DELTA STEM
Science • TECH • Engineer • MATH

DEAR PARENTS

It has been an exciting start to the DELTA STEM program, and I wanted to take the time to communicate with you about some of the projects that I have enjoyed working on with your son / daughter these past few months. It is my hope that you can take a moment to read through this newsletter to learn more about our current projects and what we have on track after the holiday break.

I also encourage you to sign up for a parent account in Edmodo.com (more explanation in the article ***What is Edmodo? on page 2)***, so you can witness first hand what your child is learning about in his/her DELTA STEM classes.

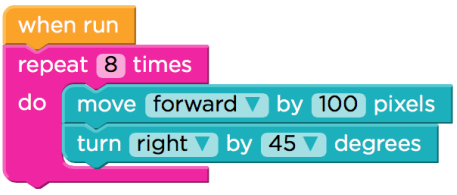
Thank You,

Mrs. Kathy Donovan, DELTA STEM Educator

WHY CODING IS KEY

Children of this net-worked generation have grown up consuming digital content. Whether it be playing with the latest game app on an iPod or looking at several webpages trying to validate information for their research project, these digital kids have enjoyed diving into this endless pathway of creating meaning for themselves. But, in this process, they have become so great at ***consuming*** all of this digital delivery constructs (web-pages, games, apps) that some have lost the fact that these devices are only as "smart" as the human being who wrote the set of instructions (or algorithms) to make all of them run so magnificently. So, in keeping with the STEM mindset that we are all imaginative creators and innovators, and because so much of our current world is computer-driven, my DELTA students have begun their STEM learning-adventure by understanding how to program, or write algorithms, for the computer.

We have been using a visual block language programming code called Blockly in the website CODE.org, and have begun to learn about the basics of computer science in a very kid-friendly way. We have been tackling each of the ***Angry Bird*** or ***Plant vs Zombie*** puzzles within the course to learn about algorithms, loops, conditionals, and, soon to come, other programming constructs called functions. For example, we have understood that if we want to draw an 8-sided shape (octagon) I asked them, "What angle is repeated 8 EQUAL times to create a full rotation (360°)?" Division quickly came to mind, so we wrote out the equation, 360 / 8 = 45. It was then determined that an octagon has (8) 45° angles to create a full rotation to complete the shape. After this example, we talked about how this formula could be applied to *any* geometric shape we wanted the computer to create. The students learned how to see and match a pattern, and then abstract the differences to create an algorithm to determine how to apply it to other shapes, therefore to draw a hexagon: 360/6= 60, so there are (6) 60° angles; and to draw a pentagon: 360/5 = 72. so there are (5) 72° angles. After we saw the pattern, we then constructed the logic using a repeat or a loop command in the Blockly code. ***(see graphic)***



In this set of blocks we instructed the computer to complete this set of instructions: "when run button is clicked, move forward and draw a line of 100 pixels; turn right by 45°; and then loop back to the start to begin this set of instructions again. Do this eight times to create an octagon."

There is much more to learn about computer programming, and we will be tackling another visual-block project language and accompanying website developed by MIT called Scratch in early February. My goal is for them to create an original game or a story, and work on several iterations of the game with obtaining feedback by their peers to make it the best it can be. The engineering design process at work!

WHAT IS EDMODO?

I sent home permission slips in the beginning of the year which may or may not have explained the true purpose of how we are using Edmodo website in DELTA STEM. At first glance it may look like Facebook, but I assure you it is not what it appears to be!

Edmodo is a private learning management portal that allows teachers and students to virtually communicate together beyond the time constraints of the physical classroom space. My job is to teach my students how to appropriately use the tool, explain how it accents their learning, and use it as a tool to provide supportive feedback in a closed digital campus. Edmodo truly compliments your child's STEM learning in many ways.

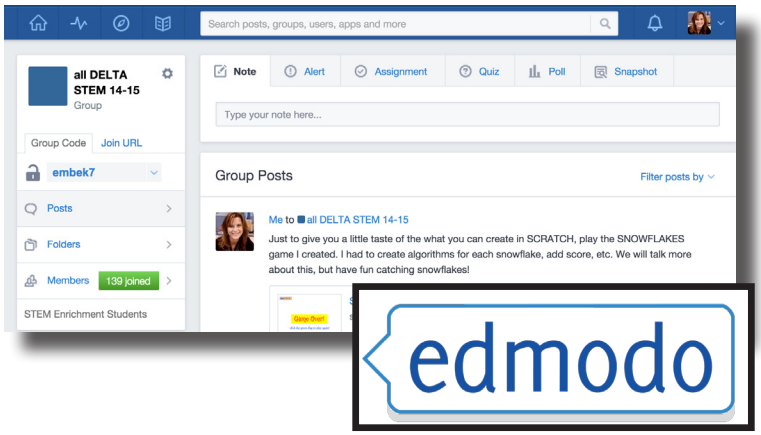
On the Edmodo news-feed wall I have posted learning links and other coding challenges. They also have the opportunity to share their free-draw coding projects with each other, communicate their ideas, and earn digital badges for their accomplishments. It is also important to note that I monitor all of their conversations because I receive an email update on their posts as they occur.

As I watch students engage with each other on Edmodo I am very encouraged to see the level of maturity and respect coming from the participating users, but I am also eager to see more students participate and gain the benefits of this social learning experience. I *know* they will love to participate more if they see how their peers are using the site, but I do not think they are remembering check-in at home.

I also understand that some of my student's lives are very busy, and there are very different rules in each household about online access. Therefore, I will try to make time in the school day for your son or daughter to check in on Edmodo, but any assistance in reminding your son/daughter to log into the site at least once in between his/her STEM classes would be most appreciated!

Students have told me that they really enjoy using the Edmodo app (free in the iTunes store) on their mobile device, so please consider using this option if it assists your child in participating.

Finally, I encourage you to log on to www.edmodo.com with your son or daughter to observe some of the things we are working on. You can also create your *own* Edmodo parent account for yourself! To do this, have you child log in with their username and password, look for your parent code (on the left), record it (you will only need this once at sign up); log your child out, and then create a PARENT account off the Edmodo homepage. A parent account will allow you to receive messages from me, and you will see what your son / daughter is assigned to work on. I hope to see you there! If you have any concerns about this, please feel free to contact me: kdonovan@nhart.org.



Encourage your child to:

- Check into Edmodo once a week before their next class to contribute a post or reaction
- Work on puzzle sets in CODE.org or Scratch and share the project URLs in Edmodo
- Check to see if your students has any assignments to complete in Edmodo before their next STEM class.
- If you or your child comes across a STEM connection share the URL with us and create a conversation.

Great STEM Resources.

I have listed here some great books, websites and YouTube links

- Book ***The Innovators*** by Walter Isaacson
- Visit my website: www.newhartfordschools.org/donovan
- CODE.org website: www.code.org
- Computer Science Unplugged: http://csunplugged.org/
- PBS Design Squad: http://pbskids.org/designsquad/
- Instructables: www.instructables.com/
- Science Friday: http://www.sciencefriday.com