CASE STUDY:
EDISON MIDDLE SCHOOL

Prepared by The Meeder Consulting Group with support of the Kern Family Foundation
ABOUT THE CASE STUDY

This case study is one of a series of case studies produced for The STEM Schools Project. The purpose of the STEM Schools Project is to document promising practices in high schools and middle schools that are providing students a STEM-rich experience, drawing upon a high quality implementation of Project Lead The Way’s Pathway To Engineering and/or Biomedical Sciences programs.

The Meeder Consulting Group conducted the site visits, wrote the case studies and final report, and is managing all aspects of The STEM Schools Project. The project is funded through generous support from the Kern Family Foundation based in Waukesha, Wisconsin (www.kffdn.org).

From information collected during each of the nine site visits, the authors prepared detailed, reader-friendly reports describing the schools’ accomplishments, approach to STEM learning, and school improvement strategies. The case studies organize material into three overarching themes related to how schools use PLTW to spur STEM-related learning emerged:

- **Create an Exceptional PLTW Implementation,**
- **Develop a School-wide STEM Culture,** and
- **Implement Related School Improvement Strategies.**

In addition to the case studies, a Final Report will be released that synthesizes key findings from all the case studies and places them in the larger context of STEM education reform. For more information about the STEM Schools Project, visit www.meederconsulting.com.
PART I. INTRODUCTION AND OVERVIEW

SUMMARY

Educators at Edison Middle School in Janesville, Wisconsin, are creating an integrated STEM (Science, Technology, Engineering, and Math) experience for all seventh and eighth grade middle school students by fully integrating Project Lead the Way’s Gateway to Technology (GTT) program with seventh and eighth grade math and science classes and eighth grade technology education (Tech Ed) classes. By supporting the math, science, and Tech Ed teachers in collaborating around developing an integrated STEM experience, rather than offering GTT as a stand-alone program, the school is developing a school culture that emphasizes the value of STEM-related learning for every student. Furthermore, the district is creating a robust pipeline of students who are prepared to further their STEM focus in high school. With strong, sustained district leadership, Edison and the other schools in the Janesville School District are implementing integrated GTT/STEM programs and also re-energizing Project Lead The Way’s (PLTW) Pathway to Engineering (PTE) program at the high school level. The district leadership is also fostering a regional partnership of districts in Rock County that are pursuing related STEM strategies.

PROFILE OF EDISON MIDDLE SCHOOL

Established in 1971, Edison Middle School is one of three middle schools serving the City of Janesville school district in southern Wisconsin. Edison enrolls approximately 670 students in grades six through eight and serves students from both an urban and a suburban geographic area.

Janesville is the county seat of Rock County. As of 2010, its population was approximately 63,000. Mercy Health Systems, the Janesville school system, and Rock County are the three largest employers in Janesville. In 2008, General Motors closed its Janesville assembly plant, a move that marked a significant setback for the local economy.

As of the 2010–2011 school year, approximately 75 percent of Edison students are white, 13 percent are Hispanic, 5 percent are black, 3 percent are Asian, 3 percent are “other,” and less than 1 percent are American Indian/Alaskan. Thirteen percent of students receive special education services. Reflective of the changing community in which Edison students live, the demographics of the school’s population recently experienced a pronounced shift. From 2000 to 2010, the
percentage of Edison students who received Free and Reduced Lunch increased from approximately 27 percent to 59 percent. In addition, the percentage of Hispanic students enrolled at Edison almost doubled between 2006 and 2011.

The Edison leadership team includes Principal Jim Lemire, Assistant Principal Deanne McCarthy, and Academic Learning Coach Steve Pease. Principal Lemire first served as assistant principal for the 2008–2009 school year and then as interim principal for the 2009–2010 school year. He was named principal at the start of the 2010–2011 school year. There are 37 instructional team members and 1.5 guidance counselors on staff at Edison.

**Synopsis of Project Lead the Way Implementation**

Beginning in the fall of 2006, the Janesville District implemented PLTW’s PTE program in all of its high schools. The implementation of PLTW at the high school level occurred after the Superintendents Advisory Council approved the “Initial Proposal,” a proposal required for any new program and that explains the fiscal impact of the program under consideration.

However, after three years of implementation, high school enrollments were relatively low and in some schools, enrollment was dangerously low, particularly in light of budget challenges the district faced with the onset of the national recession.

In response, the Janesville district Career and Technical Education Coordinator Steve Huth recommended that the district pursue the implementation of the PLTW middle school program, Gateway to Technology (GTT), to build a stronger pipeline of students experienced in STEM learning and potentially interested in pursuing engineering-related careers. Because the high school PLTW was already underway, the district did not need to obtain separate approval for the middle school program. In order to secure funding for the middle school implementation of PLTW, Mr. Huth applied for and received a grant in 2009 that was offered through a local private foundation.

Going through the district’s curriculum committee, Mr. Huth and his staff proposed that middle school instructors receive PLTW training. A key piece of this training included a trip to two middle schools in Milwaukee that were already implementing PLTW. At both of these schools, one of which served a high-poverty area, the host staff explained the barriers and opportunities associated with the GTT program.
Upon returning from this visit, the planning team decided that Edison would be the first Janesville middle school to implement GTT because of the wide range of students it serves. (Edison is both the district magnet for the Gifted and Talented program and for special education services.)

In the summer of 2009, several teachers from the three middle schools in Janesville attended PLTW training. From Edison, Andy LaChance (one of the four seventh grade math/science teachers), two Gifted and Talented teachers, and Carl Schenzel (the Tech Ed instructor) attended training for the following GTT modules: Design and Modeling, Automation and Robotics, Science of Technology, and Magic of Electrons. The Milwaukee School of Engineering hosted the training.

Immediately after their training session, Mr. LaChance and Mr. Schenzel began working together to plan how best to fit the PLTW modules into the seventh grade science and the seventh and eighth grade Tech Ed curricula for the 2009–2010 school year. They shared what they learned from the training with their colleagues on the seventh grade math/science team. (Math and science are scheduled together as one back-to-back instructional block in seventh grade. The four members of the math/science team each teach both math and science.) Mr. LaChance noted that “it was easy to align PLTW with the science curriculum right away, and it was easy to ‘sell’ his colleagues” on the value of PLTW.

The seventh grade math/science team and Mr. Schenzel implemented PLTW for the 2009–2010 school year, and Mr. LaChance served as a mentor to his team.

In the summers of 2010 and 2011, four additional seventh grade science/math instructors from Edison attended PLTW training, and Mr. LaChance and Mr. Schenzel received training on additional GTT modules. Principal Lemire and Mr. Huth also attended training. Because the district leadership team envisioned that PLTW programs would be implemented in each of the district’s middle schools and high schools, instructors from the other schools also received PLTW training during this time period. As of the 2011–2012 school year, 18 staff members from across Janesville’s three middle schools had received PLTW training.

As of the 2011–2012 school year, the Edison seventh grade math/science team and the Tech Ed instructor were in their third year of PLTW implementation. As the chart below highlights, in any given year, all seventh grade students participate in PLTW modules through their math/science instructional block and a nine-week unit of their required Technical Education (Tech Ed/CTE) course. (All seventh graders complete an introductory Tech Ed course and have the option of enrolling in Tech Ed as an elective in eighth grade.)
For the 2012–2013 school year, 135 out of 225 eighth graders have elected to enroll in the Tech Ed course, which covers additional GTT modules. This represents an increase from 50 percent participation to 60 percent participation since 2008. (The leadership team stated that PLTW was not implemented in the sixth or eighth grade science courses because the modules do not align well with the current state science standards. If new state standards are adopted, the leadership team will revisit this issue.)

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<tr>
<th>Gateway to Technology Modules Taught at Edison Middle School</th>
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<tr>
<td><strong>GTT Module</strong></td>
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<td>Science of Technology</td>
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During the initial implementation of PLTW, the Janesville School District used local funds and a private grant to cover the costs. During the 2011–2012 school year, each of the middle schools and high schools applied for and received $15,000 through a national PLTW grant. This grant provided an additional $5,000 to each school during the second year of implementation. The district continues to allocate local funds for PLTW-related staff development and technology.

Currently, PLTW courses are offered at the two public high schools in Janesville. The other two middle schools offer PLTW as part of the middle school Tech Ed courses and, as of the 2011–2012 school year, they now implement one PLTW module in seventh grade science as well.

**The STEM Continuum Model**

The working theory of the STEM Schools Project is that there is a natural continuum of integration and connection of STEM education occurring in schools that use Project Lead the Way’s Gateway to Technology (middle schools) or PTE and/or Biomedical Sciences (BMS) programs (high schools). In some schools, PTE and BMS are offered as sequences of courses that offer an excellent learning experience to students, but the courses stand alone and do not connect to other courses that fall under the STEM umbrella. In some schools, teachers—on a case-by-case basis and through individual initiative—inculcate some of the project-based and inquiry-based approaches of PLTW courses into the math and science courses that they teach. Alternatively, they may informally collaborate with colleagues in other content areas to create a smattering of integrated or linked curriculum units. Further along the continuum are schools that are actively and intentionally creating integrated and connected learning between STEM courses, and in some cases with other courses such as English Language Arts and the Social Sciences. In these schools, teachers are actively and consistently collaborating with the support of administrative team members.
The STEM continuum includes the following groupings of strategies:

- **Create an Exceptional PLTW Implementation,**
- **Develop a School-wide STEM Culture,** and
- **Implement Related School Improvement Strategies.**

The remainder of this case study is organized around these groupings, although not every strategy in the continuum will be observed in every case study. If the strategy was not observed during the site visit or subsequent interviews, this fact is noted but should not be construed to reflect negatively on the school that is profiled.

**PART II. STRATEGIES**

**1. CREATE AN EXCEPTIONAL PLTW IMPLEMENTATION**

Through their strategic planning and commitment to the thorough application of PLTW modules, district- and school-level leaders and instructional staff established a successful environment for the exceptional implementation of PLTW at Edison.

**1.1 Building Readiness and Support for PLTW Implementation**

*DISTRICT SUPPORT FOR PLTW IMPLEMENTATION*

Members of the Janesville School District leadership team largely drove the PLTW adoption and implementation process at the high school and middle school levels. District leadership saw value in PLTW’s content and instructional approach. They viewed PLTW as a vehicle for incorporating project-based learning into the Tech Ed curricula while also improving the alignment between Tech Ed and core content areas.

At the middle school level in particular, the leadership team approached the implementation of PLTW as an opportunity to enhance and revise the preexisting science and Tech Ed curricula rather than as an opportunity to offer a stand-alone or drop-in program. Mr. Huth set the expectation that over approximately five years (by 2014) PTLW would become fully incorporated into each school’s curriculum. The decision to fully incorporate PLTW modules into the science
curriculum so that every student participates in PLTW helped to make PLTW sustainable and scalable over time at Edison.

Throughout the Janesville School District and, to some degree, the larger Rock County region, education leaders collaborated to implement PLTW in both middle schools and high schools. They engaged multiple stakeholders from throughout the region in the planning process and guided the instructional staff to assume ownership for identifying how best to weave PLTW in the curriculum.

At the district level, Mr. Huth has played an integral role in initiating and supporting the implementation of PLTW in schools across the district. He initiated the district’s pursuit of the Kern Family Foundation Grant and continues to work closely with middle and high schools to determine how and when PLTW should be implemented at each school.

Mr. Huth coordinates the planning process among the district’s schools and established a structure for collaboration among PLTW teachers from different schools. For example, the Tech Ed teachers from the three middle schools in Janesville communicate regularly, often daily, with each other regarding lesson plans and instructional challenges and successes. Further, he maintains a stream of communication with lead PLTW teachers at each school and serves as a liaison to business partners and postsecondary partners. He also serves on the state’s PLTW committee.

At least twice a year, Mr. Huth conducts informal program and staff evaluations at each of the middle schools. To do this, he observes instructors planning together for a unit, observes in the classroom while the unit instruction is taking place, and speaks to students about their experiences during these observation times. Mr. Huth states he gathers solid insight into how effectively PLTW is being implemented through this informal, walk-through approach.

**PLANNING FOR IMPLEMENTATION AT EDISON**

Edison was the first middle school in the Janesville school district to implement PLTW. The formal planning and collaboration that occurred among the school’s leadership team, the seventh grade math/science team, and the Tech Ed instructor contributed to the successful implementation of PLTW. To determine which PLTW modules to implement and the sequence in which they should be taught, the team evaluated their science curriculum against the PLTW modules to determine which ones aligned most closely with the seventh grade Wisconsin science standards. They identified where there was overlap in objectives, how PLTW could be used in place of previous units and learning activities, and how to sequence the
implementation of PLTW modules over the course of the curricula. As of the 2011–
1012 school year, the instructors began assessing how best to expand the
integration of PLTW modules from primarily being integrated into the science
curriculum to being integrated into seventh grade math curriculum as well.

This instructional team found the collaborative planning process to be
instrumental to the program’s success and to building their comfort level with
teaching the PLTW modules. Team members noted that working as a team helped
to complete “a lot of the legwork” necessary before starting PLTW. According to
team members, their approach to PLTW was, and continues to be, “What can we
do to make this work?”

1.2 Select and Support a Strong PLTW Instructional Team

At the outset, Edison’s leaders agreed to integrate GTT into its math and science
classes. This necessitated bringing together math and science instructors, in
addition to the Tech Ed teachers, in the effort.

The district and school provided extensive planning time during the summer as
well as ongoing time for collaboration during the school year. In August 2009, all
of the educators from the district’s three middle schools who attended the PLTW
training received eight hours of staff development time to plan for PLTW
implementation. They elected to use this time to meet together during two four-
hour workshops. At the school level, the Janesville seventh grade math/science
team members used their 90-minute daily collaborative meeting time to plan how
to integrate PLTW into their unit lessons. In additional summers, PLTW instructors
continued to receive eight hours of planning time that was site based rather than
district based. Both the district-level and school-level collaboration time was
essential to planning the implementation as well as to monitoring and
troubleshooting along the way.

The PLTW instructors at Edison indicate that their primary objective in
implementing PLTW was to provide all students with rich and meaningful learning
experiences. Since its first member received PLTW training, the seventh grade
math/science team has worked to thoroughly embed PLTW modules into the
science curriculum, and it continues to plan for increasing the number of PLTW
modules it will teach as part of the science curriculum and, eventually, the math
curriculum. As members of the school leadership team noted, the teaching staff
“has run with it [PLTW],” and the seventh grade math/science team is constantly
“changing, talking, and adapting” to best meet the needs of students.
Instructional team members note that their collaborative and project-based approach to planning and teaching, which predated the implementation of PLTW, helped to expedite the implementation process. They noted that the team has “always been a hands-on learning group” that uses project-based learning to make concepts relevant for students.

Leadership staff and PLTW instructors state that the organization of the seventh grade team also made the adoption of PLTW modules a fairly smooth process. Before PLTW was implemented, the seventh grade pod had been reorganized into a block schedule format. Math and science are taught by one team of teachers in 90-minute blocks every other day, and Language Arts and social studies are taught by the another team of four teachers in 90-minute blocks. This arrangement supports extensive teacher collaboration and proves valuable for the math and science team to plan instruction together.

1.3 Set Goals for Program Enrollment

In deciding to implement PLTW at Edison, the district and school leadership teams drove the decision on how many students should participate in PLTW. They realized that the full potential of the program would best be realized if two criteria were met:

- Provide all middle school students the opportunity to participate in the program.
- Fully align and integrate the PLTW modules into the existing math, science, and Tech Ed curricula rather than implementing them as stand-alone units.

When Mr. Huth sought to implement PLTW, he and other leadership team members fully intended that the PLTW modules “replace curriculum that currently existed and not add on top” of what already was taught in the preexisting science and Tech Ed curricula. Through this type of implementation, PLTW would “replace, not extend” parts of the curriculum.

As a result of the district and school leadership team’s focus, all seventh grade students at Edison participate in PLTW through their math/science instructional block and their required Tech Ed course. For the 2011–2012 school year, there were 228 seventh grade students in Edison. Approximately 60 percent of eighth grade students, or 135 students out of a total of 225, also elect to enroll in the Tech Ed course, which covers additional PLTW modules.
In the seventh grade science course, the Science and Technology, Energy and the Environment, and the Magic of Electrons PLTW modules are integrated into the curriculum at different points throughout the school year. The Tech Ed course is a mandatory nine-week course for all seventh graders. Part of the PLTW Design and Modeling module is covered in this course, and Mr. Schenzel estimates that approximately 85–90 percent of the nine-week curriculum is from PLTW. The Automation and Robotics module along with part of the Flight and Space and the Design and Modeling modules are covered in the eighth grade Tech Ed elective course.

As a result of Edison’s exceptional approach to implementing PLTW, the leadership team and instructors are creating a large pipeline of students who are well versed in project-based, inquiry-based, and STEM (Science, Technology, Engineering, and Mathematics)-related learning. Although the implementation of PLTW in the middle schools is not primarily a recruitment tool for the high school programs, the leadership team hopes it will strengthen the cadre of students interested in pursuing engineering-related careers.

### 1.4 Reach Out to Prospective PLTW Students

Because PLTW is integrated into the seventh grade curriculum, there is not a need to introduce the program to prospective students before they enroll. However, as of the 2011–2012 school year, it appears that the local high schools for which Edison is a feeder school implement few consistent outreach practices to inform rising ninth graders about the schools’ PLTW offerings. The PLTW instructors at the high school express interest in expanding PLTW but state that there currently is not enough being done to raise student or community awareness about the PTE program.

### 1.5 Reach Out to Local Businesses to Gain and Sustain Support

Initial efforts to garner local business support of and involvement in Edison’s PLTW program are supported by school and district leadership and are still being developed.

To support the implementation of PLTW modules at Edison, Mr. Huth sought out volunteers from local businesses and the community to work in the seventh grade science classroom. Three civil engineers, two male and one female, who work for the City of Janesville currently volunteer approximately two times a week in the fall to help students as they complete the Science of Technology PLTW module. The engineers discuss their jobs with students, provide guidance to students as they complete their PLTW projects on simple machines, and serve as role models.
for students. The engineers stress to students the importance of using critical thinking, communication, project management, and teamwork skills throughout the project. The volunteers commented that over the course of the project, they often observe “confidence building and excitement” as students see their ideas in action.

2. DEVELOP A SCHOOL-WIDE STEM CULTURE

The leadership and instructional teams at Edison are beginning to develop a STEM (Science, Technology, Engineering and Mathematics) culture at the school by engaging all students in PLTW modules and ensuring they experience relevant and linked learning that connects their math, science, and PLTW instruction. Although the implementation of PLTW itself will not singlehandedly cultivate a STEM culture, the way in which Edison’s seventh grade math/science teachers fully integrate PLTW modules into the curriculum, implement purposeful STEM-rich learning experiences on a consistent basis, and purposefully collaborate to provide students with rich learning experiences is a critical starting point to transforming teaching and learning across the school.

2.1 ESTABLISH SHARED GUIDING PRINCIPLES FOR STEM LEARNING

Under this strategy of establishing shared guiding principles for STEM Learning are three related, but distinct sub-strategies: Define STEM Education, Define STEM Literacy, and Develop District-Wide Vision for STEM Learning.

2.1.1 DEFINE STEM EDUCATION

At this time, Edison has not yet established a specific definition for what constitutes STEM education.

2.1.2 DEFINE STEM LITERACY

At this time, neither the school nor the district has developed a set definition of “STEM literacy.” However, Edison does use common based assessments for reading, math, and science that are based on state and national standards. Mr. Huth indicates that these assessments help articulate the key components of STEM learning.
2.1.3 Develop District-wide Vision for STEM Learning

Reflecting discussions occurring at the national and state level, Janesville is beginning to look at STEM learning and the role it should play in the district’s schools. For example, the district is considering the creation of a STEM charter school that would be focused on applied and project-based learning.

Although the implementation of PLTW in the middle and high schools serves as a starting point for a greater focus on STEM learning, Mr. Huth points out that PLTW is not the sole route for spurring wide-scale STEM learning. He states that the district is “not trying to drive enrollment in PLTW per se, but it is trying to drive enrollment in appropriate STEM-related courses...It’s important for students to be involved in applied learning and STEM-related curriculum, but this does not necessarily just mean PLTW.” Rather than just isolating STEM education in PLTW, he indicates that STEM learning can and should occur throughout a wide range of courses and programs that “best serve the students.” Although students may not be pursuing PTE in great numbers at the high school level, they may still be pursuing a STEM-focused education through their pursuit of other math and science courses.

2.2 Implement Innovative STEM Curriculum and Instruction

Under this strategy of implementing innovative STEM curriculum and instruction, there are two related, but distinct sub-strategies: Integrate STEM-Rich Instruction, and Implement Inquiry-based and Project-based Learning Strategies.

2.2.1 Integrate STEM-rich Instruction across Math, Science, and PLTW Courses

For seventh grade students at Edison, their science and PLTW instruction is tightly linked. The seventh grade math/science instructional team fully and purposefully integrates several PLTW modules into the science curriculum and estimates that the modules account for approximately 60 percent of the curriculum they teach.

The level of integration between science and PLTW material is so deep that a classroom observer and most students are not able to differentiate between what is technically PLTW content and what is science content. Integration occurs seamlessly as students move through science and PLTW learning activities interchangeably. For example, students conclude a science unit on simple machines by creating a Rube Goldberg machine (an example of a machine that performs a very simple task in a very complex fashion), which is part of the PLTW
Science of Technology Module. The instructors emphasize that linking their instruction across science and PLTW allows students to better understand the application of the lessons and skills they teach. They also state that students make better connections across these content areas and “see value in [what they learn] in school.”

2.2.2 Implement Inquiry-based and Project-based Learning Strategies

Although most of the integrated STEM instruction and inquiry-based and project-based learning strategies occur in the seventh grade math/science block, the Edison leadership team is actively looking at ways to infuse similar types of learning experiences into the sixth and eighth grade courses.

2.3 Engage Math, Science, and PLTW Teachers in Collaborative Planning and Instruction

The extent to which the seventh grade math/science team at Edison integrates instruction across math, science, and PLTW content is largely dependent on the high level of collaboration and team planning in which its members engage and is also supported by the leadership team’s commitment to providing common planning time.

According to Principal Lemire, the organization of students and teachers makes the middle school model “tailor made to do integration.” Students are organized into two cohorts per grade and take each of their core content courses with their cohort. English and social studies teachers represent one team and math and science teachers represent another team.

The leadership team tries to maximize the potential of this organizational model to spur cross-discipline integration by providing a daily common planning time for each team of teachers. Teachers are required to use this common planning time to meet with their teams at least once a week. The school leadership sets the expectation that teachers are to engage in collaborative planning and “rich conversation” during these meetings. This expectation helps drive the strong collaboration that occurs among the seventh grade math/science team members. Although this team is committed to its instructional approach, the leadership team ensures that its collaboration is formal and has a platform to sustain it over time and through potential staffing changes.
Using the common planning time, the seventh grade math/science team members strategically planned and mapped out how the PLTW modules would align with the science curriculum and replace some of the preexisting curriculum while still addressing the same objectives. Team members state that this “design and build and do” attitude results in an instructional approach that “gets kids thinking outside of the box” and “teaches them to think.” The team’s purposeful planning to identify content overlap allows them to plan lessons and projects that connect and reinforce content across disciplines. The instructors continue to plan collaboratively each week to determine the pace of instruction and specific learning activities to implement. Students seem to appreciate the instruction they receive. One student noted that her science/math block is “more creative than I thought it would be.”

Working as a cohesive unit, the instructional team members find that the “team concept is phenomenal.” They state that together they “think outside of the box and bounce ideas off of each other.” They teach similar lessons, assign the same projects, and use common assessments.

The instructors meet at least once a week for approximately one hour. To strengthen their team, they established team norms and defined the purpose of their team. They also develop an agenda to guide the direction of each meeting. During these meetings, they address their instructional plans, develop shared materials, and divide up various responsibilities.

The leadership team recognizes the strength of the seventh grade math/science team and the impact that their collaborative approach to planning and instruction has on students. As Principal Lemire states, the team is constantly “changing, talking, and adapting...they are a very collegial group who keep embracing” the integrated instructional approach to PLTW and science.

3. IMPLEMENT RELATED SCHOOL IMPROVEMENT STRATEGIES

In addition to the specific emphasis placed on implementing PLTW and developing STEM literacy among students, the leadership team and instructional staff at Edison also incorporate several other improvement strategies to help students be successful. These strategies aim to create a school structure that assists those students who are in need of additional academic or behavioral support, maximizes
learning opportunities for all students, and supports the achievement of school-wide goals.

### 3.1 Provide Academic Support and Intervention to Enhance Student Learning

*Under this strategy of providing academic support and intervention, there are two related, but distinct sub-strategies: Provide Support for At Risk Students, and Convene Teacher Teams to Address Student Needs.*

#### Additional Academic Support

Through a 21st Century Learning grant, students may attend a two-hour after-school Community Learning Center (CLC) that is available Monday through Thursday. Students receive a snack and help with schoolwork and homework. Approximately 40 students currently participate in the program. Parents or teachers may recommend students for the program.

The leadership team and instructional staff also run a Saturday School from 9:00 a.m. to 12:30 p.m. twice per month from September through November and once per month from December through May. The focus is on strengthening math and reading skills in preparation for the Wisconsin Knowledge and Concepts Exam (the standardized state exam). In 2011, approximately 30 students participated. Students are recommended for the program on the basis of their level of academic achievement. Ten staff members work during the Saturday School, and they are compensated through the CLC grant money.

#### School-Wide Focus On Math And Reading

In order to improve the math and reading skills of students, the leadership team also requires all teachers to incorporate lessons that target specific math and reading objectives (as identified through student performance on the standardized Wisconsin Knowledge and Concepts Exam). To meet these goals, the leadership team encourages instructional teams to collaborate and plan together and, as Principal Lemire states, to constantly ask, “How can we support each other?”

#### Small Learning Communities

Edison is organized into six Small Learning Communities with six pods—two for each grade level. Teachers work in teams within the pod. Although students are typically separated by grade level, there is some blending of grades in talented and gifted, special education, and English Language Learning classes.
Students also participate in an “advisory” period for roughly the first half hour of each day on four days of the week. The advisories alternate between having an academic focus and having a character education/values focus.

**Outreach To Families**

As a spin-off from the work done with the CLC, the leadership team is trying to encourage greater engagement at the school among parents, especially those who may be unsure of how to become involved. The school hosts after-school events such as dinners and talent shows in an effort to bring parents to the school. In 2011, the school sponsored both Martin Luther King Jr. and Cinco de Mayo activities, which were specifically intended to bring families into the school.

### 3.2 Prepare Students for Postsecondary and Career Success

*Under this strategy of preparing students for postsecondary and career success, there are two related, but distinct sub-strategies: Offer Career Development and College Planning, and Offer Opportunity to Earn College Credit.*

#### 3.2.1 Offer Career Development and College Planning

During the 2011–2012 school year, Edison will host its first Eagle Expo. The goal of this event is to provide students and their parents with information about postsecondary options. Representatives from three local postsecondary institutions, Blackhawk Technical College, University of Wisconsin–Rock County, and University of Wisconsin–Whitewater, will attend the expo. Principal Lemire hopes that events such as this will help to knock down barriers related to language and cultural differences that may stand in the way of Edison families accessing valuable education resources and information.

As of the 2011–2012 school year, every eighth grade Talented and Gifted student will take the ENGAGE survey, which was developed by ACT for sixth through ninth graders. According to the ACT website, ENGAGE measures “students’ behaviors and psychosocial attributes” and can predict how likely students are “to graduate high school, and whether they will earn at least a 2.0 GPA.” Principal Lemire states that the expectation is that in a few years, all eighth grade students will take the ENGAGE survey.
3.2.2 Offer Opportunity to Earn College Credit

As a middle school program, Edison does not make an effort to influence the acquisition of college level credits by high school students. In general, the strategy for a more universal STEM experience in middle school is intended to prepare students to take advantage of high school dual-credit activities.

3.3 Focus on Professional Development, Growth, and Collaboration

For almost a decade, the leadership team has focused professional growth on improving math and reading instruction and using data to drive instructional decisions. Professional development also focuses on how to infuse more rigor into classroom instruction. Every Tuesday morning, teachers attend professional development meetings. On some days, teachers will review specific test questions, review how students performed on those test items, and then develop prospective strategies.

In response to the changing demographics of the families that Janesville schools serve, the school district emphasizes that professional development should also focus on ways to incorporate classroom materials that represent and address a variety of cultures. Principal Lemire states that he expects teachers to look collaboratively at demographic and achievement data. Then, if teachers observe gaps or ongoing struggles among students, they should realize, “It’s about me and changing the way I’m instructing.” He emphasizes, however, that school leaders and teachers are “trying to do things differently and are not just trying to do more.”

3.4 Use Data to Make Instructional Decisions

The leadership team at Edison is committed to using data to drive improvement at the individual student level, the classroom level, and the school-wide level. To achieve this goal, the leadership team focuses on how to help both teachers and students “own the data.” In practice, the leadership team wants teachers to understand what testing data can tell them about how students are achieving and where students need additional support. To meet this goal, the leadership team uses many of the weekly professional development sessions conducted with instructors to teach them how to look at data and how to use data to drive instruction. They also teach instructors how to develop curriculum-based assessments to measure student learning throughout the year.
In part to help students assume ownership for their academic performance, the leadership team uses the Measure of Academic Progress (MAP) test. The MAP test is a computer-based assessment that is individualized so that students receive targeted growth goals based on their performance. At Edison, students meet with their advisor on the first day of school and set performance goals. They then take the MAP test in April. Each time students take the test they are assessed beginning at where they left off skill-wise on the previous year’s assessment. The leadership team credits the use of the MAP test for helping instructors and the students themselves monitor individual student progress.

3.5 Other Notable Features

Regional Collaboration among Education and Business Stakeholders to Support Education Opportunities

The educational experience of Edison students is also shaped by a strong and cohesive regional commitment to preparing students for postsecondary and/or career success and to meet the needs of the local economy. Regional consortiums and initiatives, such as the Stateline Career and Technical Education Academy (SCTEA), which focuses specifically on improving the quality of career and technical education (CTE) across six school districts, exemplify this commitment.

In the words of Principal Lemire, the community of Janesville continues to look at the big-picture opportunities available to students across the district and determine how to “provide the essential education for people who are here and who come to Janesville.”

Stateline Career and Technical Education Academy

To some extent, the implementation of PLTW at Edison mirrors a greater regional collaboration focused on preparing students for success in the 21st-century workforce. Leaders from area school districts collaborate and coordinate CTE services on an ongoing basis through the SCTEA, which is a self-organized consortium with members from six area school districts. The SCTEA Joint Operating Board consists of superintendents and board members from these six districts. The primary objectives of SCTEA are:

- To ensure the delivery of rigorous academics within the context of career and technical education;
- To promote the development of the soft skills students will need to obtain and succeed in a career; and
• To promote the specific technical skills taught by industry professionals at the highest possible level.²

Through the consortium, members determine which school can provide the highest level of courses in a particular Tech Ed model. Such courses are then offered at that one location in order to consolidate resources. Students attending schools within the consortium may attend participating schools in order to enroll in courses not offered at their home school.

According to members of the Joint Operating Board, SCTEA is based on the need for business to have a qualified workforce, and the Board is looking for all students to be postsecondary-ready. Out of this focus, the Board recognized the need to “raise the bar for all kids in math and science” and found PLTW to be a program that could help schools achieve this goal. Although Edison Middle School has the greatest level of PLTW program implementation as of the 2011–2012 school year, each district represented in SCTEA has implemented Project Lead the Way at the middle or high school level to some extent.

Rock County 5.0

Officially launched in October 2009, the Rock County 5.0 Initiative (http://www.rockcounty5.com/) is a five-year public–private partnership focused on supporting and advancing economic development in Rock County. According to the Rock County 5.0 website (http://www.rockcounty5.com/), the Initiative’s established goals include the following:

• Establish and strengthen business-to-business relationships and demand-driven workforce solutions.

• Identify, explore, and leverage business and investment connections that provide direct access to decision makers.

• Create, compile, and update real-time, marketplace data that are recognized as providing meaningful, value-added information.

To boost the Rock County’s economy, the initiative emphasizes the importance of strengthening educational opportunities in the region. For example, the initiative is helping to create a regional vision for CTE and has identified PLTW and SCTEA as key components of meeting the needs of the local workforce and of preparing future workers who possess STEM-related skill sets.
PART III. DATA AND NEXT STEPS

PERFORMANCE DATA

The charts below show the percentage of Edison students who scored proficient or higher on the math, reading and science Wisconsin Knowledge Concepts Examinations (WKCE) from 2008 through 2010. (Only 8th graders take the science WKCE. All data was provided by Edison Middle School.)

**Percentage of Edison 6th Graders Scoring Proficient or Higher on Math WKCE**

- **FALL 2008**: 78%
- **FALL 2009**: 77%
- **FALL 2010**: 76%

**Percentage of Edison 7th Graders Scoring Proficient or Higher on Math WKCE**

- **FALL 2008**: 75%
- **FALL 2009**: 82%
- **FALL 2010**: 84%
Percentage of Edison 8th Graders Scoring Proficient or Higher on Math WKCE

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>FALL 2008</td>
<td>76%</td>
</tr>
<tr>
<td>FALL 2009</td>
<td>67%</td>
</tr>
<tr>
<td>FALL 2010</td>
<td>81%</td>
</tr>
</tbody>
</table>

Percentage of Edison 6th Graders Scoring Proficient or Higher on Reading WKCE

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>FALL 2008</td>
<td>83%</td>
</tr>
<tr>
<td>FALL 2009</td>
<td>80%</td>
</tr>
<tr>
<td>FALL 2010</td>
<td>87%</td>
</tr>
</tbody>
</table>
### Percentage of Edison 7th Graders Scoring Proficient or Higher on Reading WKCE

- **FALL 2008**: 83%
- **FALL 2009**: 89%
- **FALL 2010**: 87%

### Percentage of Edison 8th Graders Scoring Proficient or Higher on Reading WKCE

- **FALL 2008**: 90%
- **FALL 2009**: 81%
- **FALL 2010**: 88%

### Percentage of Edison 8th Graders Scoring Proficient or Higher on the Science WKCE

- **FALL 2008**: 76%
- **FALL 2009**: 74%
- **FALL 2010**: 77%
EDISON'S NEXT STEPS

Both the Janesville district leadership team and the Edison leadership team continue to set goals to guide educational opportunities for students. At the district level, there is a push to scale up PLTW’s PTE program and to make it a more sustainable program in the high schools. Currently, at the two high schools that Edison students attend, PLTW enrollment and course offerings ebb and flow considerably from year to year, so there is little consistency or structure in how and when the courses are implemented.

Approximately 9 percent of students enroll in a PLTW course in high school, up from 1 percent in previous years. Part of the reason for the drop-off in PLTW enrollment between middle school and high school may be the fact that other and more extensive course offerings are available to students at the comprehensive high schools. Students may be electing to enroll in AP science courses, such as physics, chemistry, or biology, on the basis of their postsecondary interests.

The leadership teams are working to maximize the benefits students experience while enrolled in PLTW but also understand that some students may be pursuing STEM learning through other courses; the leadership teams’ ultimate goal is to provide students with programs that best meet their needs. There are some discussions taking place at the district level that may make it easier for students to continue enrolling in PLTW courses. The district is considering expanding the high school schedule from the current seven-period day to an eight-period day and will make a final decision in June 2012. The district also is looking at the PLTW Biomedical Sciences program to determine whether it would be a good fit at the high schools.

At Edison, the leadership team wants to continue the school’s strong PLTW implementation in the seventh grade math/science block. The leadership team and instructional staff also are considering ways to expand extensive project-based learning into the sixth and eighth grades. In addition to project-based learning, the leadership team also emphasizes the need for every teacher to integrate math into their curriculum in an effort to strengthen student math skills. To achieve his goal, instructors will continue to receive professional development in integration strategies.

# # #
The site visit was conducted November 21-22, 2011. This case study was written by Hans Meeder and Michelle Hebert-Giffen of the Meeder Consulting Group. Site visit coordination and follow up was provided by Steve Huth, Janesville district Career and Technical Education Coordinator, and Jim Lemire, principal of Edison Middle School.

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ENDNOTES


2 Stateline Career and Technical Education Academy Executive Overview