

## Tech Corner – Bee Bots

**Tech Corner highlights new and innovative uses of technology and the Council Rock teachers who make it happen. In this article, Citizens honors “Bee Bot” and the teachers from Churchville and Goodnoe who are responsible for Bee Bot’s introduction to Kindergarteners in Council Rock.**

**Bee Bots are a Kindergarten “STEAM” initiative.** Bee Bots are small floor robots that can be programmed for direction and length of travel. They are the conduit for the introduction of STEAM (Science, Technology, Education, Engineering, Arts and Math) education across the curriculum at the Kindergarten level. STEAM education incorporates an “A” for the Arts – recognizing that to be successful in technical fields, individuals must also be creative and use critical thinking skills which are best developed through exposure to the arts.

**Bee Bots are used at Churchville and Goodnoe for Reading, Writing, Music, Math and Robotics.** This year, Kindergarten teacher, Kim Bender and Math Specialist, Mary Dougherty are using Bee Bots to enhance learning and develop basic coding skills in Churchville’s Kindergarten classes. They join Goodnoe Kindergarten teachers, Ms. Nikki Birkbeck, Ms. Lauren McCusker and Math Specialist, Charyl Hills who are utilizing Bee Bots for the second year. At both schools, Bee Bots are an across the curriculum device for learning. Students learn a Bee Bot song and dance moves in their Music class. They are introduced to a book about Bee Bots in Reading and use Bee Bots to learn sequencing and predictions skills in Math and also write about Bee Bots in Language Arts.

**Kindergarten students use Bee Bots to develop basic coding skills.** Citizens for Education was given an opportunity to go into Ms. McCusker’s morning Kindergarten class at Goodnoe Elementary School to observe the students interacting with a Bee Bot. When Ms. McCusker told the students there were visitors who wanted to see how they taught their Bee Bot to dance, the students rushed over with excitement. They came with their written program directions that enabled Bee Bot to dance to a song they had learned in Music class. One of the students from Ms. Birkbeck’s class, Brodie Molden, programmed the demonstration Bee Bot to dance by using its forward, backward, left or right buttons found on its back. The Goodnoe Kindergarten Class had so much fun singing the words of the song and watching the Bee Bot go through the moves of the dance.

**Kindergarteners learn directional language, logical thinking, and problem solving.** Under the tutelage of their teacher, Ms. McCusker and Math Specialist Mrs. Hills, the Bee Bots were used to help the students sharpen their prediction skills by guessing how many forward moves it would take Bee Bot to go certain distances. Students collaboratively figured out how to program the Bee Bot to do a full rotation that would return it to its starting position facing the classroom’s Smartboard. Students then were asked to predict which way Bee Bot would face if he was programmed to turn right for a fifth time.

**Bee Bots arrival and growth in CR.** The first Bee Bot arrived at Council Rock 2 years ago when Principal Nicole Crawford of Goodnoe brought one back from a PA Educational Technology Expo and Conference (PETE & C). Math Specialist Charyl Hills, who was nominated by her Principal, Nicole Crawford, and named by the Pennsylvania Association for Educational Technology and Communications as a 2015 *Keystone Technology Innovator Star*, worked with Ms. McCusker to develop activities and ways to integrate the one Bee Bot into the kindergarten curriculum. After watching the success of the interaction between the Bee Bot and the students, Ms. McCusker recognized the need for more Bee Bots intended for small group

instruction. Thanks to a grant from the Council Rock Education Foundation (CREF), the number of CR Bee Bots has multiplied. In addition to the original Bee Bot, sixteen more have been added at Goodnoe Elementary School and another sixteen were added to Churchville Elementary School.

**Citizens For Education especially recognizes and honors Mrs. Charyl Hills** as one of Council Rock's exemplary Math Specialists for her teaching, her collaboration with colleagues at Goodnoe and other schools, and her integration of technology into the curriculum. As a Keystone Technology Innovator Star, Mrs. Hills was invited to spend a week with other Keystone Innovator Stars at Shippensburg University, a week that she says was "life-altering". Mrs. Hills is using the knowledge gained and the relationships made with other attendees to spread technology integration ideas in Council Rock. Her website "Math Moments" is a resource for teachers, parents and students - <http://www.crsd.org/site/Default.aspx?PageID=20166>. Follow her tweets @Good2noeMath which give insight into her love for teaching Math. You would just have to observe her with students, or talk to parents or present and former students to get a glimpse into how much her teaching is appreciated. CFE thanks Mrs. Hills for both her passion and dedication to teaching and for expansion of the integration of technology at Council Rock.