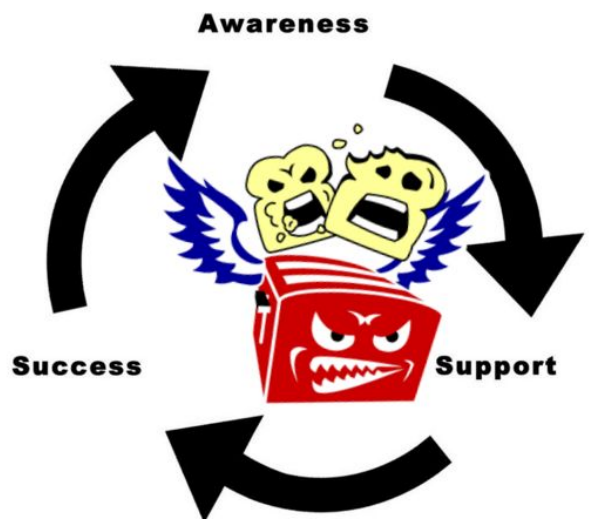


### How to Run a STEAM Class

STEAM classes are an integral part of the Flying Toaster's outreach and efforts to promote FIRST throughout the community. The success of these classes has increased interest in creating more FLL and JrFLL teams throughout South Lyon. Working with our FTC teams, we have hosted multiple classes at our local library. We read our children's book, *"The Flying Toasters Spread the Word"*, and have a station for each aspect of STEAM. The children that attend are introduced to FIRST robotics, and many have told us that they show an interest in starting their own team. At these classes, students are exposed to ways we use Science, Technology, Engineering, Art, and Mathematics in the real world and how exciting going into STEAM careers can be. The following is how the Flying Toaster's Chairman's team sets up these classes and promotes them throughout the community. We would like to encourage all teams to host similar classes in their own community to gain more support and show everyone the benefits of STEAM. We will follow the Toasters' circle of growth to see how these classes have been wildly successful.



## Science-

The first letter in STEAM stands for science. This station shows students how we use the scientific method, research, and other scientific practices in the real world. To set up this station, first think about the age group of students you will be hosting. We host students K-5, meaning our STEAM classes must have appropriate science related activities for children all throughout elementary school. One example of a station includes making slime. This station takes the students through collecting and measuring ingredients and taking the proper steps in the right order to create something. We even let students take home their slime and provided a recipe for them to be able to make it at home. To prepare for this station, we had to purchase all of the ingredients (in large quantities), tablecloths and paper towel (to clean up our mess), plastic bags for students to take home slime in, and bins and tubs to make the slime in. Another example of a science station is exploring magnets. For this, we had all different types of magnets that we taught students and games we would play with them such as a magnet race on a metal baking sheet, magnetic shavings you could move with another magnet, and magnetic building pieces to make structures. Both slime and magnet activities fit within our given time allotment and were a huge hit with students!



## Technology-

The second letter in STEAM stands for technology. This station shows students how recent innovations and creations of their own can be applied in real world applications. Again, we have to consider the age of students we are hosting (K-5) and what activities are acceptable for that range. An example of an appropriate station is a VEX robot. We asked a VEX team that was part of the Flying Toasters if they would be willing to show off their robot and even let students drive it in our STEAM classes. They graciously agreed. Students were able to build towers with blocks and use the VEX robots to knock them over and even do other tasks, such as throw balls or test speed. The students were all wide-eyed and amazed that they were able to control a robot, as many of them had never even seen one before. This is an experience that only a robotics team can provide. This station is definitely one of the students' favorites!



## **Engineering-**

The third letter in STEAM stands for engineering. This station is geared towards showing students what being an engineer is like, through age appropriate activities. We show how engineering is about planning, building, and testing a design, and how this mindset can be used in their lives. We promote engineering as a future career and how beneficial knowledge engineers use is. An example of a station is using legos. We had buckets of legos for students to use in building a structure for a simple task, and a time constraint so it felt more like a challenge. A challenge included building a structure at least six inches tall that could hold ten robot erasers we had. Students were given five minutes to use their creativity to make such a tower. It was amazing what students came up with! Another station example is giving students marshmallows of different sizes and toothpicks to create. The kids were given five minutes to build a robot. We taught students how you could use almost anything to make innovations and using their creativity, anything is possible.

## **Art-**

An important addition to STEM by the Flying Toasters is an A to make STEAM. Team 3641 believes art to be an integral part of what we do, citing the design process and CAD as examples. At our STEAM classes, we make sure students know the importance of art and creativity by giving art it's own station. Art is using creativity and

individuality to make something. An example of an art station is drawing. We gave students coloring supplies and three minutes to draw a robot. Each student drew their own robot, and at the end of the three minutes got to tell us what their robot did and how it works. It was amazing what they were able to come up with, and showed how nothing is more valuable than a child's creative instincts. Another station example is using scrap pieces to create something new. We reached out to the "Scrapbox" a local business that sells scrap pieces for kid's artwork. We got bags and bags of supplies, and gave students eight minutes to build a robot creation. We were again impressed with what kids were able to do, all from just scrap pieces of foam and sticky tape. This was another favorite station, showing art is such an important part of STEAM.

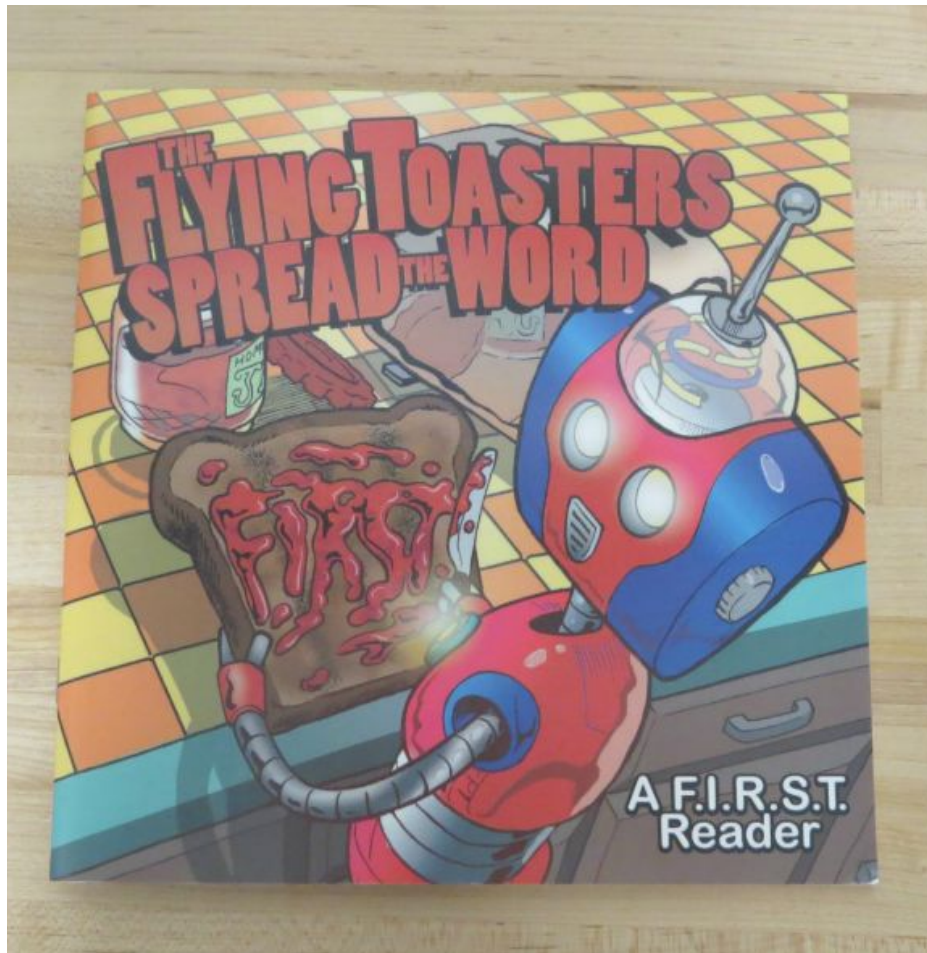


## Math-

The fifth and final letter in STEAM stand for mathematics. This station aims to teach students that math is everywhere, and math can be fun! It focuses on counting, patterns, numbers, and simple age appropriate activities. Many elementary school students may not think math can be as cool as other aspects of STEAM because it focuses less on creativity, but we aspire to show them that math is in almost everything you do, and it is very fun. A station example includes car racing. We set up a racetrack for toy cars, and had dozens of cars available to race. Students made predictions on which car they thought was going to be the fastest. Once the cars were raced, we analyzed the data we gathered and taught the students about statistics. We did this by numbering each car and writing down it's time on a whiteboard. Once all the cars were written down, we could compare the times and see if any student's predictions were correct. This was a way we could show how cool math was in a new way to students. Another math station example includes giving students specific number or pattern parameters to form lego structures. We again had a large bin of legos and five minutes for students to build a robot. The rules were that they could only use five green pieces, eight red pieces, two brown pieces, one white piece, ten black piece, and one creative piece of their choice. Students built a wide range of robots and learned how math was used in our lives.



Children's book-



Last year, we created a children's book, *The Flying Toasters Spread The Word*, which provides an interactive experience with FIRST Robotics. The book is written in a format for younger children, which provides an entryway into FIRST Robotics and STEAM education. We presented the book at our STEAM classes to start the night and it was a huge hit. We also gave parents the opportunity to purchase their own copy.



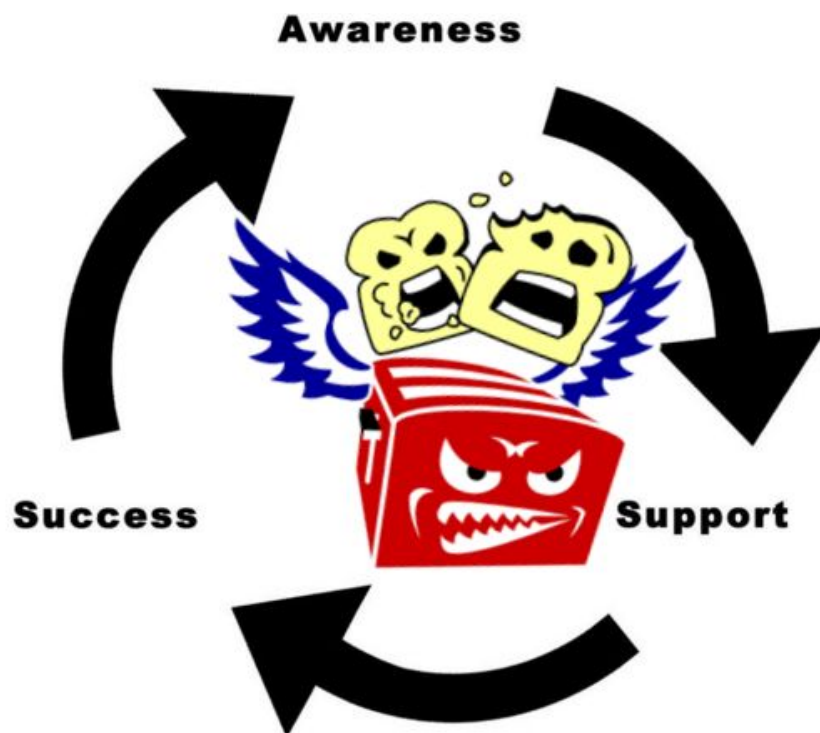
### Gift bags and activity book-

Each student left the night with a gift bag so that when they left, they could continue with the STEAM experience. It included all of the items they had made in the previous hour (such as slime, scrap-piece robots, artwork, etc) as well as crayons, buttons, stickers, and our Toaster Activity Book. This booklet is filled with coloring pages, mazes, word searches, crosswords, information about STEAM, and information about FIRST including how to start your own FIRST team. Through this, we aim to see more FLL and JrFLL teams throughout South Lyon.



## Circle of Growth-

The Flying Toaster's Circle of Growth loops through awareness, support, and success. It is the method in which we increase our community's knowledge of STEAM and teach others about FIRST. For our STEAM classes, we first have to raise awareness. To set these classes up, we contacted our local library who gave us a room to use. They also put the classes in their newsletter to increase interest among families. We also spread the word through our own newsletter and when we did community events. This gave us an increased support and a huge backing for these classes, which made them extremely successful.



## The Toaster Mission-

The mission of The Flying Toasters is “To intrigue and inspire, unite and achieve greatness”. The purpose of the STEAM classes perfectly fits this. The aim is for kids to gain interest in robotics and intrigue the minds of younger generations. We hope to spark student’s creativity and inspire them to do great things. All team members are asked to volunteer and unite to show our community what STEAM is. The success of these classes is a true testament to how great the minds of students are and the toaster mission statement.

All of the outreach events hosted by the Toasters aim to spread the word of FIRST to younger generations and open doors to STEAM-powered futures. The purpose and hopes of our STEAM classes perfectly embodies these goals. Through these classes, students have been newly exposed to FIRST and STEAM and have even increased interest in forming new teams throughout our community. The Toasters have seen huge success in STEAM classes, and plan to continue and expand upon them in seasons to come.

