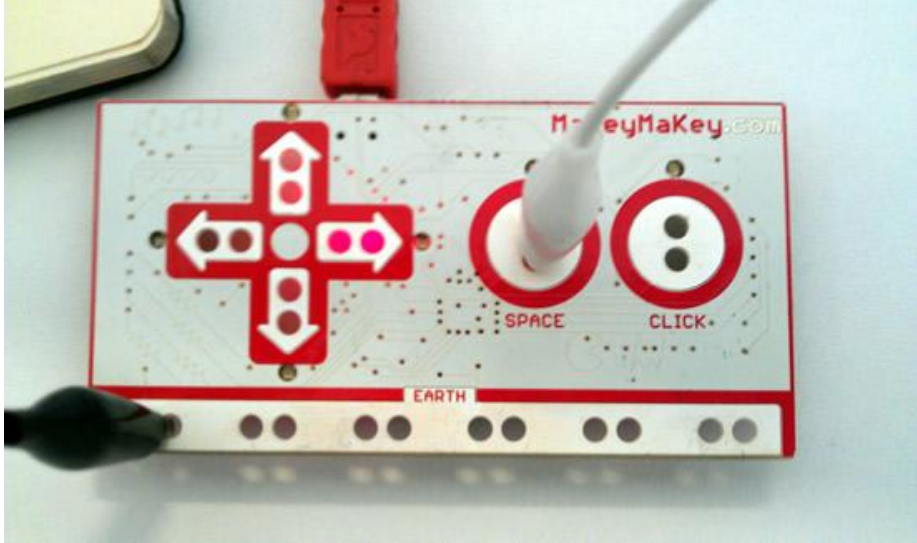


Physical Programming Development Platforms

Tool type	Makey Makey
<p>What is it and how does it work?</p>	<p>A MaKey MaKey is an invention kit that tricks your computer into thinking that almost anything is a key. It is the product of an education research project undertaken by doctoral students at the MIT Media Lab's Lifelong Kindergarten Group to design a creative technology education tool that could take computer programs off the screen and into the real world.</p> <p>The MaKey MaKey uses high resistance switching to detect when you've made a connection even through materials that aren't very conductive (like leaves, pasta, playdoh, bananas or even people).</p> <p>The on-board ATmega32u4 communicates with your computer using the Human Interface Device (HID) protocol which means that it can act like a keyboard or mouse.</p> <p>It can be hard to describe a MaKey MaKey in words without getting super-technical, but you can better get an idea of what it is and how it works by watching the great introduction video at: http://www.makeymakey.com/</p> <p>An advantage is that it is super easy to use without any programming, but also has the capacity to be reprogrammed using the arduino programming environment.</p>
<p>What and who is it good for?</p>	<p>Youth learn about conductivity and how a basic circuit works.</p> <p>The MaKey MaKey provides a fun way to get youth from elementary through high school to imagine cool interactive games and activities that they can build. It is also a great platform for playfully engaging families and intergenerational groups with STEM activities.</p> <p>One excellent use is as an add-on for Scratch programming activities that require inputs (like programmed games or interactive animations or musical instrument projects) because the game controller can be taken off the screen and into the real world.</p>
<p>Recommended number</p>	<p>1 Makey MaKey kit for each students/participant in a workshop or class.</p>
<p>Minimum number</p>	<p>1 Makey Makey kit for each pair of students in a workshop or class.</p>

Estimated cost USD, exc. tax/ship	about \$50 per MaKey MaKey Kit (less if you apply for Sparkfun Educator Discount)
Example links	www.makeymakey.com
Recommended source	Sparkfun.com (apply for the Sparkfun 20% off educator discount) MakeyMakey.com Adafruit.com <i>each supplier has different peripherals in their kits, so check out what's included</i>
Picture	

Peripherals and/or Consumables

Peripheral / Consumable type	Alligator Clip Leads
Use	<p>Having 3-4 extra alligator clips leads to supplement the kits is a very good thing. What you want are the test leads with alligator clips on both ends.</p> <p>Alligator clips leads come in two clip sizes --- small and large. The small (sometimes called precision) alligator clip size is the one that fits into the holes on the MaKey MaKey, so you want to seek those out. You can still use the larger clip size as "extenders" for projects that require a long hook up, like floor sensors or some arcade games.</p>

	When working with youth, these will break or get lost more than you think, so having extras stashed away is a GOOD thing.
Storage Tip	If you have a lot of youth or are transporting these to different locations for workshops, we find that storing all the alligator leads in one plastic freezer bag from the grocery store, rather than putting them in with each MaKey MaKey kit box makes it easier to keep track of them. Gathering up each color and slip knotting the leads together, then putting them into the freezer bag together keeps them neat and easily accessible.
Estimated cost USD, exc. tax/ship	approximately \$3-5 for a 10 pack
Peripheral / Consumable type	Male-Male Jumper Wires
Use	<p>Having a mess of extra male-male jumper wires is helpful. You use these to connect the female holes on the back of the MaKey MaKey to add extra letter keys, if you go beyond using “space,” “click” and “arrow” keys on the front. Having these in different colors helps the youth keep track of which key they are using.</p> <p>When working with youth, these will break or get lost more than you think, so having extras stashed away is a GOOD thing.</p> <p>On a pinch, you can substitute some of your hook-up solid core plastic coated wire with the ends stripped off. Or you can even unbend metal paper clips (NOT the ones made of plastic!) which you can also buy in different colors.</p>
Storage Tip	If you have a lot of youth or are transporting these to different locations for workshops, we find that storing the jumper wires all together in one plastic freezer bag from the grocery store, rather than putting them in with each MaKey MaKey kit box makes it easier to keep track of them.
Estimated cost USD, exc. tax/ship	from U.S. suppliers like Sparkfun, they will run you about \$4/10pack on eBay, you can get as low as hundreds for under \$5
Recommended source	Sparkfun: https://www.sparkfun.com/products/9194 eBay: You can really get a great deal on these from eBay if you order 3-4 weeks ahead of time. Look for the suppliers that offer free shipping. e.g.

	http://www.ebay.com/itm/2pcs-x-65pcs-Jumper-Wire-cable-kit-for-Solder-less-Breadboard-New-/171269157387
Consumable / Peripheral type	Hook-up or Solid Core Plastic-Coated Wire
Use	Having lots of <i>hook-up type wire, solid core</i> (rather than braided wire) wrapped in plastic helps with more ambitious MaKey MaKey projects. Perhaps having 3-4 feet on hand for each
Storage Tip	Keeping this wound up in plastic freezer bags, rather than putting lengths in each kit is a GOOD thing for keeping track of the stuff if you have lots of youth or are transporting to different locations for workshops.
Estimated cost USD, exc. tax/ship	at my hardware store it is \$.1 - \$.29 / foot
Recommended source	You can buy it by the foot at any local hardware store.
Consumable / Peripheral type	Heavy Aluminum Foil
	It is pretty important to have a couple of rolls of <i>heavy-duty foil</i> (get the thicker freezer foil at your grocery store), aluminum tape (from your hardware store) or copper sheeting handy for making “grounding” devices for participants to wear or for making larger touch sensors.
Estimated cost USD, exc. tax/ship	At my grocery store, it’s about \$2.50 for 50 square foot roll
Recommended source	You can buy it by the foot at any local grocery store

Tutorials

Tutorial name	
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Link	
Topic	
Target audience	
Notes	

Manufacturers

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Stores

-

Examples of interesting projects

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Interesting materials

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School curricula

-

Interesting people

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Examples of a school setup

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Notes

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