple Valley High School called E3 STEM. One core element of this grant is to provide students engagement with

employers in STEM fields. We wanted to ensure that the furnishings in our new fab lab matched our desired 21st design vision so I contacted one of our grant partner companies to support the project. This company is well known for this creative and innovative trade show exhibits. They agreed to work with a group of our grant students to design the tables and other components of the lab furnishings. Four AVHS seniors jumped at the opportunity to work with the company's designers and engineers to research and design these new tables. They also worked in coordination with engineering and technology instructor Kerry Blaine at the high school. This group of seniors met with the designer team multiple times in their design studios to undergo the process of designing the tables. At the end of that design phase, they invited all of us to their facilities to have the students perform a design reveal and review. It was an outstanding learning opportunity for these young men. The group provided them with critical feedback which they then used to complete a final design.

This design group of seniors then graduated so we recruited another group of eight grant students to work with AVHS staff and members of the engineering team to convert the design drawings to CAD models which



could then be used to create the parts on our new CNC router. Once the CAD modeling was complete, the students were guided through a series of prototype iterations before landing on a workable final version. Kerry Blaine then helped the group develop a production line in our fab lab and woods workshop to manufacture the new fab lab tables. Over the course of about 4 weeks, the

students successfully produced 12 student design tables that are now part of our fab lab.

This project provided a tremendous amount of learning for our students. “*The students had an opportunity to see the design and manufacturing process all the way through from concept to product.*” according to Kerry

Continued on Page 15

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# Apple Valley Middle School's 'Fab Lab' Built to Engineer Better Students



Valley Middle School's four Afinia 3D Printers

*Christopher Magan, Pioneer Press*

Valley Middle School eighth-grader Jarett Huard manipulated water-filled syringes attached to hoses that served as a hydraulic system for a mechanical arm he built out of wood, cardboard, plastic and hot glue.

The Apple Valley student's goal was to pick up and move a small disc with his creation. He used high-tech tools such as a three-dimensional printer, laser etcher and vinyl cutter to make parts for the robotic tool.

"It's my favorite class," Huard said. "If I could do it all day, I would."

This isn't your father's woodshop or even your older sister's "tech-ed" class.

Valley Middle School celebrated the opening of a fabrication lab back in November, 2014. The lab pairs computers and precision tools, allowing students to learn advanced manufacturing skills. There are even a few drills and band saws around to complement the digital age.

For Huard, the so-called "Fab Lab" reinforced his desire to study engineering in high school and college.

"I think it's a privilege," he said of working in the lab. "It's something everyone should have a chance to do. It helps develop real world skills."

The Fab Lab is part of the Rosemount-Apple Valley-Eagan school district's effort to encourage collaborative learning and creative

problem solving across its elementary, middle and high schools. All schools in the district have a growing focus on STEM education, short for science, technology, engineering and math that encourages project-based learning and student exploration.

"These are things that are great for all learners," said Cathy Kindem, who coordinates STEM and magnet programs for the district.

The Fab Lab concept was developed at the Massachusetts Institute of Technology, and versions have popped up in a handful of Twin Cities schools, including Mahtomedi and Prior Lake. Valley Middle School leaders believe their lab was one of the region's first at the middle school level that is open to every student.

Principal Dave McKeag said all of the school's roughly 800 students will use the lab, and not just in math and science classes but during their English, art and communications studies.

"It's not just about making little engineers," he said. "It's about making better thinkers and better collaborators."

Total cost of the lab was about \$100,000, including the high-tech tools that were funded through a partnership with BTD Manufactur-

## BTD Sponsors Middle-School Fabrication Lab

BTD understands that ensuring a strong future for the next generation of American manufacturing begins in the classroom. This is why we're proud to have sponsored the building of a fabrication lab for Valley Middle School in Apple Valley, Minn. Known as the "Fab Lab," it features a variety of equipment and tools for the school's 870 students to use. Providing students with the opportunity to get hands-on experience with tools like 3D printers and vinyl cutters not only helps them explore their creativity, but also foster a better understanding of how physical goods are produced.

The school is going beyond utilizing the Fab Lab for just shop classes, too, with teachers from numerous departments including the fabrication lab in their lesson plans. This enthusiasm is exciting not only for the students and educators, but for us as well.

Continued on Page 15



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## White Bear Lake Continued from Page 10



There were several hundred people who showed up. Students were standing up asking questions about manufacturing as a career, and parents were there asking about manufacturing as a career for their kids.

Sara Paul, the district's current assistant superintendent, says the educational context for the grant is "not about a class, it's about a pathway. How do we find that sweet spot of helping kids throw the door open to all the opportunities out there for them? How do we begin designing our system to make sure that students are prepared for livable wage jobs that are out there?"

The curriculum has been designed, she says, to give students exposure to manufacturing, to deepen their understanding of possibilities within the industry, and then to help find an internship that shows them a fit to their skills and interests.

"Bridging the gap to employment is a new way of capitalizing on the gift we have," she says. "Industry partners that really want to provide lots of opportunities for students all the way from the very beginning of that exposure through the deeper experiences."

Beyond just the actual skills of using equip-

ment, there are a lot of things that we are learning from our industry partners about what essential skills are needed for the different types of jobs available in manufacturing, so that we really are setting our students up for success."

A key liaison in those relationships is Rich Wessels, the career navigator also underwritten by the grant who began working with district students in February. Wessels is provided by an outside workforce development company. One of his responsibilities, according to Nyren, is to help arrange job shadowing and internships for students with local manufacturers.

So what's next for White Bear Lake? Are there more grants in its future?

"I haven't asked that question, Nyren says. "I'm kind of just basking in the moment. This is something that doesn't happen every day.

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## Valley Middle School's 'Fab Lab'

Continued from Page 14

ing in Lakeville. These tools include:

- A computer-controlled laser-cutter, for press-fit assembly of 3D structures from 2D parts
- A vinyl cutter, for making various masks and adhesive applications
- A larger (4'x8") numerically-controlled milling machine, for making furniture- (and house-) sized parts
- 3D Affinia Printers, for creating prototypes and testing designs before they make it to the production environment

BTD President Paul Gintner said the Fab Lab was an easy project for his company to support because it will help develop workers

with skills that businesses such as his need.

"When I walked into the lab it felt like a little BTD," Gintner said.

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[www.twincities.com/2014/11/22/apple-valley-middle-schools-fab-lab-built-to-engineer-better-students](http://www.twincities.com/2014/11/22/apple-valley-middle-schools-fab-lab-built-to-engineer-better-students)

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## Fergus Falls Continued from Page 12

The working group, which now included community leaders as well, wanted to think big. They approached Jim Donahue and Dennis Wutzke, two veteran technology teachers at the high school and asked them for a wish list of what they might need to get it done.

They came back with a plan to spend \$10,000 for upgrades.

"They laughed us out of the room," Wutzke remembers. They said, really, what do you need?

Westra concluded the two teachers had likely had other proposals thwarted in the past by ever-tightening school budgets.

After several more meetings, the two teachers came back with a list of equipment that cost something close to \$350,000. Their wish list included an array of CNC welding equipment in addition to plans to clean and repaint the facility, installing epoxy flooring, a new exhaust system, and new lighting.

With Embretson at the helm of the fundraising, the money rolled in with impressive speed. The final tab for the project came in at \$317,000. He added that money wasn't the only contribution.

Local manufacturers volunteered to loan

their tech people to set up the machines, and help show the students how they work.

"We're lucky the manufacturing industry leaders that helped spearhead this project have directed us toward these Haas milling machines because they're using them in their facilities. We're going to have excellent resources to have people come in, I think, and show us some ways the students can get on these pieces of equipment," Donahue said.

The teachers are still playing with the curriculum, like how to get first-year students familiar with CNC equipment in just 50-minute increments.

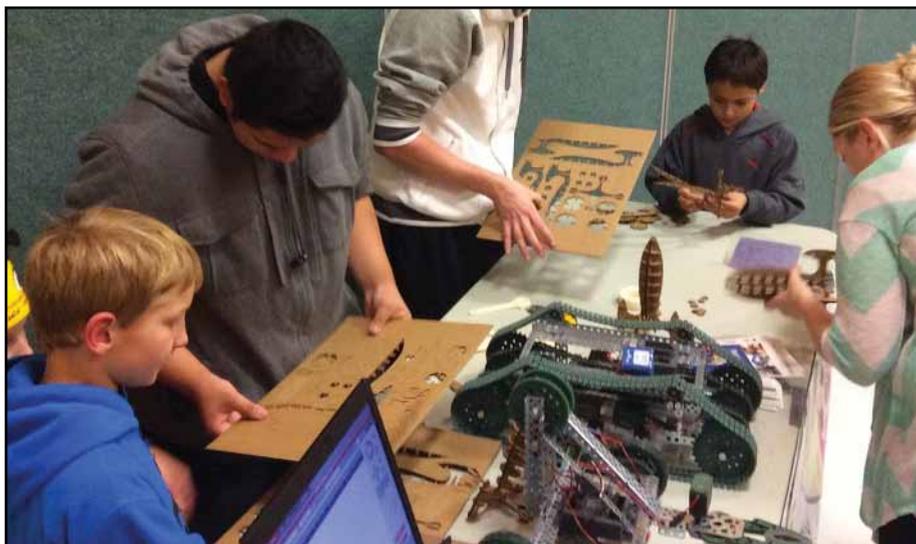
But the bigger accomplishment, the teachers agree, is that they can now show students and parents the possibilities in manufacturing. "It's exciting and new every day. I think it's our job to make sure students know that and understand that it's not what it was even 10 years ago," Wutzke says.

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## Apple Valley High School's 'Fab Lab'

Continued from Page 13



Blaine. Through the process, a few of the students even developed leadership skills and took on project management roles under the guidance and supervision of their instructor Mr. Blaine. One of these students grew so much in the process that he was recognized for his leadership skills by being elected captain of our FIRST Robotics team. Other groups of grant students are now doing other collaborative internships with our corporate grant partners based upon the structure of this model. Apple Valley High School is leading the way in developing the future of teaching

and learning in the 21st century through its creative collaboration with its many corporate partners. Many more Apple Valley Eagles will soar into their futures thanks to these relevant learning opportunities directly linked to the real world.

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# Technology, Team Effort Remove Barriers to Learning for 7th Grader



Edina Public Schools

The snoring dog is the first clue that this is not an ordinary 7th grade classroom. It's the sunroom at Sophia Doebbert's home, which is her classroom for about half of the school year. It looks like mission control, with Sophia at the center of an arc of computer screens, her motorized wheelchair temporarily in "park." Winston, the dog, is sleeping noisily on her lap, but Sophia is alert and working hard.

Creating equal access to educational

opportunities means adapting classrooms and processes to remove barriers. The goal is that all students can participate to their fullest ability and achieve to their highest potential. For Sophia, the effort is broad, including many district staff members, specialized technology and fine-tuned, daily coordination.

"I'm smart and do not have a cognitive disability," said Sophia. She uses eye-gaze technology on a Tobii computer, typing her response to questions by using her eyes to

select each letter. Sophia was born with spinal muscular atrophy (SMA), a genetic disorder that affects the control of muscle movement. The loss of nerve cells in the spinal cord and brainstem leads to weakness and wasting of muscles. It contributes to having a fragile immune system, which is why Sophia spends flu and cold season, working from her home base. What SMA does not affect, however, is intellectual abilities.

On this day, Sophia is attending her Valley View classes from home. But via webcam, she is alongside her classmates in Jane Andrews' classroom working on poetry "stations." She is writing an acrostic poem, where she chooses a word that begins with each of the letters of her name that describes her. She selects each letter on a keyboard that appears on the monitor, opens a new windows to grab a photo for her poem, and a "tool box" to crop the photo, all literally in the blink of an eye. S = sophisticated.

"I like going to school and the communicator lets me talk to my teachers and classmates," Sophia said. "I use it for group work and for giving book reports." Before she received her first Tobii in fifth grade, she had to rely on facial expressions and her parents or nurses to help others understand her.

## Team Sophia

While Sophia takes care of the hard work and creativity pertaining to her academics, Team Sophia paves the way so that she can be engaged with classmates and teachers and so her learning can be as independent as possible. Paraprofessional Margi Zander is at Sophia's right side, positioning a laptop with a webcam so that Sophia can see and hear the activities in each of her classes, and they can see her. They know her because she was able to be in the classroom until mid-November this year, thanks to mild weather and a late flu season. Paraprofessional Nick Westcott is in the classroom at Valley View, adjusting the laptop there. Sophia's teachers coordinate with Zander to be sure she has the lesson plan and knows what the class will be doing each day.

Emily Voelker, special services case manager, coordinates with teachers and helps ensure that Sophia does not get eye-fatigue by sometimes adapting a project or test so that she can take it orally or in some way not reliant on eye-gaze technology. The district's assistive technology specialist, helped secure just the right kinds of technology to match Sophia's needs and capabilities to her academic work.

Continued on Page 17

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## Removing Barriers to Learning Continued from Page 16

Also supporting Sophia are physical therapist Jan Dahl, and Kari Cahn speech/language pathologist, who has helped develop Sophia's use of the Tobii. Valley View school nurse Colleen Ziebol is always on the lookout for an outbreak of flu that signals the beginning of Sophia's homeschooling season, and nurse Amy Runion is with Sophia on days when she can be in class at Valley View. She is a frequent visitor when school happens from home. Sue Schmidt, district-wide physical impairment/health disabilities consultant, makes a weekly visit to Sophia's home to be sure everything is running smoothly. District office administration offers assistance as the support system surround Sophia is tweaked each year.

Sophia makes the most of everyone's efforts by being a good student who is very engaged in her schoolwork and academically on par with her classmates. Like any middle schooler, she has definite likes and dislikes. "I liked looking up Lucretia Mott for social studies," Sophia said, the Tobii, which she has named Katie. "I enjoyed reading about who she was and the historical story of her life. I still love looking stuff up and research." She likes to reading, naming a smaller Tobii device Anne for Anne of Green Gables, and she enjoys art and uses computer programs to draw and paint. "I drew a picture called

'Dark Summer Night with a Light,' she said, "because I remembered how the sky looked one night when I was on vacation with my parents." Math, on the other hand, is the work she is often trying to negotiate with her mom to get out of.

### Sophia and 'Speedster' perform

Although Sophia describes herself as patient that does not necessarily apply to her driving. She calls her motorized wheelchair "Speedster" and she looks anything but patient zooming down the hallway at Valley View, headlights flashing, with her nurse and para stepping quickly to keep up. But Sophia and Speedster look altogether different at ballet class, an activity she has been involved in since she was seven. Choreographed turns and twirls coordinated with able-bodied dancers combine to make an amazing dance experience for Sophia and for audience members.

"She is not afraid of the public eye," said Andrea Doebbert, Sophia's mom, as she listed a number of organizations that have used photos of Sophia modeling equipment. Sophia is also happy to show a video of a dance that she and a family friend performed at a talent show during their family vacation.

Which brings us to the "home team."

When she is schooling from home, Sophia's mom is on hand for medical needs that may arise. "The academic complexity and all the technical stuff is beyond me," she said. She describes her role as being in the "background," but her words of encouragement and attention to Sophia's comfort as she pops in and out during the day are clearly important to her daughter's success in school. Doug, Sophia's dad who works from home, is also able to assist with a lift if needed. Younger sisters Evie and Lila make for a very lively household, along with Frankie, the fat cat, and Winston, the snoring dog, one of which is typically cuddled up on Sophia's lap while she works away on school assignments.

After school, Sophia connects with friends online, particularly those she has met with the same type of muscular disorder. They get together on a penguin game where they visit one another's igloos, dress their characters, and go places like the library or soda shop. When Sophia is at Valley View, she has many friends who gather around as evidenced in several strips of photos from last fall's Halloween party. Andrea commented that having a wheelchair-accessible photo booth made a big difference in helping Sophia feel included. Many of her friends are those she has known since her days at Countryside Elementary, including a boy who waits faith-

fully by the school door each morning to hold it open for her.

Community service is also a part of Sophia's life, as it is with many of her peers. A week ago she donated 15 inches of her thick, dark hair to Locks of Love. "I had told her about Locks of Love a long time ago," Andrea said. "When she decided she wanted to cut her hair, it was harder on me than it was on her!"

Sophia says she is a typical teenager. She loves playing computer games, the latest Star Wars movie (especially the character Kylo Ren), and Taylor Swift, whom she got to meet after a concert once. Sophia's goal is to someday work in a technology-related field. "I am a quick learner of technology," she said. Those around her say Sophia is resilient, intuitive, joyful and funny, and for that reason they all enthusiastically attack anything that gets in the way of her success.

"She is our inspiration," said Andrea, "we are just trying to keep up with her!"

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**Website:** [www.bridges4kids.org](http://www.bridges4kids.org)

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**Website:** [www.colorincolorado.org/guides-toolkits](http://www.colorincolorado.org/guides-toolkits)

### The Family Center on Technology and Disability

A resource designed to support organizations and programs that work with families of children and youth with disabilities. We offer a range of information and services on the subject of assistive and instructional technologies.

**Website:** [www.ctdinstitute.org/](http://www.ctdinstitute.org/)

### Auties

Website for the first global employment service by people on the spectrum for all people on the autistic spectrum.

**Website:** [www.auties.org/](http://www.auties.org/)

### First Signs, Inc.

A non-profit organization dedicated to educating parents and physicians about the early warning signs of autism and other developmental disorders in early childhood.

**Website:** [www.firstsigns.org/](http://www.firstsigns.org/)

### Between the Lions

Between the Lions is an award-winning PBS children's series designed to help young children learn to read. The Web site includes games and materials from the show, including a literacy curriculum aimed at children ages 4-7.

**Website:** [pbskids.org/lions/](http://pbskids.org/lions/)

### Art of Making Life Easier - Tying Shoes

Apparently most of us have been doing it the wrong way all of our lives. No, the incorrect way is not the bunny ear technique. Great tie method for kids with sensory issues. The laces do not touch your ankles. From Thriving in School

**Website:** [hosmerot.blogspot.com/2011/05/art-of-making-life-easier-tying-shoes.html?spref=bl](http://hosmerot.blogspot.com/2011/05/art-of-making-life-easier-tying-shoes.html?spref=bl)

### Best Practice of Inclusive Services: The Value of Inclusion

Includes definition of inclusion, overcoming barriers, six step process and best practices of inclusive services, From the National Center on Physical Activity and Disability

**Website:** [www.nchpad.org/341/1999/Best-Practice-of-Inclusive-Services-The-Value-of-Inclusion](http://www.nchpad.org/341/1999/Best-Practice-of-Inclusive-Services-The-Value-of-Inclusion)

### Curb Cuts - Hands-free Computer Access Video

Video from Curb Cuts, a California TV show about assistive technology highlights hands free computer access options with particular attention paid to an eye gaze system, an infrared head pointing device and a mouth operated joystick.

**Website:** [www.youtube.com/watch?v=u35z3Vpobow](http://www.youtube.com/watch?v=u35z3Vpobow)

### 12 Tips to Setting up an Autism Classroom

Checklist and ideas for keeping a structured classroom, using visuals, schedules, reducing distractions and more.

**Website:** [kendrik2.wordpress.com/2007/10/10/12-tips-to-setting-up-an-autism-classroom](http://kendrik2.wordpress.com/2007/10/10/12-tips-to-setting-up-an-autism-classroom)

# Metropolitan Airports Commission Helps Families 'Navigate Autism'



Many families who have children with autism avoid flying because they are unsure how their children will respond. In an effort to ease the anxiety associated with an airport visit and flying, the Metropolitan Airports Commission (MAC), Fraser and the Autism Society of Minnesota (AuSM) have teamed up to create the Navigating Autism program. The program includes monthly events, all designed specifically for individuals with autism, that guide families through the steps of an airport visit, from walking in the door to finding their seats on a plane.

During the Navigating Autism event, families will have the opportunity to familiarize themselves with airport and travel procedures. Children will practice traveling the airport, obtain a security pass, go through screening at a TSA security checkpoint and walk through the airport to a boarding gate. To culminate their experience, children and their families will board an aircraft and find their seats. Please note that the aircraft will remain on the ground.

In addition to preparing families for a positive travel experience, the Navigating

Autism program also will provide a valuable training and awareness opportunity for airport, airline and TSA personnel to learn how to accommodate children with autism and other special needs.

Families are invited to participate in any of the Navigating Autism event sessions, scheduled for the first Saturday of every month. Join MAC, Fraser and AuSM for a fun, safe practice run, while learning from airport personnel what works and what doesn't work to make your travel experience efficient and less stressful.

## A WOW experience for a participating family:

*We were "wowed" by the Navigating Autism program on so many levels. It is one of the most detailed, organized programs that I have ever attended. The details provided from the beginning were helpful, the check in was so organized, and everything about it was so well thought out. Every person that we had contact with was informed, kind, and helpful.*

*Our son really struggles with new experiences and I feel like the pace was set to what he was comfortable with and the explanations along the way were great. I didn't expect to experience so many things about the airport (actually riding on the tram, seeing the obser-*

*vation deck, locating the "quiet" places around the airport) and all of the details made us so much more confident about traveling in the future. The fact that they even offered water and snacks before we "boarded" was extremely generous after all the walking around. To experience the additional snacks and juice while on the plane was also appreciated.*

*The pilot and flight staff were all so welcoming, professional, and knowledgeable. I really appreciated the pilot's tips for traveling with a child on the spectrum. We don't often get to have "successful" outings and our family truly enjoyed it. We learned a lot and had fun doing so. I really compliment the entire team for all of the little things that made this such a great day for us (the visuals, the one-on-one help through security, and all of the things that we probably didn't even realize were happening). We are so appreciative of everyone's time to volunteer at this event and for all of your behind the scenes efforts to make this happen. Thank you again for offering this program and for letting us attend.*

— Sara L.

For more information go to:

[www.ausm.org/navigating-autism.html](http://www.ausm.org/navigating-autism.html)

## A Letter From Stephanie Morales

My name is Stephanie Morales and I am a 13 year old student at M.S.T. I have a 6 year old brother who has been diagnosed with autism. I also have a 9 year old cousin that was also diagnosed with autism. My brother was diagnosed with autism when he was 2 years old. Here are some helpful things that I think everyone should know about children with autism.

- We have to be aware of body language, withdrawal, agitation, or other signs that show something is wrong or when they are having problems interacting with others. If they don't know how to communicate through words.
- You really need to have a lot of patience with them.
- You can't give up on them when you are trying to teach them something. If you do they are going to think or feel like, "why should I try."
- You have to focus on one thing at a time and build on what they can do, rather than what they can't do.

- Try to find out what causes their meltdowns so you can prevent them from happening again.

To me, autism isn't a disability, rather an ability to view things in a different way. If it wasn't for my brother and cousin who were diagnosed with autism, and having the hands on experience of dealing with them and their issues, it has opened my eyes to seeing that they really need people that understand them and their needs. It has encouraged me to want to become a therapist for special needs children. The type of therapist I would like to become is an O.T. or a Speech Therapist. I used to go with my brother to speech therapy to see how they worked with him so that I would know how I could also help him at home. Some of the challenges that children with autism have to deal with are: communicating with others, sensory problems, behavior problems, and interacting with others. I think that this project was a great idea since April is Autism Awareness month. This gives me the opportunity to spread awareness.

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# NAVIGATING MSP AIRPORT



## PRACTICE MAKES PERFECT



Traveling with your special needs child can seem intimidating. Navigating MSP Airport helps ease the anxiety with free, monthly practice runs through the airport.

A partnership between the Metropolitan Airports Commission, the Autism Society of Minnesota, and Fraser, this program will allow you to:

- Experience TSA security
- Explore the terminal
- Board a plane and meet a pilot
- Prepare for takeoff
- Gather helpful tips, information and resources

**FOR MORE INFORMATION,** contact Shelly Lopez at 612-726-5239 or [Shelly.Lopez@mspmac.org](mailto:Shelly.Lopez@mspmac.org).

