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Homeschool Robotics Team Advances to World Championships

By Connor Darlington



Pictured, L-R: Lissa Bohne, Kullen Renaud, Eamon Taylor, Quinton Renaud, Jack Nugent, Liam Taylor. (Photo by Rebecca Nugent)

The local homeschool community has a winning robotics team in the LANBros, a band of seven high school homeschool students representing our region at the 2017 FIRST Tech Challenge (FTC) World Championship.

The LANBros is one of six New Jersey teams competing at the World Championships, out of 175 in the state. From April 26-29, 2017 a total of 136 FIRST (Continued on Page 6)

3-D Printing in the Medical Field

By Chloé Walker

3-D printing has been around since the late '80s, and with it have come many advancements for the medical industry.

Invented in 1984 by Charles Hull, now the co-founder of 3D Systems, 3-D printing was originally created to produce proto-

types. But over time 3-D printers became more accessible to the public, and their popularity has risen to new heights.

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Allura Red AC in strawberry soft drink.
(Photo by Kotra)

“...Red Dye 40 may cause hyperactivity in children and possibly cancer. It may also cause allergic reactions and tumors.” — Kristen Fischer, “Is Red Dye Toxic?”

Red Dye 40 Raises Health Concerns

By Jana Zollner

Do you love Skittles, M&M’s, Starburst and all of your other favorite candies? Well, don’t get too excited because they all have Red Dye 40.

One of the most commonly used food dyes in America, Red Dye 40 is also found in baked goods and cosmetics such as eye makeup, body lotions and sun-tanning products.

Red Dye 40 is used to make products more appealing, but raises some very serious health concerns.

Kristen Fischer, in “Is Red Dye Toxic,” cites several studies indicating Red Dye 40 may cause hyperactivity in children and possibly cancer. It may also cause allergic reactions and tumors.

Other names for Red Dye 40 are Red No. 40, FD&C Red, No. 40 Allura Red, C.I. Food Red 17, C.I. 16035.

It is hard to avoid Red Dye 40, but not impossible. Products that use paprika, beet juice, carotene, red cabbage and turmeric for coloring are good alternatives. Products such as these can be found locally at Trader Joe’s whole Foods, and MOM’s Markets.

LWE Needs Setup and Cleanup Volunteers

By Josh Puglia

As LWE gears up for fall registration, think about the many jobs that need to be done to run a co-op smoothly. Families with elementary or junior high students are required to stay at co-op and sign up to help throughout the day. Families with high school students may drop off, but are strongly encouraged to help volunteer.

Please take a moment to consider helping with

setup or cleanup, two jobs that always need more help.

Set Up

To help with setup you need to arrive by 8:30 a.m. The various tasks involved in setup include putting up signs, setting up a room in the order that it will be used for classes, putting the TVs and projectors in the proper rooms, and setting up the coffee.

Lunch Cleanup

Lunch involves helping put chairs and tables away, sweeping the gym, and cleaning up any trash left behind.

Cleanup

Cleanup for the day usually happens any time from 1:30 to 3:00 p.m., or whenever the last class in a room is finished. It is the teacher’s job to clean up the room

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Setup and Cleanup

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and return the room to the church's regular setup. All you do if you sign up to clean a specific room is be sure that the teacher and students have cleaned and reset the room.

Other jobs that need to be done for cleanup are making sure all the windows are closed and locked, returning the coffee supplies to the basement, removing room signs, and taking trash bags to the dumpster.

When you sign up for one of the above chores you only need to focus on the section that you help with, and then you are done.

"These are the hardest jobs to fill each semester but they are the easiest to do," says Mrs. Tracy Apple.

You can sign up for any of these positions during class registration, or contact Mrs. Brook Gall at

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TV Programs for Kids and Teens

By Anna Earl

These days, it's hard to find a

TV program you don't walk into with both eyes shut, hoping and praying you're not about to open them and see some pretty suggestive material your mom would definitely not want you watching. While TV shows and movies geared towards kids and teenagers might not be as clean as you (or your parents) would like, don't stress! Here are some shows and movies for kids that teenagers can — and do — still enjoy.

First up is *"Avatar: The Last Airbender."* First aired in 2005, *"Avatar"* follows the story of a rag-tag group of kids and their journey to save the world.

On the way, they have to not only learn new skills but examine themselves closely on a personal and spiritual level. With three seasons under its belt, the show is long enough to entertain for either weeks or a couple days if you really want to sit down and binge. After an episode of this excellently done show, you just might.

Another is *"Miraculous: Tales of Ladybug and Cat Noir."* This French animated show geared towards kids has captured the hearts of many teenagers with its quirky characters and charming storytelling. It currently has one complete season and

is working on season two. When asked, other teenagers weighed in with their opinions.

"Most Pixar films are targeted at a younger audience, but they still remain interesting due to a smattering of topical jokes and relatable storylines," Joshua Thomas said.

Another teenager, Anna Decker, answered the question with great enthusiasm, *"Steven Universe!"* In the beginning it looks really dumb and average, but the longer you watch the more the story develops and becomes this one massive story you get hooked on. The characters have a lot of depth to them too. And I love the feel of the show. It still feels light, but can also have more mature moments."

Jake Inabinet, less infatuated with current shows, said, "Probably reruns of *"The Suite Life of Zach and Cody"* because laughing at something immature keeps you from worrying about mature things."

Other responses included *"Phineas and Ferb," "Voltron: Legendary Defenders," "Kim Possible," "Lab Rats,"* and *"Milo Murphy's Law."*

Not all kids shows can capture the interest of skeptical teenagers, but if you're willing to dig a little deeper, there are plenty that offer a truly enjoyable — and worry-free — time.

Amazon Echo vs. Google Home: Which is Best for You?

By Chloé Walker

The Amazon Echo and Google Home are two of the major devices in the field of digital personal assistants. But with such similar devices it is hard to determine which one is best for you.

A digital personal assistant is an assistant that is in the form of a device, in this case bluetooth speakers. These devices have integrated intelligence that allows them to go by your command and can be used for a number of tasks such as scheduling events, setting alarms, and helping you shop, etc.



This is the Amazon Echo appliance that is basically a talking speaker. (Photo by Fmorrison, Creative Commons)

The Amazon Echo and Google Home are some of the first devices in the growing field of digital

personal assistants, personal assistants in the form of technological devices.

The most noticeable difference between these devices is in prices. The Amazon Echo has three different models which all differ in price and features.

The lowest priced model is the Echo Dot which is currently \$49.99 and has a design that resembles a large hockey puck. This model allows you to connect to other bluetooth speakers and smart devices in your home as well as voice-control your lights, fans, thermostats, play music, etc. You can activate almost all of the three models by simply saying “Alexa” or “Echo.”

Going up in price you have the Amazon Echo Tap which is \$129.99 which has a more tall cylindrical design than the Echo Dot. The Tap is capable of doing almost everything the Dot does and is the most portable of the three. But sadly does not feature voice-activation and requires you to hold the microphone button to speak to Alexa, hence the name “Tap”.

The most expensive of the three is the Amazon Echo which can do everything the Dot and Tap with some added features and is \$179.99.

The Echo does not require you to connect to bluetooth speakers around the house like the Dot and features better speakers with all of the Echo Dot’s features as well.

“It can order you an Uber, help you shop for things on Amazon, and, like Google Home, can sync with Spotify,” says Chase Purdy, Quartz Media.

According to DigitalTrends.com all of the Amazon devices can connect to one another which offers more flexibility.

The Google Home on the other hand is \$129.99 which is significantly lower in price than the Amazon Echo. The Google Home’s design looks similar to that of an air freshener dispenser and is notably smaller than the Amazon Echo.

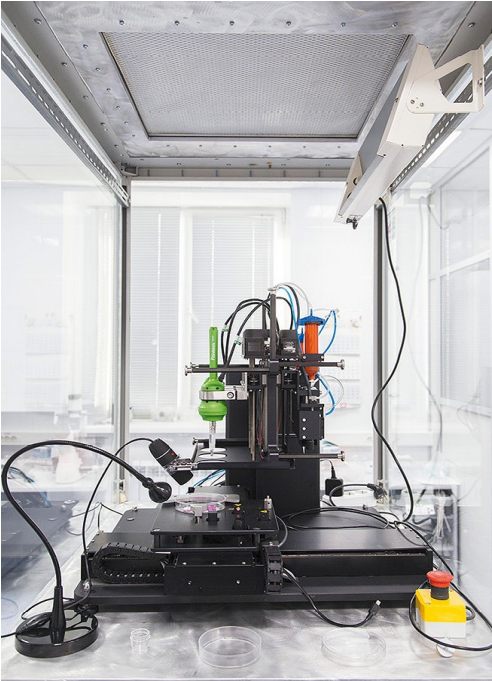
The Google Home allows you to voice-control your home’s smart devices just like the Amazon Echo. As well as these features you can connect to your Chromecast. This allows you to control your TV by speech, Gmail, and Google Calendar this lets you to see your upcoming events, etc.

To activate the Google Home you must either say “O.K. Google”

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3-D Printing

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A 3-D bioprinter. (Photo from *Russian Business Journal*, Андрей Ильин)

Most of the “printing” performed in the medical field is done with bioprinting. Bioprinting is the use of 3-D printing technology with materials that incorporate viable living cells.

3-D printing has opened doors for new medical advancements in the field of cybernetics. Scientists and doctors alike are now able to create and test prototypes of human body parts, implants, and medical equipment.

3-D printing “has the potential to generate customized replacement parts of the human body, or even create organs containing capabilities beyond what human biology ordinarily provides,” as stated in the Nano Letters of ACS Publications.

According to thefutureofthings.com scientists at Heriot-Watt University in Edinburgh, Scotland are currently bioprinting stem cells and aim to “print” directly into parts of the body in the near future.

Many other scientists are working on using printers to bioprint cartilage and bones. Hod Lipson, professor of mechanical engineering and data science at Columbia University, is in the process of working toward bioprinting cartilage from stem cells and a viable meniscus (knee cartilage) for everyday use. More information about his work can be found at thefutureofthings.com/8-major-advancements-3D-making-in-the-medical-field.

With 3-D printing, scientists are now capable of replicating an individual’s exact body parts. This allows doctors to be able to assess and determine how they can best accomplish a surgery. For example, according to The Telegraph, Dr. Tarique Hussain, a doctor at King’s College London, was able to 3-D print a two-year-old’s heart. This allowed him to evaluate the prototype to determine the best surgical technique.

Although 3-D printing is still not at a point where scientists can “print” every bone in the human body, it has brought about multiple magnificent achievements for the medical field. “This is what technology is for. Many of us are attracted to it because it’s cool. But what turns out to be cool and

incredibly meaningful is using it to enable a new kind of future,” says Jon Schull.

3-D printing will continue to grow and advance the medical field and I, along with other scientists, doctors, and tech enthusiasts, am excited to see what comes next.

Echo vs. Home

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or “Hey Google.” Many say the loading time for Google Home to search your question is faster than the Amazon Echo. There is also speculation that the Google Home will be able to be integrated with the Roku, a device that allows you to stream television, in the future.

The American Echo and Google Home offer relatively the same thing with some minor differences. But that is not to say that each is not unique. Although the Amazon Echo has more going for it as of right now, such as third-party apps, the Google Home has the potential to dominate the Echo with its wide range of compatibility. It’s too early in the game to see which device will be the triumphant one.

The only way to say which device is best for YOU is for YOU to determine what you want from the device you will invest in to essentially improve your lifestyle.

Homeschool Robotics

(Continued from Page 1)

Tech Challenge teams from the US along with international teams will compete in St. Louis. FIRST Robotics Competition (FRC) and FIRST LEGO League (FLL) Championships will take place simultaneously.

The LANBros team currently consists of Jack Nugent, Kullen Renaud, Quinton Renaud, Lissa Bohne, Liam Taylor, Eamon Taylor, Owen Taylor, and Isaiah Cutts.

This team of homeschool robotics enthusiasts worked their way up this year through local and state championships, then district-wide Super-Regionals. On April 1 they won first place at the Champion's Challenge scrimmage in North Brunswick, NJ. All the NJ teams that qualified for the World Championship were invited to compete, along with some of the NJ teams who went to Super-Regionals.

FTC is part of the FIRST family of programs, which also includes FLL Jr. (ages 6-9), FLL (ages 9-14), and FRC (high school). In all their programs, FIRST stresses the importance of team spirit, sportsmanship, and gracious professionalism.

Teams are also encouraged to mentor other teams and encourage interest in the STEM fields. This year the LANBros mentored the FLL Battle Toads, and also worked

with young elementary students at LWE co-op to encourage their involvement in FLL Jr.

The LANBros are active in many outreach events. They enjoy showing the robot at libraries, LWE co-op, and other venues. Last September they were one of only two New Jersey teams chosen to demo at the World Maker Faire in New York City.

Started in 2005, FTC robotics gives students in grades 7 through 12 an opportunity to build fully functional robots. Every September a new challenge is released. The competition season starts around November and goes anywhere from February to mid-April, depending on how well the robots do in competition. Successful teams like the LANBros have a longer season as they compete in local and regional championships.

Students in FTC build working competition bots using metal, plastic, and other materials. Every part of the robot has to fit in an 18" square box, but can extend to any size later on the field. The playing field is a 12x12 ft. square.

This year's challenge involves shooting whiffle balls into a center "vortex", pushing button-controlled beacons, and lifting a large ball onto the center vortex. Teams compete in alliances of two each, being either red or blue.

The LANBros team formed in 2015, when Rebecca Nugent began an FTC team at the request of her

son, Jack. But their story actually began much earlier.

Mrs. Nugent started coaching a FIRST Lego League (FLL) team in 2012. "My son, Jack, was very interested in robotics, technology, and building from a very young age," she says. "I kept looking for local robotics teams but couldn't find one in our area. Finally, I decided to take the plunge and start our own FLL team."

Mrs. Nugent's first FLL team was the Knights of the Rectangular Table, later renamed The Perfect Storm.

Three years later, when Jack was entering high school in 2015, he had aged out of FLL and wanted to compete at a high school level. FTC provides an increased emphasis on robotics and programming, and more opportunities to develop technical skills.

Nugent says she loves FIRST programs "because they give kids so many real world experiences, not just in working with technology, but also teamwork, communication, public speaking, marketing, networking, and entrepreneurship."

The LANBros team is taking their robotics to the next level as they compete at the world Championships in St. Louis, the next step in their exciting robotics story.