Summer Camp Discovery

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FORT WAYNE COMMUNITY SCHOOLS

Fort Wayne, Indiana
Indiana’s Largest Public School District
30,000 students
32 Elementary, 11 Middle, 5 High
75 Languages spoken
K-8
Makerspace library stations
Technology focused

First summer program in over 10 years!
Funded through Title I
Goal was to prevent Summer Slide

Find out how you can use these ideas to transform your learners into makers!
Elementary Resources

Middle School Resources
Lego Reading Tower

- Each 20 minutes a student read, he earned a Lego brick to add to a tower.

- The challenge is to see how tall the whole school can build the tower during summer camp.

- Visual representation of the amount read.

- Use engineering skills to make the tower strong and sturdy, but still be tall.
Snap Circuits
CIRCUITRY
CREATING

Osmo
CREATING 3D Pens
LEGOS
Robotics

Sphero
Makerspace Research from *Invent to Learn* by Sylvia Martinez and Gary Stager

**Teacher Role in Makerspace:**

Student Centered: When students own the learning, they own the knowledge. When children think through problems, they invent different paths to an answer. A teacher who allows a child time and support to **rethink and revise** gives them the opportunity to be problem solvers. If the teacher is the source of all judgement, this impedes student learning. The student will just wait to be told the answer.

Example: In the book, *Pax*, by Sara Pennypacker, a boy is told to operate handmade wooden puppets, “bring them to life”. The movements were clunky and unrealistic because he did not understand how they worked. He then had to take them apart and put them back together. Only then could he understand how their movements were made and the puppets’ movements were very realistic.

Instruction narrows the scope of exploration. Give the child the toy and let them explore.

**T.M.I. Think, Make, Improve**

Think: Brainstorm, Talk it out, predict, gather materials

Make: Play, build, create, experiment, construct, deconstruct, test it out, observe others, document process, ask questions

Improve: **Fix or make better.** Talk it out, look at a different view, use different materials, change something, play with it

**LUMT: Less Us, More Them**

Walk around and support them when asked. Before intervening, ask yourself, “Is there some way I can shift more responsibility to the learner?”

When students need help, ask questions to steer them in the right direction. Ask a well-timed question and walk away. Allow students to solve problems their own way. When they get stuck, remember F.A.I.L.: First Attempt in Learning.

**What to do when a student says, “I'm done.”** Students should seek to improve or refine their work. Ask questions such as, How can I make our ____ faster, slower, better, prettier, stronger, taller, shorter?

Have time for sharing, collaboration, and reflection within their group, classroom, or grade levels. Ask students to explain a problem/challenge to someone else (or record on iPad). Short sharing sessions can be woven into the schedule or when they return to their classroom from Makerspace.

See also *Eight Big Ideas Behind the Constructionist Learning Lab* by Dr. Seymour Papert (1999)
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K-2 Makerspace Stations

**General Info:** Take a picture on Teacher iPad of all creations before deconstructing.

**Lego Reading Tower:** Media Clerk gets class lists and checks off every time a student gets a brick. Tally up the checks at the end of the program and multiply by 20 to know how much students read.

**Lego 1**
You found a perfect tree for your tree house. Can you build a new hideout for you and your friends?

- Book Resource: Lego Play Book and Lego Awesome Ideas
- Bonus Challenge: Oh no! A cat is stuck in a tree! Can you help the fireman to rescue it? Can you build a carry box to keep the cat safe?

**Lego 2**
Can you build a vehicle to take you on a road trip to your favorite park?

- Book Resource: Lego Play Book and Lego Awesome Ideas
- Bonus Challenge: The Science Museum is missing a dinosaur from the exhibit. Can you build a new one?

**Circuitry 1: Snap Circuits**
Learn how to make your first circuit. Complete Project #1 or Project #2 in the manual. Then continue on to another Project of your choice.

**Circuitry 2: Snap Circuits**
Choose a more difficult project to complete. Have fun!

**Coding 1: Scratch Jr.**
Learn about Scratch Jr. by watching the Intro Video. Then complete the following activity: 1 Drive Across the City. Try the challenges from the Scratch cat on the bottom of the activity.

- Book resource: Hello Ruby. Read Chapter 1 and then turn to page 70 and complete Exercise 1-3.

**Coding 2: Scratch Jr.**
Create your own story. Book resource: Hello Ruby Read Chapter 2 and then turn to page 74 and complete Exercise 4-6

**Robotics 1: Ozobot**
Calibrate your Ozobots. Learn to use the Ozobots. Watch K-2 Video. Decorate your Ozobots.

- Turn Ozobot on by pressing the button on the side. Complete the activity sheets included in the box.

**Robotics 2: Ozobot**
Calibrate your Ozobots. Watch Video for Challenge #2. On a chart paper, try out some of the codes. Make sure to draw a black line before and after each code. Let Ozobots drive on these lines and see how Ozobot reads those colors and the LED in Ozobot's dome shines in that color.

**Creating 1: Osmo**
Tangrams: Watch Tangrams Video. Open the Tangrams app. Click on Introduction and complete all the puzzles. Then click on Play and try the Easy levels.

- Words: Words is a game similar to Hangman. The goal is to try to guess the word hidden in the photo on screen by placing letter tiles inside the play area.
- Watch Words Video. Open the Words app. Start with the Junior Learning Words. Before starting, press the Pause button and turn on Speech. Then, go back to the Home page and click Play. Select Versus to play against your partner. One of you will use the red tiles and one of you will use the blue tiles to try to get up to 100 points!

**Creating 2: Osmo**
Numbers: Watch Video. Open the Numbers app. Click Play and see how many levels you can complete in Count, Add, Connect, Multiply

**Newton:** Watch Video. Newton works best on plain copy paper. Open the Newton app. Watch the introduction, then put a piece of paper under the iPad stand and start Play. See how many levels you can complete!
3-5 Makerspace Stations

General Info: Take a picture on Teacher iPad of all creations before deconstructing.
Lego Reading Tower: Media Clerk gets class lists and checks off every time a student gets a brick. Tally up the checks at the end of the program and multiply by 20 to know how much students read.

Lego 1
You have a band concert tonight but can't find your instrument. Can you build a replacement?
Bonus Challenge: Build A Duck! Each group member builds a duck. Use only red and yellow bricks.
Book Resource: Lego Play Book and Lego Awesome Ideas

Lego 2
Build a bridge. Test to see if it will hold a book...2 books...3 books?
Book Resource: Lego Play Book and Lego Awesome Ideas

Circuitry 1: Makey Makey
Learn how to use a Makey Makey. Follow the How-to guide and then experiment with different materials you see around you. What is conductive? How do you complete a circuit? What does it mean to be grounded?

Circuitry 2: Makey Makey
Can you create human piano keys by playing your friends? Use the piano app on the Makey Makey website.

Coding 1: Scratch Jr.
Learn about Scratch Jr. by watching the Intro Video. Then complete the following activity: Drive Across the City. Try the challenges from the Scratch cat on the bottom of the activity.
Book resource: Hello Ruby. Read Chapter 1 and then turn to page 70 and complete Exercise 1-3.

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Creating 1: 3D Pen
Can you design and print your own object?
Watch intro video on how to use the 3D Pen.
Draw your favorite shape: circle, star, triangle, square, etc.
Sketch it out first, then print with pen.
Book Resource: Leo the Maker Prince

Creating 2: 3D Pen
Book Resource: Leo the Maker Prince
Can you use a stencil to create a wearable object?
Watch video tutorial on how to do a stencil.
Choose a stencil to make a pair of glasses.
6-8 Makerspace Stations

**General Info:** Take a picture on Teacher iPad of all creations before deconstructing.

**Lego Reading Tower:** Media Clerk gets class lists and checks off every time a student gets a brick. Tally up the checks at the end of the program and multiply by 20 to know how much students read.

**Lego 1**

Design the largest structure you can balance starting with the Orange 2x2 brick. Take a picture.

Design the largest structure you can balance starting with the Pink 1x1 brick. Record your strategy.

**Bonus Challenge:**

Build a bridge. Test to see if it will hold a book...2 books...3 books?

**Book Resource:** Lego Play Book and Lego Awesome Ideas

**Lego 2**

Create a car powered by a balloon. Record how far it goes in one breath. Take a picture of it.

**Bonus Challenge:** Build A Duck! Each group member builds a duck. Use only red and yellow bricks.

**Book Resource:** Lego Play Book and Lego Awesome Ideas

**Circuitry 1: Makey Makey**

Learn how to use a Makey Makey. Follow the How-to guide and then experiment with different materials you see around you. What is conductive? How do you complete a circuit? What does it mean to be grounded?

**Circuitry 2: Makey Makey**

Can you create human piano keys by playing your friends? Use the piano app on the Makey Makey website.

**Coding 1: Tynker App**

Watch the Intro Video. Complete all the levels in the Crash course.

**Workshop:** Choose 1 from the Physics and make your own: Joke or Greeting Card

**Book Resource:** Secret Coders

**Coding 2: Tynker App**

Solve at least 10 levels of Candy Crush. Workshop: In Physics, Choose Space Chicken to create a scene with bouncing space chickens. Workshop: In Drawing, create a program that draws a spinning character around the screen.

**Book Resource:** Secret Coders

**Robotics 1: Sphero**

**Book Resource:** Robotics, Watch Intro video. Open app on iPad as a guest. Connect Sphero to Bluetooth on iPad. Explore the sample programs. Start with the Intro and change the code to do something different.

**Optional Challenges:** Make Sphero that slow down and stop when it approaches objects or walls. "Use the Force" to control Sphero with your hand.

**Robotics 2: Sphero**

Program Sphero to navigate a simple maze. Construct a maze with no dead end loops using books and other items nearby.

**Creating 1: 3D Pen**

Can you design and print your own object? Watch intro video on how to use the 3D Pen. Draw your favorite shape: circle, star, triangle, square, etc. Sketch it out first, then print with pen.

**Book Resource:** Leo the Maker Prince

**Creating 2: 3D Pen**

Can you use a stencil to create a wearable object? Watch video tutorial on how to do a stencil. Choose a stencil to make a pair of glasses.