

# Developing Future Leaders Through Barrington 220 School District STEM Program



Becky Gill, Director of Elementary Education at Barrington 220 and Becky McDowell, K-5 STEM Teacher and Coach at the Roslyn Road Elementary in Illinois, were looking for a STEM program to complement their robust core science curriculum. In addition, they needed it to align with Next Generation Science Standards (NGSS), be an addition as opposed to a substitute for science and still maintain the level of rigor Barrington 220 prides themselves on.

Gill used research from the National Research Council to assess program goals. "You need to get students involved with, excited about STEM, and believing that they have the attributes of what it takes to have a career in STEM as early as 12 years old," Gill says. Looking at these attributes and further recommendations from the National Research Council, **Gill and McDowell selected two programs to pilot in their district.**

McDowell implemented both programs, one of which used LEGO® Education WeDo 2.0, Simple Machines and LEGO® MINDSTORMS® Education EV3 from LEGO® Education. Within the two pilot programs, McDowell and Gill measured success by collecting pre- and post- pilot program data, based on four areas recommended by the National Research Council:

**Achievement, Learning, Interest and Identity.** **Achievement** looked at assessments that they use across the district. **Learning** looked at anecdotal research from students, where students' understanding of computer programming was measured. **Interest** measured students' self-identified interest in a STEM field. **Identity** measured students'

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confidence levels with solving different STEM problems and whether or not the students were more likely to choose to pursue additional STEM learning beyond the classroom, such as in afterschool and summer school programming. Gill and

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McDowell also met with other principals, administrators, and community members.

After reviewing the data, Barrington 220 determined LEGO® Education solutions best met their needs for their STEM program.



## Top 4 Reasons for Preferring LEGO® Education

- 1. Flexibility** “Some of my reasons for preferring LEGO® Education was the flexibility for us to modify and add our own content to it. Because programs and standards and other things change and if there's not as much flexibility, then over time it's going to become outdated. By buying a timeless tool that we can use, we can continue to iterate and improve and that's what we do every year, is add in and change, and then we're still able to use the tools to meet our needs,” says Becky McDowell, STEM Teacher and Coach.
- 2. Critical Thinking** “LEGO® Education solutions allowed for deeper critical thinking and reflection. Students had the ability to iterate and scaffold on top of it as opposed to a recipe-driven, one-and-done tool. We can start with the lesson and then modify. There is more troubleshooting, more inquiry where students are actually solving their problems and thinking about why something doesn't work and then are able to go back and redesign,” says Becky McDowell, STEM Teacher and Coach.
- 3. Authenticity** “It's so authentic too, to see the kids trying out the different situations and the different missions with their robots, and seeing them so excited, talking to each other and working together, ‘Oh this didn't work, let's try this instead.’ We even had one boy say, ‘We had this mission and we're not there yet, but we're going to try again tomorrow!’ And that's exactly the thinking

that we want to grow in our kids,” says Becky McDowell, STEM Teacher and Coach.

- 4. Familiarity** “I also liked that it was a tool that a lot of kids do have at home. So when we do our LEGO® zipline, they can go home and keep experimenting and designing as well. I have a first grader who is in our district too, so I am fortunate to see the program through the eyes of a parent as well. And one of my favorite moments was when my first grader came home and said, I'm going to do a design challenge with you and daddy tonight, so get ready! And she planned it all and designed it,” says Becky Gill, Director of Elementary Education.

As both an administrator and a parent, Gill sees the value in and skills students developing with LEGO® Education solutions. “From an administrator lens, when we do Family STEM nights or Family STEM Saturdays. We have over 3,000 families at the elementary level and it will sell out in 20 minutes because that's there's so much excitement and enthusiasm. That's just another favorite thing I love about our STEM program.”

Gill and McDowell see more awareness of STEM career paths for their students. “The kids are thrilled to be challenged and think in a different way, and we see the teamwork evolve. We get a lot of feedback from the kids that they're considering engineering as a career option, and they all realize that it's not easy; it was challenging, and it was hard,

but they see they did it in the end,” says McDowell.

Because of student success in the STEM program with LEGO® Education solutions, Gill and McDowell are growing the program throughout the district. Gill says, “Whenever I walk into any of our classrooms, they want to share what they're learning.” Gill continues, “They are so ecstatic, thrilled and confident and just ready to take on the world.”

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