

GREATER JASPER  
CONSOLIDATED  
SCHOOL CORP.

# STEAMing AHEAD:

## A Journey Toward STEAM Integration

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**G**reater Jasper Consolidated School District is located in Dubois County, Indiana. During the 2019 school year, Greater Jasper will serve 3174 students in grades PK-12. Greater Jasper is comprised of five schools; Fifth St. Elementary School, Tenth St. Elementary School, Ireland Elementary School, Jasper Middle School, and Jasper High School. Greater Jasper has committed to educating the whole child by supporting

programming for the arts, the social emotional well-being of all students, and the design of graduate profiles to ensure college and career-ready skills for all students.

It's no secret that STEAM integration in public education has switched from a suggestion to a priority in Indiana and our nation as a whole. The rationale behind the need for more STEAM is simple: The jobs of tomorrow require more Science, Technology, Engineering, and Math. Jasper agrees with the experts who are predicting this and we are a few years into our own journey to fully integrated STEAM education.

The use of the acronym STEAM as opposed to STEM is intentional at Greater Jasper Consolidated Schools. We have chosen to emphasize and support arts through several well established programs and partnerships at the local and national level. The arts remain an important component of our curriculum programming for all students in addition to the Science, Technology, Engineering, and Math.

In 2017, Jasper developed a district level STEAM education committee represented by STEAM minded educators from each of our schools. The purpose of the committee was to guide the further integration of STEAM into our schools and support teachers with STEAM-related needs. Along with that committee we established building level STEAM coordinators who would not only be leaders of the initiative in their building, but also share the responsibility of purchasing supplies for the labs and assisting in the coordination of lab time and rotations. We built in a small stipend from our Title IV grant for these individuals to support the work they were doing. In most cases the building level STEAM lab coordinators were also the same individuals who served on our district committee.

STEAM integration into math and science lessons is not a foreign concept to educators, but integrating STEAM into social studies and English curriculum is a little more challenging. It takes a real commitment to planning well-designed projects that not only align with, but support the learning objectives of the science and social studies lessons. This takes time,

High School students utilizing robotics in an introduction to engineering and design class.



Kindergarten Students build structures out of various materials for the "Big Bad Wolf" project.

it takes training, and it takes a change in mindset when planning. This is where we wanted to be, but it isn't where we were. To get to this point, there were smaller steps we needed to take to build the capacity of our teachers to reach the goal of STEAM integration.

We started by sharing the well advertised need for STEAM with our staff and sharing our vision for finding a way to increase our students' exposure to STEAM from Kindergarten on up. This sharing consisted of building-level staff meetings and grade-level meetings. We also encouraged participation in trainings like Project Based Learning, and we even had two teachers accepted into the STEM Fellows Program sponsored by ROI in Southern Indiana. The response we received from staff was encouraging, but we also had lots of obstacles to resolve in order to move forward. At this point we didn't have any real method to deliver STEAM curriculum, the lab materials to do it, or an equitable time for getting it done. From these initial meetings, our three goals quickly developed: First, find and select a common curriculum for STEAM; second, acquire the equipment and materials needed to deliver the curriculum, and; third, make decisions on how STEAM time would occur at the elementary level.



Students being introduced to coding with the "Code-a-pillar."

## CURRICULUM SELECTION

One of our first goals as a committee was to begin reviewing and acquiring curriculum, equipment, and lab materials that would support STEAM learning. In an effort to not go into this blindly, we made some site visits to schools that were further ahead of us on their own STEAM journeys.

There is a lot of value in site visits, and we believe it is a great way

to learn quickly and find new methods to improve upon our own methods. Those site visits helped us determine a curriculum guide for our STEAM labs and get some great ideas about equipment that could further support STEAM learning. We settled

on utilizing Curiosity Machine as our curriculum guide and encouraged grade levels to select a few grade-level appropriate labs to conduct as a part of their STEAM activities. We chose Curiosity Machine mostly because of its video-enhanced guidance for our teachers who were planning the instruction, the cost of the program (free), and the low cost of the required lab materials.

After making some big picture decisions about curriculum, we scheduled meetings in each of our elementary buildings to share our plans for curriculum and outline the steps teachers would need to take at each grade level to select age-appropriate STEAM activities from within the content options we were providing. Our building level STEAM lab coordinators assisted in guiding the teachers to decisions about which activities would have the most success and be the most impactful in each grade level, while also keeping in mind vertical articulation so STEAM labs wouldn't be repeated each school year by our students as they advanced to the next grade level.



1st grade students using VR to explore ecosystems.



Robo 3D printer – Each school has a 3D printer available to students in their STEAM labs.

## ACQUIRING LAB EQUIPMENT AND MATERIALS

Through site visits, social media shares, and discussions with secondary CTE teachers, we started to develop wishlists of equipment we wanted for our STEAM labs. Items like 3D printers, iPads, Legos, Keva blocks, etc., were near the top of our list, but costly. We also began to develop our materials list for the Curiosity Machine Labs for each grade level. These items were mostly consumables like plastic straws, popsicle sticks, rubber bands, batteries, etc.

After reviewing possible funding sources we determined we would use Title IV grant dollars to supplement the purchase of larger instructional items and equipment and work toward building in a small STEAM lab fee for all elementary students to support the consumable lab items.

## FINDING TIME TO MAKE IT HAPPEN

Elementary school schedules are well thought out and designed to utilize every minute of every day. Finding time in an elementary school to do anything new or different is always a challenge, but in order to provide a real commitment to STEAM, we needed a scheduling commitment from our elementary schools. One of our overall objectives was to get all students in grades K-5 exposed to STEAM-related activities/projects each week. We believed getting students and teachers in the routine of doing STEAM labs would not only familiarize them with what STEAM looks like, but also help jump start the capacity building of our teachers to plan and coordinate STEAM labs. We accomplished this by modifying our elementary schedule to allow



4th grade Students build structures out of straws and tape in an earthquake simulation.

for a 30-minute STEAM lab for each classroom, each week.

Our approach has focused primarily on the elementary level because we believe we need to establish the foundational STEAM skills as soon as possible. However, our journey has not only been about changes in the elementary schools. At Jasper Middle School we have enhanced the science curriculum at each grade level by incorporating PLTW modules to ensure we are meeting the new computer science standards as well as providing engaging, hands-on activities that are STEAM related. At Jasper High School we have continued to expand our CTE and STEAM related course offerings to include Biomedical Science, Principles of Engineering, Digital Electronics, and new this year, a PLTW Cybersecurity course.

Ultimately, we plan to pursue STEAM accreditation at our elementary schools during the 2020-21 school year. While we aren't ready yet, we have made some huge strides and a positive indicator can be seen in the faces of our students and teachers when participating in STEAM labs. Students are engaged, they are having fun, and they are learning important 21st century skills in the process. 🎓

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