



# 2017 TinkRcamp Project Catalog



Dear Friends,

Thank you for your interest in TinkRworks! Our Team has worked diligently to develop a set of STEAM-powered projects that are both fun and enriching for our TinkRers this summer.

This Project Catalog highlights our projects (or camps) that we will be running throughout the 2017 summer season. Relative to last year, you will see that we've not just added a number of new projects, but we've also expanded our age groups significantly which means that a number of new children—or "TinkRers" as we affectionately call them—will be able to participate in journeys with us. In total, we are offering 14 projects this summer broken out as follows:

- **TinkRers aged 7-9:** Three (3) total projects
- **TinkRers aged 9-12:** Seven (7) total projects
- **TinkRers aged 12-14:** Four (4) total projects

As you make your way through the catalog, you'll see that we've kept some of the core projects that were extremely popular last year and that parents and TinkRers requested for this year—these include ***Game of Drones***, ***Real-World Minecraft***, and ***Rocket Control Center***. Enrollment in these projects went quickly last year and as a result, not all TinkRers who wished to participate in these projects were able to do so. As a result, this year we've opened up additional sessions to ensure that TinkRers who have interest in taking these projects will have the opportunity to do so.

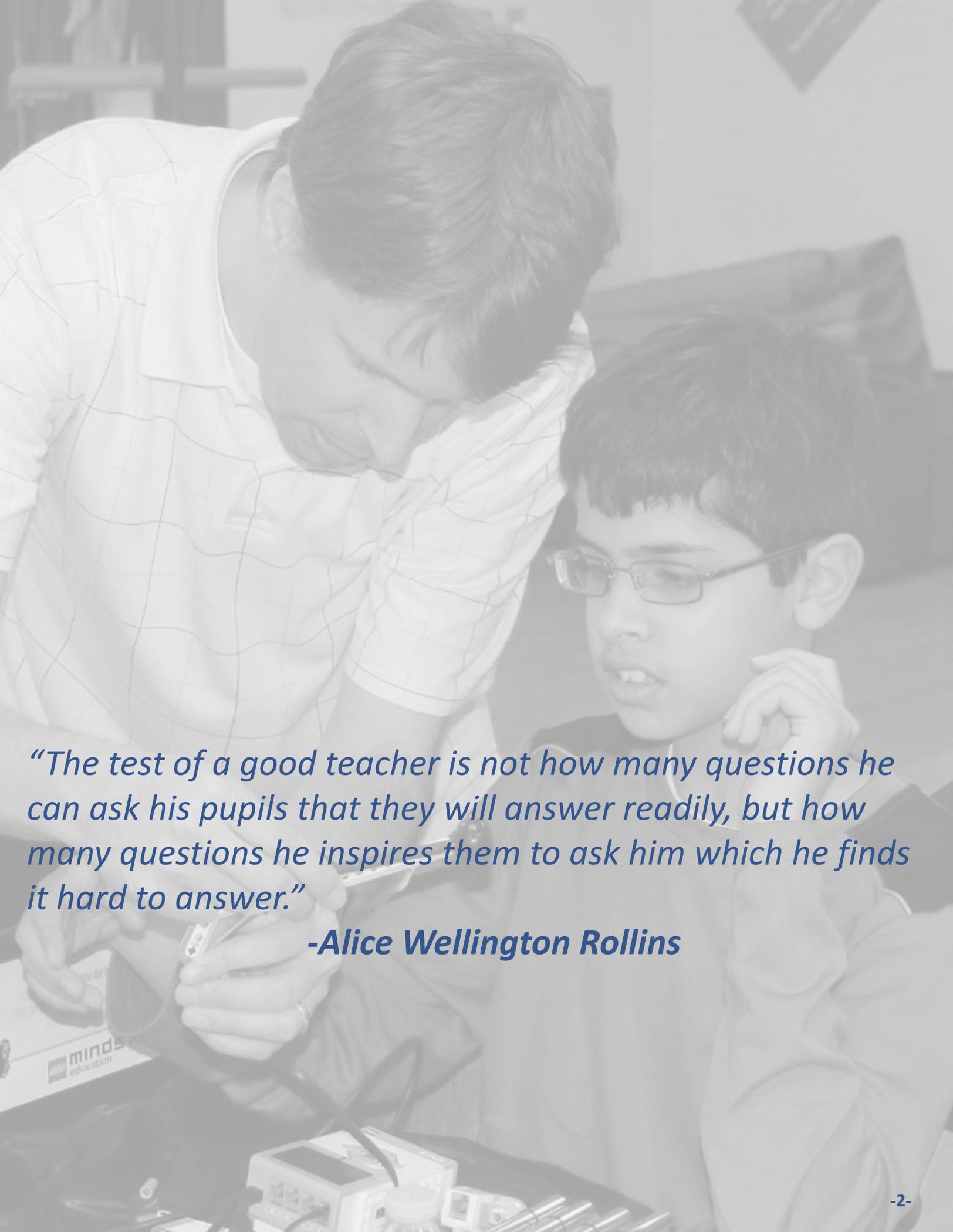
Looking through the catalog, in addition to the classic projects mentioned above, you'll also find a whole host of new and diverse projects. TinkRers will have a chance to bring their artwork to life in with lights, sounds, and sensors in our ***Smart Art*** project. In ***Jedi Power***, TinkRers will have the very unique opportunity to design, assemble, wire-up, and code their very own lightsaber complete with sounds and lights as well as mastering the use of The Force which they will do by developing hand-gesture-based gloves that will activate items across the room with patterns of their hand movements that they will code. Meanwhile, in ***Escape Room***, TinkRers not only get the opportunity to participate in one of the hottest experiential trends in the US at the moment (escape rooms) but they actually get a chance to develop a storyline, design the puzzles, and design the rooms to house their own Escape Room experience that other TinkRers will try out. These are just three of our new projects this year, but given the diversity of projects, I'm hopeful that you'll find that there is indeed something of interest for your TinkRer(s).

My Team and I look forward to seeing you this summer!

Sincerely,

A handwritten signature in blue ink, appearing to read "Anu Mahajan".

**Anu Mahajan, Ph.D., M.B.A.**  
CEO, TinkRworks



*“The test of a good teacher is not how many questions he can ask his pupils that they will answer readily, but how many questions he inspires them to ask him which he finds it hard to answer.”*

***-Alice Wellington Rollins***

# Instruction Philosophy

## *Our approach*

At TinkRworks, we provide exceptional hands-on experiences that teach children to make – and to think – through experimentation, failure and iteration. Our instructional approach, which encompasses both our summer-camp and after-school programs emphasizes:

- Focus on “making”
- Project-based learning
- Holistic curriculum
- Inter-disciplinary approach
- Leveraging the best available resources

## *Excellence in Instruction*

Implementing this approach requires that we hire only top-notch instructors. On this point, the instructor base we have assembled comprises of lifelong TinkRers - PhDs, university professors, technology-industry veterans, and gifted teachers - who share a passion for supporting and guiding each TinkRer to success.

## *TinkRer-to-instructor ratio of 1:6*

Additionally, we firmly believe that each TinkRer needs direct and personal access to these instructors. As a result, we maintain low student-to-instructor ratios of 1:6 which allows students to explore new learnings and experiences.

TinkRcamp sessions will be run in two convenient locations in Chicago's western suburbs, with multiple options spanning different weeks. This is done to allow flexibility when trying to schedule specific sessions.

## TinkRcamps for ages 7-9

- Fly with Me*
- Smart Art*
- Star Wars Galaxy*

## TinkRcamps for ages 9-12

- Build-A-Bot*
- Escape Room*
- Game of Drones*
- Jedi Power*
- RW Minecraft*
- Rocket Control Center*
- Treasure Hunter*

## TinkRcamps for ages 12-14

- Drones 2k17*
- Escape Room*
- It IS Rocket Science!*
- Treasure Hunter*

Dates & location	Ages 7-9	Ages 9 - 12		Ages 12-14
		Project 1	Project 2	
6/12 – 6/16 <i>Burr Ridge<sup>1</sup></i>				
6/19 – 6/23 <i>Burr Ridge<sup>1</sup></i>				
6/26 – 6/30 <i>Burr Ridge<sup>1</sup></i>				
7/10 – 7/14 <i>Burr Ridge<sup>1</sup></i>				
7/17 – 7/21 <i>Burr Ridge<sup>1</sup></i>				
7/24 – 7/28 <i>Hinsdale<sup>2</sup></i>				
7/31 – 8/4 <i>Hinsdale<sup>2</sup></i>				
8/7 – 8/11 <i>Hinsdale<sup>2</sup></i>				

### TinkRcamp logistics

- Weeklong projects (Monday – Friday)
- Daily instruction from 9:00 am – 4:30 pm
- Drop-offs: 8:30 – 9:00 am; pick-ups: 4:30 – 5:00 pm
- Extended hours available
- Snacks/drinks provided; TinkRers bring lunch

Heading	Page
<b>TinkRcamp Projects for TinkRers aged 7 – 9.....</b>	<b>6</b>
Fly With Me.....	7
Smart Art.....	8
Star Wars Galaxy.....	9
<b>TinkRcamp Projects for TinkRers aged 9 – 12 .....</b>	<b>10</b>
Build-A-Bot.....	11
Escape Room.....	12
Game of Drones.....	13
Jedi Power.....	14
Real-World Minecraft.....	15
Rocket-Control Center.....	16
Treasure Hunter.....	17
<b>TinkRcamp Projects for TinkRers aged 12 – 14.....</b>	<b>18</b>
Drones 2K17.....	19
Escape Room.....	20
It <u>IS</u> Rocket Science!.....	21
Treasure Hunter.....	22





## *TinkRcamp Projects for TinkRers aged 7 - 9*



**FLY WITH ME ♦ SMART ART ♦ STAR WARS GALAXY**

## I. FLY WITH ME

*Dates: Jun 12 – 16, Jul 10 – 14*

*Location: Burr Ridge (Gower Middle School)*



TinkRers will have a blast (literally!) as they build rockets and mini-drones in this special camp focused on aerial vehicles. They'll learn all about the science behind flight and will personalize their aeronautical creations and watch their rockets soar over 500 feet in the air and cheer as they fly their drones from up to 100 feet away.

In ***Fly with Me***, TinkRers will create fully-functional mini-drones and reusable model rockets from scratch and make them beautiful using paint, markers and custom-made stickers. They will get plenty of practice piloting their drones and launching their rockets hundreds of feet into the air. TinkRers will also learn about the fascinating history of flight and the cool science behind it. Along the way, they will develop and apply their reasoning and problem-solving skills as they experiment with their aerial vehicles. We will also use on-board sensors and cameras to make in-flight observations and learn about real-world applications.

**What TinkRers will take home with them:** TinkRers will take home their fully-functioning drones, which will include the drone itself, the transmitter (controller), the battery to power the drone, and the battery charger. Additionally, children will also take home their rockets that they design.

**What TinkRers WILL NOT bring home:** Drones will be fully operational and will not require additional purchases unless breakage occurs; spare parts will not be provided. For their rockets, parents of TinkRers may consider purchasing engines to power the rockets as well as a launch pad and launch controller; TinkRworks instructional staff will be happy to make recommendations on specific launch kits and engines that will work with TinkRer rockets.

## II. SMART ART

*Dates: Jul 31 – Aug 4*

*Location: Hinsdale (TinkRworks Center)*



TinkRers will bring their imagination to life as they add lights, sounds, and sensors to their artistic creations which include paintings, woodwork, and much more. TinkRers not only will flex their artistic muscles, but they also will learn how to wire-up their artwork with LEDs, sound elements, and a variety of sensors—and then code all of these elements—to bring their artwork to life in highly engaging and **EXTREMELY FUN** ways.

While technology is many times used to automate repetitive tasks (e.g., tasks on factory floors), we at TinkRworks believe that TinkRers can use it to express their artistic side. In ***Smart Art***, TinkRers will learn about micro-computers, sensors, LEDs, and speakers and use their creativity to integrate them into captivating and interactive works of art. Throughout the week, TinkRers will learn about and work with an array of materials, including wood, fabric, plastic, glue, and, of course, paint. After designing and constructing their unique artifacts, TinkRers will bring them to life with a little bit of coding magic. In addition to traditional mediums used for artwork, *TinkRers will also explore the world of 3D-printing as an artistic medium* that allows them to bring their ideas to light in novel ways. At the end of the week, the young artists will present their works in an exhibit for their parents before taking them home.

**What TinkRers will take home with them:** All of the art that TinkRers create will be taken home by them, including paintings, wearables (e.g., hats that incorporate flashing lights, pillows that incorporate flashing lights and sounds), woodwork, and 3D-printed objects created and printed by TinkRers. Additionally, all supporting electrical components and batteries needed to power the artwork will be provided.

**What TinkRers WILL NOT bring home:** N/A—TinkRers will take home all components of their work.

## III. STAR WARS GALAXY

*Dates: Jun 26 - 30*

*Location: Burr Ridge*



Definitely a unique camp experience and one for Star Wars fans not to miss! TinkRers will dive deeply into the world of Star Wars and design, assemble, code, and customize their very own lightsabers and mini droids in this camp which balances technology and imagination for a fun-filled immersion into the world—or should we say “galaxy”—of this epic saga.

George Lucas’s epic creation unites generations and cultures across the planet. At TinkRworks, we appreciate the saga’s imaginary scope and the values it promotes. As a result, we are offering our ***Star Wars Galaxy*** camp, which will inspire young TinkRers to learn and create as they go through the process of building and customizing their own lightsabers and mini-droids. The lightsaber blade will be customizable with programmable LEDs, while each personalized handle will house electronics to sense movement and produce sound effects. In addition, TinkRers will assemble and customize a mini-drone that will amaze and entertain them with its movements and beeps that they will program. The lightsaber and droid that young TinkRers will create are sure to give them a great sense of accomplishment and will become their prized possessions.

**What TinkRers will take home with them:** TinkRers will be the talk of their neighborhood as they will take home—and show their friends and family members—lightsabers that they create as well as the mini-droids they develop and code. Additionally, all electronics associated with these creations will be provided, including batteries.

**What TinkRers WILL NOT bring home:** N/A—TinkRers will take home all components of their work.



# *TinkRcamp Projects for TinkRers aged 9 – 12*



**BUILD-A-BOT ♦ ESCAPE ROOM ♦ GAME OF DRONES ♦ JEDI POWER  
REAL WORLD MINECRAFT ♦ ROCKET CONTROL CENTER ♦ TREASURE HUNTER**

## I. BUILD-A-BOT

Dates: Jul 31 – Aug 4

Location: Hinsdale



Robots are ever-increasing in popularity for reasons of elevating work efficiency, enhancing safety, and of course, for doing things that are fun (e.g., solving Rubik's Cubes)! Have your TinkRer join us for a deep dive into the world of robotics. As part of this dive, TinkRers will design & build their own fully-functional robot from scratch. They'll spend time learning not just about the electronic components, but will code their bots to move, explore, and interact with their environments and ultimately do things that only TinkRers can envision.

Looking around in any hobby store or computer store, we all see that there are a lot of robot kits that allow children to build pre-fabricated parts into functional robots that have limited capabilities. At TinkRworks, we feel that to really appreciate the many aspects of robotics, children should be allowed to design, build and program their own individual robots—from scratch! So during **Build-a-Bot**, TinkRers will design and build their robotic chassis—using 3D printing, CNC milling, and/or good old fashioned wood—and incorporate motors, sensors, and other electronics to bring their robot to life. After learning about each of these electrical components, children will then spend time wiring everything up. Once wired, TinkRers will spend time coding their robots to perform movements, sense their environment, and delight their humans with light and sound displays. TinkRers will also teach their robots to perform navigation tasks such as solving mazes.

**What TinkRers will take home with them:** TinkRers will take home their fully-functioning robots with them at the end of the week, which includes all electronic componentry that they utilized. Additionally, if children chose to incorporate remote-control operation, they will also take home their remote-control devices.

**What TinkRers WILL NOT bring home:** N/A—TinkRers will take home all components of their work.

## II. ESCAPE ROOM

*Dates: Jun 12 – 16, Jul 17 – 21*

*Location: Burr Ridge*



Immerse your TinkRer in one of the hottest experiences around these days, namely Escape Rooms. One slight twist, though—TinkRers not only will get a chance to participate in an Escape Room but they must design it as well. In doing so they will combine art & high-tech to create an exciting adventure. They will build a room outfitted with electronic and mechanical puzzles that TinkRers must solve before time runs out!

**Escape Room** combines story-telling, building, and coding in creative ways as TinkRers work together to bring an exciting “Can you solve it?” adventure to life. TinkRers will be introduced to the concept of escape rooms after which they will work in groups to create their own stories which describe a perilous situation that requires teamwork and puzzle-solving skills to solve. With their story ready, TinkRers will then begin building the room while learning design and carpentry skills in the process. As with any TinkRworks adventure, they will learn foundations of digital design & 3D-printing along with electronics & coding that TinkRers will use to create engaging puzzles. And towards the end of camp, we’ll invite groups of TinkRers from other camps to experience the adventures they have created.

**What TinkRers will take home with them:** TinkRers will take home an assortment of the electrical and mechanical puzzles they have created as well as the supporting electrical components to power these puzzles.

**What TinkRers WILL NOT bring home:** As part of **Escape Room**, TinkRers will design and build actual rooms, supporting room fixtures, and furniture. These large-scale items will not be taken home.

## III. GAME OF DRONES

*Dates: Jun 12 – 16, Jun 26 – 30,  
Jul 17 - 21*

*Location: Burr Ridge*



The classic is back! TinkRers will spend an epic week designing, building, and of course, flying their very own quadcopters. During the week, they will learn all about the science of flight as they design their drones in ways that allow them to achieve compromises between speed, acrobatics, and stability. Throughout the week, TinkRers will improve their piloting prowess by participating in unique sets of drone games that will allow them to push their piloting skills to the edge.

During this year's version of last year's most in-demand camp, ***Game of Drones***, TinkRers will exercise their creativity and problem-solving skills while building and customizing their very own quadcopter—from scratch! TinkRers will be given basic components needed to make a drone and then will be introduced to concepts on how the parts work together to enable flight. They will learn about the design rules and make choices to optimize their quad-copters for stability or maneuverability, depending on their preference. They then will have the opportunity to customize their drones through the use of 3D-printing and also CNC milling. Once drone construction is finished, TinkRers will polish their piloting skills and play in drone games with fellow TinkRers. And...above it all, all TinkRers will take their drones home at week's end so that they can continue the fun!

**What TinkRers will take home with them:** TinkRers will take home a fully-functional quadcopter along with a transmitter to fly it. Additionally, TinkRers will get both a primary lithium polymer (LiPo) battery to power their quadcopter as well as a back-up battery (with charger) to ensure that they maximize their flying times when outdoors.

**What TinkRers WILL NOT bring home:** Spare electrical parts (e.g., flight controller board with integrated receiver, LEDs) will not be provided. Similarly, spare connectors and spare booms will not be provided. Spare transmitter batteries also will not be provided.

## IV. JEDI POWER

*Dates: Jun 26 – 30, Jul 24 - 28  
Aug 7 – 11 (Hinsdale)  
Location: Burr Ridge*



Join us in this one-of-a-kind summer saga that is not to be missed! TinkRers will explore the outer edges of the galaxy as they search for mystical Jedi secrets that allow them not only to design, construct, and code their very own lightsabers, but... also come away as true masters of the Force as they develop hand-gesture-based gloves that will activate items with the patterns of hand movements that they will code. Truly a unique experience that TinkRers will love!

**Jedi Power** camp will immerse TinkRers into the fantasy world that they know and love, while giving them a powerful foundation in the technology which is changing the world around us. TinkRers will have a blast while gaining experience using tiny microcomputers, programmable LEDs, advanced sensors, and wireless communications to build a lightsaber and force glove (that can control objects at a distance!) from scratch. As they build their creations, the TinkRers will also experience the joy of design and creation of physical objects using traditional as well as digital making techniques.

During breaks, TinkRers will even play Star Wars-themed games that will strengthen friendships with their peers. At the end of the camp, TinkRers will take home the amazing artifacts that they create as well as a sense of accomplishment and confidence in their creative abilities.

**What TinkRers will take home with them:** TinkRers will take home a built-from-scratch lightsaber, including a rechargeable lithium polymer (LiPo) battery. Additionally, they will take home a force glove and force glove-controlled box that can light up or make sounds in response to movements of the glove.

**What TinkRers WILL NOT bring home:** Spare parts (e.g. electronics) for the lightsaber, for the force glove, and for the force-glove-controlled box.

## V. REAL-WORLD MINECRAFT

**Dates:** Jun 19 – 23, Jul 10 – 14     **Location:** Burr Ridge



The basis of Minecraft revolves around making and creating, which is exactly what TinkRers will get a chance to do in this highly popular summer-camp experience. TinkRers will construct real and virtual (Minecraft) forts, playscapes, and artifacts and then electronically connect them, allowing actions in one world to occur in the other. Pull a lever in the real world (the physical world) and watch as dynamite goes off in the game of Minecraft (the virtual world). Similarly, push a button in Minecraft and watch—and hear!—as a doorbell goes off in a room constructed by TinkRers. Join us in this unique blend of virtual & physical worlds which immerse TinkRers in creation.

In the return of ***Real-World Minecraft***, TinkRers will explore creative ways to bridge the gap between the virtual Minecraft and real worlds. At the beginning of camp, they will construct a Redstone lamp from wood, electronics and other materials that will serve as the center piece for the rest of camp. They'll program to glow in amazing ways and use it to interface the real world to the Minecraft world-- maybe flipping a light switch in Minecraft will make a light turn on in the real world or pulling a lever in the real world spawn loveable pigs in the Minecraft world. There are limitless possibilities to explore, guided only by the TinkRers' imagination! TinkRers will also build real, physical spaces out of wood, plastic and other materials and create the digital representations of these real-world structures in Minecraft. And when camp completes, TinkRers will take home their beautiful Redstone lamp and hand-crafted lever.

**What TinkRers will take home with them:** TinkRers will take their Redstone lamp, Minecraft lever and Minecraft pressure plate as well as a cord to power the lamp.

**What TinkRers WILL NOT bring home:** As part of ***Real-World Minecraft***, TinkRers will design and build actual rooms, supporting room fixtures, and furniture. These large-scale items will not be taken home.

## VI. ROCKET CONTROL CENTER

*Dates:* Jun 12 – 16, Jul 10 – 14     *Location:* Burr Ridge



TinkRers will soar to new heights as they build rockets & outfit them with cameras that they'll use to observe the earth as their rockets scream to 1,000+ feet in the air! They'll learn all about rocket science and also rich space heritage of the United States. And, they will have the chance to design parts of their rockets using 3D printing and/or CNC milling which will give them a true sense of customization of these very unique aerial vehicles!

In ***Rocket Control Center***, TinkRers will build their own model rockets from scratch, as they learn about propulsion, aerodynamics, and other aspects of rocket science. They will have multiple opportunities to launch their reusable rockets and watch as they soar to impressive heights—hundreds of feet, up to roughly 1,200 feet (weather permitting). These will not be run-of-the-mill rockets, as TinkRers will use either 3D printers or CNC milling machines to design and fabricate some of the parts for the rockets and also accessorize them with custom stickers and paintwork. TinkRers will also learn how to estimate the peak height of a flight path based on measurements and mathematics, and learn about the rich history of rocket flight. As an added bonus, we will attach cameras to the rockets in order to capture amazing in-flight videos. Houston—we are a FULL GO!

**What TinkRers will take home with them:** TinkRers will take home their initial rockets that they design as well as another rocket that they will design using design principles that we review with them. All rockets provided to children will be tested during the week and will be fit-for-flying. Additionally, TinkRers will be given their flight footage on USB jump drives.

**What TinkRers WILL NOT bring home:** Parents of TinkRers may consider purchasing engines to power the rockets as well as a launch pad and launch controller. These items are readily available in most hobby stores as well as online. TinkRworks instructors will happily provide recommendations on these items.

## VII. TREASURE HUNTER

Dates: Aug 7 - 11

Location: Hinsdale



TinkRers will build a GPS navigator and a metal detector from scratch to help them find buried treasure that is scattered around fields that they will search throughout camp! As they become expert treasure-hunters, TinkRers will learn about cutting-edge technologies such as the GPS, micro-controllers and a variety of other modern-day electronics. Additionally, they'll learn how our ancestors navigated the world using only the sky.

Throughout camp, TinkRers will exercise their navigation skills by performing treasure hunts and burying their own treasure for others to find!

**Treasure Hunter** is designed for TinkRers who are ready to combine diligent tinkering and a taste for adventure! The mission will be to use technology in order to locate and recover a valuable buried object. TinkRers will learn about how ancient humans navigated the globe using stars and all about the satellite-based Global Positioning System (GPS) that is used today. They'll construct their own hand-held GPS devices that will help them locate clues along a path to the treasure. And once they arrive at the approximate location of buried treasure, TinkRers will need another piece of tech to find what's hidden. For that purpose, TinkRers will develop and use their design, electronics, building, and coding skills to create their own, unique metal detector. All of the devices that TinkRers create will be theirs to take home to locate their very own treasure and impress their family and friends!

**What TinkRers will take home with them:** TinkRers will take home a fully-functional metal detector which they created during camp. Integrated into the metal detector will be a fully-functional GPS unit and display which TinkRers will have programmed throughout camp which also will be theirs to take home.

**What TinkRers WILL NOT bring home:** Spare parts (e.g. electronics) for the metal detector, GPS unit or display will not be provided.



# TinkRcamp Projects for TinkRers aged 9 – 12



## DRONES 2K17 ♦ ESCAPE ROOM ♦ IT IS ROCKET SCIENCE ♦ TREASURE HUNTER

# I. DRONES 2K17

Dates: Jun 19 - 23

Location: Burr Ridge



TinkRers will develop advanced drone-designing, building, and piloting skills while acquiring electronics and aeronautics knowledge as they rule the skies with bigger and faster drones which are sure to amaze and delight. Given the size, power, and speed of the drones that TinkRers will design in this camp, significant time will be spent on honing needed piloting skills, which will include demonstrations of first-person view (FPV) flights, used in drone racing leagues around the world!

An eagerly-anticipated and super-hot **Drones 2k17** is a super-sophisticated extension of the highly-popular **Game of Drones**. Drones that TinkRers will build in this camp are serious drones for those who have interest in learning about the hobby that is sweeping across the country. The drones are more powerful. The design task is more daunting. Flight control is more challenging. However, with the skillsets and capabilities that TinkRers will gain throughout the week, we know that TinkRers will achieve success in building—and flying—their drones.

As part of this camp, TinkRers will learn about all the components required for their quadcopter build—brushless motors, electronic speed controllers (ESCs), flight controller boards, power-distribution boards, radio receivers, and transmitters. They will characterize each of these components and then integrate them together using a frame they design. Once TinkRers have integrated these parts together, they then will spend time coding up their flight controllers to allow them to get the responsiveness they require to fit their piloting skills. A truly amazing and unique experience!

**What TinkRers will take home with them:** TinkRers will bring home drones that they build along with all electronic parts and a single Lithium Polymer (LiPo) battery and battery charger. They also will bring home the transmitter/receiver combination.

**What TinkRers WILL NOT bring home:** TinkRers will not bring home any spare parts for their drone. TinkRworks instructors, however, are happy to make suggestions.

## II. ESCAPE ROOM

*Dates: Jul 10 - 14*

*Location: Burr Ridge*



Immerse your TinkRer in one of the hottest experiences around these days, namely Escape Rooms. One slight twist, though—TinkRers not only will get a chance to participate in an Escape Room but they must design it as well. In doing so they will combine art & high-tech to create an exciting adventure. They will build a room outfitted with electronic and mechanical puzzles that TinkRers must solve before time runs out!

**Escape Room** combines story-telling, building, and coding in creative ways as TinkRers work together to bring an exciting “Can you solve it?” adventure to life. TinkRers will be introduced to the concept of escape rooms after which they will work in groups to create their own stories which describe a perilous situation that requires teamwork and puzzle-solving skills to solve. With their story ready, TinkRers will then begin building the room while learning design and carpentry skills in the process. As with any TinkRworks adventure, they will learn foundations of digital design & 3D-printing along with electronics & coding that TinkRers will use to create engaging puzzles. And towards the end of camp, we’ll invite groups of TinkRers from other camps to experience the adventures they have created.

Relative to the younger-aged version of the identically-titled camp, TinkRers enrolled in this camp will face more complex storylines, more sophisticated puzzles, and will go deeper in terms of the supporting electronics, mechanical systems, and room infrastructure that will be built to support the storylines and puzzles.

**What TinkRers will take home with them:** TinkRers will take home an assortment of the electrical and mechanical puzzles they have created as well as the supporting electrical components to power these puzzles.

**What TinkRers WILL NOT bring home:** As part of **Escape Room**, TinkRers will design and build actual rooms, supporting room fixtures, and furniture. These large-scale items will not be taken home.

## III. IT IS ROCKET SCIENCE!

Dates: Jul 17 - 21

Location: Burr Ridge



TinkRers will soar to new heights as they learn all about rockets and then design and build a variety of different rockets of their own imagination from scratch. These rockets will definitely be more than meets the eye, though, as they will have electronic cameras to capture flight footage and electronics to capture telemetry information (altitude, temperature, speed). TinkRers will capture this information and then analyze it to understand how they use the information to design rockets that can travel even faster and higher.

***It IS Rocket Science!*** extends the scope of the popular Rocket Control Center in a way that allows middle-schoolers (and even high-schoolers) to flex their aeronautical muscles to design, create, launch, and track rockets that will fly in excess of 1,000 above the earth. TinkRers will start by learning the basic principles of rocket flight and construct their first model. Upon launching this rocket, they will learn about how the rockets flight is affected by a variety of different elements and then use this newly developed information to iterate on their design, incorporating their own design elements, sometimes through use of 3D printing and/or CNC milling. As the week goes on, they will learn techniques to measure speed, altitude, and even acceleration of their rockets. To support their budding hobby, TinkRers will also dive into the world of electronics and wireless communications and build their own wireless launch system which they will use to launch their rockets from >100 feet away.

**What TinkRers will take home with them:** TinkRers will take home their constructed rockets as well as a USB jump drive which contains flight footage of selected flights. Additionally, they will also take home their wireless launch system.

**What TinkRers WILL NOT bring home:** Parents of TinkRers may consider purchasing engines to power the rockets as well as a launch pad and launch controller. These items are readily available in most hobby stores as well as online. TinkRworks instructors will happily provide recommendations on these items.

## IV. TREASURE HUNTER

Dates: Jul 24 - 28

Location: Hinsdale



TinkRers will build a GPS navigator and a metal detector from scratch to help them find buried treasure that is scattered around fields that they will search throughout camp! As they become expert treasure-hunters, TinkRers will learn about cutting-edge technologies such as GPS, micro-controllers, and a variety of other modern-day electronics. Additionally, they'll learn how our ancestors navigated the world using only the sky.

Throughout camp, TinkRers will exercise their navigation skills by performing treasure hunts and burying their own treasure for others to find.

**Treasure Hunter** is designed for TinkRers who are ready to combine diligent tinkering and a taste for adventure. The mission will be to use technology in order to locate and recover a valuable buried object. TinkRers will learn about how ancient humans navigated the globe using stars and all about the satellite-based Global Positioning System (GPS) that is used today. They'll construct their own hand-held GPS devices that will help them locate clues along a path to the treasure. And once they arrive at the approximate location of buried treasure, TinkRers will need another piece of tech to find what's hidden. For that purpose, TinkRers will develop and use their design, electronics, building, and coding skills to create their own, unique metal detector. All of the devices that TinkRers create will be theirs to take home to locate their very own treasure and impress their family and friends!

Relative to the younger-aged version of the identically-titled camp, TinkRers enrolled in this camp will go deeper in the areas of electronics, coding and building treasure-hunting puzzles.

**What TinkRers will take home with them:** TinkRers will take home a fully-functional metal detector which they created during camp. Integrated into the metal detector will be a fully-functional GPS unit and display which TinkRers will have programmed.

**What TinkRers WILL NOT bring home:** Spare parts (e.g. electronics) for the metal detector, for the GPS unit, and for the display.



Sparking **CREATIVITY**  
Fostering **INNOVATION**  
Sharpening **PROBLEM-SOLVING** skills

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