



**Northwestern School District – Excellence & Innovation!**

Northwestern Schools are very appreciative of our many collaborations for the future of our excellent programs and students. The success of Northwestern programs is well documented. We are emulated by several school districts and followed closely by numerous Ohio businesses. We continue progressing in our PBL (Project-Based Learning) for growth and continued excellence K-16 & in Pre-School - including foundational reading & math throughout STEM areas, core subjects, electives, and expanded fine arts courses.

What is amazing is how a low-wealth rural school district has created enduring career pathways in grades 7-12 with a career-minded student focus K-12 while living within our financial means.

This is achievable, sustainable, and improves student engagement in legitimate, authentic learning!

**Below is a general outline of this panel discussion:**

- |  |   |
|--|---|
| ❖ 5-minute Northwestern District Overview  | Superintendent Jeffrey N. Layton              |
| ❖ 5-minute Northwestern ES Overview        | Elementary Principal Julie McCumber           |
| ❖ 5-minute Northwestern MS Overview        | Middle School Principal Joey Brightbill       |
| ❖ 5-minute Northwestern HS Overview        | High School Principal Mike Burkholder         |
| ❖ 5-minute Northwestern Teacher Insight    | Biomedical Teacher Kelly Woodruff             |
| ❖ Collaboration, Grants & Partnerships     | HSTW NE Ohio Regional Director Diana Rogers   |
| <br>                                       |   |
| ❖ Additional Curriculum & Program Insights | District Associate Superintendent Scott Smith |
| ❖ Board & Community Perspective            | Board Member Charles Beck                     |
| <br>                                       |   |
| ❖ Questions & Discussion                   | Panel Discussion                              |

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## Northwestern School District – 13 years of Excellence & Innovation!

Northwestern Schools are very appreciative of our many collaborations for the future of our excellent programs and students. The success of Northwestern programs is well documented. We are emulated by several school districts and followed closely by numerous Ohio businesses. We continue progressing in our PBL (Project-Based Learning) for growth and continued excellence K-16 & in Pre-School - including foundational reading & math throughout STEM areas, core subjects, electives, and fine arts courses.

We are especially proud of our innovative project-based learning environment, required 12<sup>th</sup>, 8<sup>th</sup>, 5<sup>th</sup> Gr. Career Capstone Courses, Agri-Science Programs, STEM programs, Husky Huddle Advisor-Advisee, Pre-Apprenticeship, 7-12 Career Pathways, job-shadowing, 3,000Sq. Ft. Greenhouse & Clean Energy Lab, as well as our STEM Preschool and our ***“Innovation Station” District STEM Lab.***



### Summary of Northwestern, Innovation, Initiatives & Student Opportunities:

- 2005 implemented all-day, every-day Kindergarten
- 2005 membership in SREB (Southern Regional Education Board), HSTW (High Schools that Work), and MMGW (Making Middle Grades Work)
- 2005 introduction of High School “Husky Huddle” student-teacher mentor program
- 2006 Strategic Plan and Planning year for incorporating STEM and project-based learning
- 2006 Introduction of Senior Seminar Capstone course requirement
- 2007 4-course Biomedical PLTW STEM program initiated
- 2007 4-course Engineering PLTW STEM program initiated
- 2007 middle school Gateway to Technology PLTW STEM courses added
- Attainment of 50+ credit hours of dual college coursework available on Northwestern campus
- 2008 Membership in Northeast Ohio BioScience Consortium
- 2006 introduction of Middle School “Husky Huddle” student-teacher mentor program
- 2009 Membership in BioOhio
- 2009 Awarded K-8 “Program of Excellence” STEM Grant
- 2010 Goal Benchmark: 1<sup>st</sup> year of continuous >67% of 8<sup>th</sup> Gr. students completing Algebra I
- 2010 Competitive after school Robotics Club formed
- 2010 High School 4-year Biomedical program earns initial national PLTW accreditation
- 2010 High School 4-year Engineering program earns initial national PLTW accreditation
- 2011 Pilot and initial year of our Middle School Medical Detectives Biomedical course
- 2012 Introduction of 8<sup>th</sup> Grade Career Capstone course requirement
- 2013 Inclusion of smart phone “Application Design” within computer networking class
- 2013-2015 Transitioned our Tech I course from high school to middle school
- 2014 (spring) Northwestern Middle School named by OSLN (Ohio STEM Learning Network) “Ohio STEM Designated School” (1 of only 25 schools in Ohio at the time)
- 2014 (spring) Northwestern High School named OSLN (Ohio STEM Learning Network) “Ohio STEM Designated School” (1 of 25 schools in Ohio at the time)
- 2014 Invited to be a sitting member of Wayne County Economic Development WIN (Regional Workforce Innovations Network) Committee. Active with Wooster Area Chamber of Commerce.
- 2014 \$10,000 Martha Holden Jennings Ohio Superintendent Outstanding performance Award
- 2014 “Inspiration Station District/Community STEM Lab” dedication (includes 3 helicopter drones, 4 3-D printers, more than \$20,000 in robotics equipment, laser engraver, 2 ShopBot CNC routers & industrial CNC machine, desktops, laptops, action cameras, etc.).



- 2014 (fall) Full-Time Middle School STEM Teacher employed (quadrupled STEM courses – we now offer more than 15 MS STEM courses including: Design & Modeling, Environmental Design, Smart Historians & Architecture, Science in Technology, Electricity, Scientific Inventions, Agricultural Science, Green architecture, Agri-STEM, Automation & Robotics). We offer 30+ electives for students to explore and pursue potential careers!
- 2014 (fall) Robotics transforms from a club to a high school course.
- 2014 (winter) Ohio ILN Membership (Innovation Lab Network) 1 of only 16 member districts.
- 2014-2015 SY Project-Based Learning teacher professional development throughout year.
- 2015 (winter) K-5 elementary PLTW Launch STEM programs pilot – one teacher per grade.
- 2015 (fall) Full implementation of K-5 PLTW Launch (Engineering, Robotics, Biology/Science).
- 2015 (fall) Established high school Clean/Renewable Energy SREB (Southern Regional Education Board) 4-course STEM program/career pathway.
- 2015 (fall) Our 1<sup>st</sup> Associates Degree articulation. HS BiScience Diploma - NC State College.
- 2015-2016 SY Intensive Project-Based Learning teacher professional development.
- 2016-2017 SY Initiating high school Computer Sciences PLTW STEM program (4-year phase-in of 6 program 8-12 grade course).
- 2016 1-1 ratio of student-device (Chrome Books, Ipads, laptops, desktops) Gr. 5-12. 90% K-12.
- 2016-2017 SY Collaborator in 5-district Battelle-led \$1,000,000 “Straight ‘A’ Grant” for professional development & STEM Problem-Based Learning/Blended Learning Lesson creation.
- 2016 (fall) Purchase of Lincoln Electric “Virtual Welder” to enhance student welding skills.
- 2016 (fall) Begin Construction of 30 X 100 Ft. Greenhouse with Botanic & Hydroponics areas.
- 2016-2017 SY Northwestern is Lead of 5-district \$680,000 PBL/LDC “Straight ‘A’ Grant” for professional development Northwestern and 4 adjacent low wealth rural districts reaching 6 counties. Includes conversion of 30X100Ft Greenhouse to include Clean Energy Lab infrastructure: Geothermal, Solar array, Biodiesel plant, wind turbine, monitoring equipment.
- March, 2017 Earned Northwestern Elementary STEM School Designation!
- March, 2017 Northwestern is first in Ohio with K-12 District-wide OSLN STEM Designation!
- April 27<sup>th</sup>, 2017 3,000 Sq. Ft. Greenhouse-Clean Energy Lab dedication!
- 2017 (summer) Northwestern ES approved as HSTW NE member (Helping Elementary Schools Work). Now ES (HESW-1yr), MS (MMGW-12yrs), HS (HSTW-12yrs) K-12 SREB sites.
- 2017 (summer) 1-1 ratio of student-mobile device Gr. 3-12 and 1-2 current ratio Gr. K-2.
- 2017 (summer) Began 3-year Library “Multi-Media Makerspace Innovation Centers” conversion
- 2017 (summer) Became a “Future Ready” School District
- 2017 (fall) began our first STEM Preschool!
- 2017-2018 SY began 6<sup>th</sup> Gr. Career Exploration Capstone Projects



### Current Initiatives:

- Conversion of Libraries to Multi-Media Makerspace Innovation Centers.
- Pursue matching funds for adding sorely needed lab additions for high school STEM programs.
- Attaining 1-1 student to device Pre-K-12.
- Pre-Apprenticeship Program approval & student internships program expansion.
- Expansion of student earned industry credentials.
- Expansion of student professional organizations from 4 pathways to all 8 pathways.
- Expansion of Agri. Business & Production to additional Agri. Science pathways.
- Pursue construction of a barn and adjacent farm for Agri. Science programs and experimentation.

### Awards/Accomplishments:

- ✓ 2015 Southern Regional Education Board National “Outstanding School District Award”!
- ✓ Northwestern MS, Northwestern HS, Northwestern ES each approved as “OSLN Ohio STEM Schools”. We are the first OSLN K-12 STEM School in Ohio!  
We are in our 4<sup>th</sup> year with MS and HS OSLN STEM School Designation!
- ✓ Over 6.5 million in scholarships over the past five graduating classes (doubling prior five years)
- ✓ Consistent “Excellent” Ohio Dept. of Education Academic rating.
- ✓ HS – State Superintendent “School of Honor” (2014).
- ✓ HS – National SREB “Gold High School Award” (2014).
- ✓ HS – State Superintendent “School of Promise” (2010, 2011, 2012, 2013, 2014).
- ✓ MS – SREB National Math Rigor and Improvement Award (2014).
- ✓ SREB National Depth of Implementation Award (2013).
- ✓ Lighthouse District: innovative administrators & teachers present regionally, state-wide, nationally on a continuous basis.
- ✓ Prestigious Thomas Edison Science Award (2013).
- ✓ Incoming Open enrollment has surpassed 220 students each of the past 4 consecutive years – increasing each year over past 13 years to the **current 238 incoming open enrolled students** at the start of this 17-18 SY. This represents more than 17% of our 1402 students enrolled.
- ✓ Northwestern was the first Public School District to become a Special Needs Peterson. Scholarship Provider for incoming students with special needs beginning in 2012-2013.
- ✓ Northwestern received over \$1,000,000 in grants & contributions for various programs last year.
- ✓ Northwestern Teachers & Administrators welcome visitors – school representatives, community members, public officials, legislators, business representatives, and post-secondary institutions.
- ✓ NWHS and NWMS have been repeatedly been recognized as High Schools that Work (HSTW) and Making Middle Grades Work (MMGW) sites that met or exceeded all sites nationally based on HSTW/MMGW Teacher and Student Surveys. Below is the 2016 summary:
  - ❖ NWHS student responses met or exceeded all sites nationally in 6 of 12 categories, and teacher responses in Continuous Improvement.
  - ❖ NWMS student responses met or exceeded all sites nationally in 5 of 14 categories, and teacher responses in Continuous Improvement.
  - ❖ This data indicates that students are having experiences that align with research-based proven best practices that often result in higher student achievement that prepare students for high school/college and careers.



# Northwestern Elementary School

Northwestern Elementary is a Pre-K through Fifth grade rural school in Wayne County, Ohio. There is an enrollment of 630 students. Northwestern Elementary promotes authentic learning and student engagement where the focus remains on the whole child. This is accomplished through academic rigor, content relevance, relationships, and collaboration among faculty, students, parents, and community. The goal at NES is to prepare students in real world project-based and problem-based instruction while also ensuring our students participate in a thriving STEM learning culture in all classrooms and in all content areas.

Northwestern Elementary School received an Ohio STEM School Destination in 2017 through the Ohio Stem Learning Network. The elementary has also joined Making Middle Grades Work (MMGW) making Northwestern Local Schools the first district in the HSTW NE Ohio Region with a PRE-K-12 implementation approach adopting the school improvement framework.

NES has implemented PLTW Launch over the past three years in kindergarten through fifth grade. Over 90% of teachers have been trained in using the modules. A STEAM Working Lab was created in 2014 where students can work on their Robotics, Solar Sprint Cars, 3D printing creations or any project based activities. Students work in an environment to imagine, collaborate, design and test out their designs.

PBL has been an integral approach to our teaching at Northwestern Elementary. The entire staff has been trained in Problem-Based Learning. Grade levels throughout the building are working on PBL's within the classroom, cross grade levels and district-wide development projects.

Career Education presents opportunities for students to strengthen their growth mindset and work on setting goals that are developmentally appropriate. Our Fifth Grade Team has developed an Educational Career Investigation Model that will be utilized across all content areas. Members of our fifth-grade team are also working on Literacy Design Collaborative modules that they have created and delivered to our fifth-grade students.

Northwestern STEM Preschool is about a child's curiosity and inquiry into real world problems that are appropriate in an early learner's world. The preschool's mission is to provide investigation and exploration in all environments which includes observing, hypothesizing, collaborating, and designing solutions to problems. The approach to our preschool encourages students to be active constructors of knowledge, which will enable students to work on self-directing skills. Children are viewed as strong, capable and resilient.



# Northwestern Middle School

At Northwestern Middle School, we pride ourselves in giving every student in our building an opportunity for success. We are a rural school, with over 330 students and over 40 electives and 11 advanced courses in grades 6-8. As a school, we focus on a building-wide philosophy of STEM with Problem Based Learning (PBL) and Blended Learning in all of the classrooms. Our classes from Robotics to Social Studies allow students to explore, work within groups and differentiate instruction to allow students to be challenged and work at their own pace to reach a higher level of learning. We want students to participate in all of the opportunities we provide so students can begin thinking about the pathways they will choose for high school, college and/or a career.

We believe that we are providing our students the best education by getting them ready for the next phase in their educational careers. We continue to set high expectations focusing on assessment design, aligning curriculum maps to new standards and implementing higher Depth of Knowledge (DOK) questions. We want to continue to extend the learning of all students, making sure students are challenged at all levels as they go through the learning process in academic areas. With the use of PBLs and Blended-Learning within all classes, we are STEM focused building wide. Now, more than ever, content areas are collaborating with each other, so learning can be engaging, authentic, and real for our students.

We are different from other STEM schools because we are a traditional rural school in Wayne County, but we offer a variety of electives for all of our students in grades 6-8. We are nationally recognized from Projected Lead the Way (PLTW) and Ohio STEM Learning Network (OSLN) as a STEM school. Even though we are a STEM designated school, we still operate all of the traditional courses throughout the day, as well as, focus on the arts. Some of our STEM courses include Robotics, Design and Modeling, Flight and Space, Computer Science, Laboratory Science, Zoology, Historically Speaking and Photography. We also offer a variety of fine arts classes which include 3D Art, Community, Historically Speaking, Ready Set Act and Drama with Music.

At the end of their middle school experience, students engage in an experiential learning opportunity with their 8th grade Job Shadow project. Over the course of several months, students choose a career of interest, conduct research on the career, and compose career-focused interview questions. Students, with the help of parents, set up individual job shadow experiences where they are granted an excused absence from school to spend a day shadowing within their career field. This project culminates with a final presentation that allows students to share what they discovered through their research and job shadow experience. Presented to their peers, as well as, teachers, career professionals, and community members, students are able to educate others about a multitude of career opportunities. Through this project,

students also engage in several mini-lessons, which include the discussion of employability and soft skills, writing professional letters, and business etiquette.

Along with the Job Shadow Project, all 8<sup>th</sup> grade students take an elective called Transitions. In this course, students will look at their interests and skills and what it takes to be successful in their career choices. At the end of this course, students will have created a resume and practiced soft skills to be successful in interviews later on. We want students to begin thinking about their goals and what steps they need to take in order to achieve them.

Collaboration amongst the administration, staff, and community make our programs successful. Our staff is involved with not only enhancing their knowledge within the classrooms to share with students, but participating in several grants, book clubs and cohorts such as: Army Education Outreach Program (AEOP), Blended Learning/PBL grant, Gifted Cohort 2, Science LDC and Project Lead the Way (PLTW). We value input from all parties and build leaders throughout the building. We pride ourselves on our building culture where we have developed a great rapport amongst the staff, students and the community.

At NMS, we believe in team. We believe in collaboration with all parties involved in educating each individual student. We encourage staff and students to take risks, make mistakes and try new strategies. This allows growth for our building. It takes collaborating and thinking outside of the box to challenge students through the learning process. We lean on each other as experts in the field to continue to come up with new ideas to make learning real and authentic across all curriculums. At the end of each year, we evaluate all the courses to generate new ideas to strengthen the curriculum and provide the best experiences for our students. We want to make sure at the end of each student's three years with us, they have experienced several opportunities to be successful, which helps them find a pathway that will lead to a college or career of their interest.



# Northwestern High School

Northwestern High School is an innovative, progressive, rural school located on a PreK-12 campus, which began offering STEM programs in 2006. We prepare our students today for tomorrow's opportunities through engaging, authentic, project-based instruction. Rigor, relevance, and relationships, college and career readiness with 21st century skills are the focus. Northwestern High School earned National PLTW Accreditation in 2011 for both our 4-year Engineering and 4-year Biomedical Programs, and was noted as an Ohio High School of Honor in 2014. NHS was also recognized as an SREB National Gold High School Award in 2014, named Ohio School of Promise for 4 consecutive years – 2010-2014, and was named as a Thomas Edison High School Biology Award winner in 2013. Northwestern High School received STEM School Designation in spring of 2014.

NHS has established career pathways in Agricultural Science, Engineering and Bio-medical Science. We are one year away from a completed pathway in Clean Energy Technologies and two years from a completed Pathway in Computer Science. We are currently developing additional career pathways in the areas of education and entrepreneurship/business.

As we began this journey years ago, we were struck by the notion that these curricular pathways can change the lives of our students. It was noted that when the day came where our students would have internship possibilities within the career pathway, and people would come to visit our school and our students, we would know that we had accomplished something. While we are never satisfied with where we are, it is noteworthy that we have reached this benchmark!

It is significant to mention that Northwestern High School is not a magnet school. We are a regular public school that has a strong emphasis in STEM principles. We probably should be recognized as having a STEAM emphasis, as we are just as passionate about providing our students with opportunities in the Arts as we are in STEM curriculum.

We are a strong believer in the learning that occurs from doing things. We believe that a great deal of learning can take place when groups of students work together to solve a problem, taking different approaches to get there and sometimes failing. We believe in our students doing meaningful work, working hard to get ready for their future opportunities. All seniors will



be involved in curriculum their senior year that focuses on a senior project, a career pathway capstone class and/or career related internships.

Northwestern is affiliated with the Ohio STEM Learning Network, Akron STEM Region, High Schools that Work, Southern Regional Education Board, BioOhio, NE Ohio Bioscience Consortium, Wayne County Economic Development WIN Council, and Wooster Area Chamber of Commerce.