

District Expanding STEM Education Programming to Elementary Schools

Experts agree that our nation's innovation and competitiveness are driven in large part by the new ideas created by people involved in STEM industries (Science, Technology, Engineering and Mathematics). In order to increase the number of students pursuing these careers, schools need to engage children at younger and younger ages.

This year, Council Rock has launched a pilot program to expand STEM programming to its elementary school students. STEM specialist Tim Duke has been working with teachers and students since September. "My goal is to inspire young students to be inquiring learners," said Mr. Duke. "By providing them with fascinating and challenging STEM activities we want to light a spark that encourages them to take higher level science and math courses at the middle and high school levels."

This integrated, interdisciplinary program is the result of collaboration between The Dow Chemical Company, the Council Rock Education Foundation (CREF), and a Ready-to-Learn Block Grant from the Pennsylvania Department of Education. The Dow grant was written by Suzanne Wray (CREF Executive Director) and Renee Devlin (Science Curriculum Coordinator). "We've been developing this idea for many years now," said Renee Devlin, "and when we received the Dow grant, the rest of the funding fell into place."

The STEM specialist position was initially slated to be part time, but a portion of the district's Ready-to-Learn Block Grant was allocated by the district to expand the position to full time. According to the PA Dept. of Education web portal, the Ready to Learn Block Grant "provides schools with financial assistance to implement effective educational strategies, practices and initiatives to improve student achievement." One area listed as an accepted expenditure of these funds is efforts to improve student outcomes in STEM education, which also includes STEM training and professional development for educators. The challenge for the district is to find a way to fund Mr. Duke's position in future budget years.

While Mr. Duke's home base is at Holland Elementary, he travels between all ten elementary schools, working with classes of students. "We are excited about the opportunity for our elementary school students", said Joy McClendon, Director of Elementary Education for Council Rock. "In just a few months, Mr. Duke has raised awareness and garnered excitement for integrating more technology in our science classes." While secondary level teachers tend to be specialists in their fields, elementary teachers often do not have a background in science. Mr. Duke has been working with elementary teachers to develop strategies to incorporate STEM education across multiple disciplines.

The Council Rock Education Foundation recently invited Dow to Holland Elementary School to see the impact of the grant during a 5th grade science class, focusing on the formation and results of acid rain. Students used the new Vernier Labquest devices to measure and record data. One student explained the experiment: "Rainwater is usually a pH of 6.0. We are using the Vernier pH sensors to measure the changing pH levels of water when we blow carbon dioxide in it." Students made observations, predictions and graphed the results of their data using data points recorded during the experiment. Afterward, one student summed up the real-world results explaining that "acid rain is dangerous for the environment because it can cause fish to get sick and lead to a collapsing ecosystem."

“The possibilities that this collaboration creates is exciting,” said Justin Land, Northeast public affairs manager at Dow. “By growing the capacity of teachers in STEM and invigorating the curiosity of students, we have a real possibility in building the workforce of tomorrow and transforming STEM education into a driver for innovation, manufacturing, and economic prosperity.”

On the way out of the class, students shared what they love best about Mr. Duke’s STEM classes and comments ranged from *“I love doing the experiments!”* to *“I liked using the Labquest devices to test and measure things”* and *“I like that we are always learning new stuff!”*

“It is thrilling to have students constantly ask, ‘Mr. Duke! When are you coming back? When are we going to do STEM again?’” Tim commented. “Just last week, I went to a science fair planning meeting and had two students tell me that they had been so intrigued by the recent demonstration on polymers that they decided to make a science fair project to determine which brand of diapers was most absorbent. That’s the spark we want to encourage!”

The STEM specialist position is already transforming elementary school classrooms. Citizens For Education hopes this will be a permanent addition to elementary school education. The challenge for the district is to find a way to fund Mr. Duke’s position in future budget years.