

AweStem 2019

Theme: Growing STEM in Our Communities

St. Peter Central Catholic's Problem of the Month

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Background: The Problem of the Month began at St. Peter Central Catholic during the beginning of our time in WPI's STEM Integration Program. We started it as a way to introduce the entire school to STEM or in our case, STREAM (Science, Technology, Religion, Engineering, Art and Math) as well as the Engineering Design Process. We also wanted to show our fellow teachers that STEM was not a scary thing and creating a design challenge for their students did not involve extensive and expensive materials as well as that it was okay to take a step back and let the students find solutions to problems without guiding them through step by step. As we went through the first two months of challenges we quickly realized that we were uniting our student body in a way that we didn't even think of. In giving our entire school the same problem to solve (PreK-8) students in the younger grades felt as though they were doing "big kid" work which they loved and felt such pride, and the older kids found that they were learning from the strategies employed by the younger kids! We knew this idea would work for our school when after the second problem was finished the question became "What are we doing next?!"

Steps of Problem of the Month: We developed a process for how the Problem of the Month would work for us as the STREAM team and us as the school community, and stuck with the same process in year one. Moving through year two this year, the process has mostly stayed the same, but has begun to adapt and change as our students and faculty receive more complex design challenges.

-The Problem of the Month begins with the STREAM Leader (Nicole) and STREAM team deciding the problem as well as logistics of materials, scheduling and an outline for teachers that includes background information about the skill we are targeting, a short video to introduce skill, list of materials, and constraints and modifications for each grade level.

-The problem is then introduced to the faculty at the monthly staff meeting. Teachers perform the design challenge in groups themselves to help them get familiar with the Engineering Design Process as well as the problem.

-The STREAM team passes out the materials for the challenge to each class. We did this as to ease all teachers into the Engineering Design Process by taking care of everything and only assigning classroom teachers to become the facilitators.

-At the date set in the outline, the STREAM Leader (Nicole) takes over the school's intercom and explains the Problem for the Month. The STREAM Leader then leads the school through the Engineering Design Process, giving students a set time to work on each time, and coming back on the intercom at the beginning of each step.

-For the rest of the month in their own classrooms, students work to improve their prototypes.

-At a set time in the outline, the school joins together in the gym to showcase their work and to test out their designs.

Growing STEM in Our Community: The Problem of the Month unites our school community as well as our school's family and friends. Student want to try the challenges at home with their families, bringing them closer together. We hosted a STREAM Night last year in response to parent/family curiosity as to what Problem of the Month was. We were able to have parents, grandparents, and other family members into our school to participate in STEM design challenges with their families, growing STEM knowledge. Many students have joined after school or summer clubs with robotics, coding and STEM because of what they have done at school and they want to learn more. Our Problem of the Month for December was to create a conveyor belt for the food pantry to use to help them distribute food easier and more efficiently. Our showcase discussed using conveyor belts to help St. Peter's Parish hand out Thanksgiving Dinner and gifts during Christmas time. Students learning about Windmills and Wind Turbines being used to help collect sustainable renewable energy. Students are currently solving problems that they came up with to better our communities. Students are working on saving the bees, cleaning up trash, recycling markers at school, cutting down on noise to name a few. The school as a community has been growing their STEM knowledge and confidence as well as with the Engineering Design Process.

Problem of the Month Outcomes:

- We were able to have the whole school on board at the same time for STEM
- Every member of our school community was included
- Showed teachers STREAM can move beyond science class
- Helped identify STREAM Leader and team to our school including parents
- Provided students the ability to show off their work to their peers beyond their own classroom
- United our school community with a common goal
- Helped grow our STREAM culture at school.