A BUILD YOUR OWN BODY MOD WORKSHOP

Classroom Mini-Curriculum

for educators looking to shake it up

What is BOOST x BJR?

BOOST by Born Just Right is an intensive 5-day workshop where kids with upper limb differences reframe their disability through design and making, and create their own body mods. We've gotten a lot of requests from educators wanting to bring this to their classroom - so here's a super condensed version to test out in your classroom!

Description

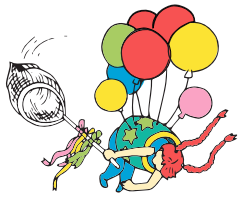
Intended for (2-4) 50-minute classes, middle school or high school aged students

This is a hands-on design and prototyping lesson to introduce students to prosthetics and body mods, and to improve design and engineering skills along with empathy. Students will first design and prototype for themselves in order to understand the process and gain first person perspective on wearing a physical device, before creating a wearable device for their "client" - a child with an upper limb difference.

Please note: This mini-lesson is only "scratching the surface" - there are lots of opportunities to go deeper and make this a much more rich learning experience! **Visit BOOSTxBJR.org to learn more about our full curriculum packages.**

Learning Objectives

- Prosthetics + disability: thinking about them differently
- Design, visual representation, and prototyping skills
- 21st Century Skills: critical thinking, collaboration, creative problem solving, communication, empathy
- **Additional learning objectives may be added, and are suggested in the lesson**



Materials and Supplies

- Post-its (~1/2 pad to 1 pad per student)
- Sharpies or markers
- Pens, pencils, colored pencils
- Scrap paper
- Assortment of prototyping supplies (ie cardboard, aluminum foil, paper, plastic wrap, plastic bottles, construction paper, straws, string, toilet paper rolls, foamcore, newspaper, craft sticks, mylar, springs, etc.)
- Assortment of adhesives and tools (ie white glue, hot glue, tape, scissors)

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Getting into a Facilitator's Mindset

At BOOST by Born Just Right, it is important to us that students drive the direction of their project. Here are some tips for taking on a mindset that will support this type of curriculum. It might get uncomfortable for some of you educators, and that's ok - we ask that you test it out, and trust the process. What is design, after all, if not about pushing boundaries?

- This curriculum is yours to riff off of and modify how you'd like - feel free to make it your own!
- Ask questions, rather than suggesting solutions.
- Let students test out their ideas - however crazy or infeasible (as long as they're safe). Try to withhold any judgement you might have, and encourage them to (safely) test it out. The laws of physics will quickly teach them what will and will not work.
- Use "failure" as a learning opportunity. We can only understand where the boundaries are if we push an idea until it breaks. If it works perfectly the first time, we probably have room to push it a lot further.
- Embrace the wild card. They're inevitable. Rather than shutting down or becoming frantic, recognize it's a wild card. Take a breath. Revisit what you're trying to accomplish, and figure out a new path forward to get there. This goes for educators and students alike!

Some sample questions:

- How's it going?
- Tell me about your idea, what do you have in mind?
- Can you draw that for me or show it to me?
- Do you know what material you'd use for this part?
- How will this (function or connection detail) work?
- How could you test that out?
- Do you know yet how that might attach to the body?
- How can we try that a different way to make it work?
- (Try to minimize these kinds of suggestions, use only if student is very stuck) I really like (x) material, because it's great at (y). I wonder if that might be helpful to use for this part?
- (If they're really stuck) If I were trying to figure that out, I would try (x) or (y) next. Do you want to try one of those out? If not, what do you want to try next instead?

Design Terms

- **Precedent:** Ideas or projects you find that are inspirational or demonstrate an aspect of your idea (eg research on Pinterest, Houzz, or Google image searches)
- **Prototype**: a test run, still has more to be polished. Can range in detail from initial (sketch) to final.
- **Sketch prototype**: the 3D/physical equivalent to a quick sketch, using materials like paper, string, and tape that are quick and easy to work with

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Curriculum Structure

1. Design for self (individually)
2. Prototype for self (individually)
3. Design for client (in teams)
4. Prototype for client (in teams)

PART 1: Design for Self

Prepare:

1. Gather supplies. Hang on to post-its and sharpies/markers. Lay out the rest of the supplies on a table that will be easily accessible to the whole room (can be off to the side)
2. Create a brief precedent presentation. This should be 5-10 images (1 image per slide, name/subtitle only or no text) of inspirational projects. You can do a Google image search for these terms to get started:
    - Cool/interesting/beautiful prosthetics
    - Project Unicorn Jordan
    - Aimee Mullins my 12 pairs of legs
    - Responsive clothing

Est. Time (min)	Materials	Activity
5	Precedent presentation (5-10 images)	Introduction to project and brief precedent presentation - prosthetics, exoskeletons, and body mods. What are they, what's the difference? Why are they important?
15	Post-its + markers/ sharpies	Teams of 6-8. Everyone gets 1 marker + ~1/2 pad of post its. Each group will get a topic, and they'll come up with as many superpower ideas as possible for that topic. 1 idea per post it, limit each post-it to 2-3 words, no talking. Do 2-3 rounds of brainstorming - give each group a new topic per round (assign or pull from a hat). 3-5 min per round. Topics: spin, push/pull, shoot/eject, display/ perform, delight/surprise, detect/notify, morph, play, strengthen/protect, animal abilities, anticipate/predict Teams put post-its up on a wall and group/organize the post-its into similar ideas. Quick go-around, each group talks about the ideas that came out.
5		Each student picks (2) post-its they are interested in (from any group) to be their superpower for the day. Can duplicate post-its as needed (or not).
10		Pair up, each choose (1) of your 2 post-its to start. "Yes, And" for each student's body mod. Rules: listen to your partner. Respond with, "YES! And..." and add on to their idea. Do 2 rounds (2nd round with the 2nd post-it). Student #1 starts with "I have this GREAT idea for a body mod, it has [post it 1] and it can [post it 2]". Students go back and forth, building on what that body mod could be. Invite students to share out. Be positive about their ideas. Repeat for round 2.

PART 1: Design for Self, continued

Est. Time (min)	Materials	Activity
10	Scrap paper, pens and pencils, prototyping materials	Individual time to sketch/sketch prototype (ie out of paper/cardboard to quickly represent an idea) your idea for a super-powered wearable. Project idea should include the ideas on the post-its (constraints to help students get started)
2		Wrap up, assign homework, etc. The first step of Part 2 can be assigned as homework if desired.

PART 2: Prototype for Self

Prepare:

1. Lay out prototyping supplies on a table that will be easily accessible to the whole room
2. Make sure there is space clear for working

Est. Time (min)	Materials	Activity
25	Prototyping materials (set out on table)	Individually, students build their prototypes! Check in with students who seem "stuck," and try to make the rounds. Let them know they'll share out at the end of class, so they'll need to have something wearable to present.
5		Clean up time!
15		Share and discuss. Everyone shares their prototype BRIEFLY, describing their idea, how their project would function, and materials it would be made out of. Discuss challenges and what was enjoyable. Discuss "anatomy" of a body mod: connection to body, interface between body connection and device, device (functional piece). Any insights on body mods and what it's like to wear them, that might carry over to prosthetics? Connection to body is super sensitive - easy for body mod to slip off or cut off blood flow
2		Wrap up, assign homework, etc.

NOTE: This Mini-Curriculum is condensing an intensive 5-weeks program into less than 3.5 hours so - as you can imagine - we're barely scratching the surface here. If you DO have more time to spend, consider adding things like:

- Relevant tool/technology tutorials (3D printing/modeling, robotics, plaster casting, technical drawing)
- Bring in an expert - especially a prosthetist to talk about proper fittings
- Additional lessons: anatomy, physics, painting, whatever you'd like to tie in!
- More time for designing and building - getting to a later stage (more finalized) prototype using more robust materials (eg 3D printed parts, functional robotics, durable thermoplastics, etc)
- We have deeper dive curricula on our website, and you can email Kate@BornJustRight.org

PART 3: Design for Client

Prepare:

1. Lay out prototyping supplies on a table that will be easily accessible to the whole room
2. Print Client Profiles (1 per group)

Est. Time (min)	Materials	Activity
5	Group assignments Client Profiles	Groups of 3-4. Each group gets a Client Profile.
15	Scrap paper, pens and pencils, prototyping materials	Come up with (10) possible body mods (per group) for your Client. At least one sheerly functional, one that is fun, and one that is totally out of this world amazing. Ideas should be sketched or sketch prototyped.
10	Scrap paper and pen/pencil	Private vote - pick your favorite (2) ideas from your group and write them on a secret sheet of paper. Open all of them together and see if there's a clear winner to keep working on. If no clear winner, see if group can talk through a consensus. If not, frankenstein the top (2) ideas together.
15		Groups refine their idea based on the feedback
2		Wrap up, assign homework, etc. The first step of Part 4 can be assigned as homework if desired.

PART 4: Prototype for Client

Prepare:

1. Lay out prototyping supplies on a table that will be easily accessible to the whole room
2. Make sure there is space clear for working

Est. Time (min)	Materials	Activity
25	Prototyping materials (set out on table)	In groups, students build their prototypes! Check in with groups/students who seem "stuck," and try to make the rounds. Let them know they'll share out at the end of class, so they'll need to have something to present for their Client.
5		Clean up time!
15		Share and discuss. Each group shares their prototype BRIEFLY, describing their idea, how their project would function, and materials it would be made out of. Discuss challenges and what their next steps would be. Questions they'd have for their Client. How did designing for their Client compare with designing for themselves? AND/OR document their project and share it with Born Just Right's social media!
2		Wrap up, assign homework, etc.

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Client Profile: Samantha

Essential Stats:

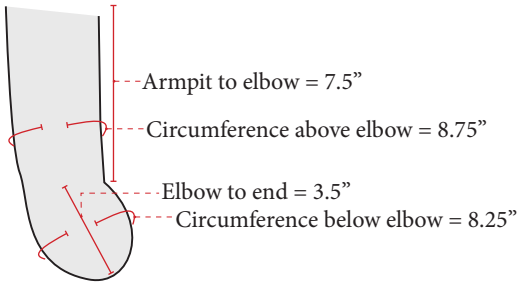
Age:	11 years old
Grade:	6th
Hometown:	Camden, ME
Favorite color:	dark blue
Favorite music:	top 40's and Beyonce
Favorite animal:	cheetah
Hobbies:	sailing, swimming, snowboarding, BMX
Wants to be an:	astronaut

Condition:

Circulatory disruption (congenital limb difference, right arm). Samantha was born with this condition. Her right arm ends below her elbow, and she has full mobility in her right shoulder and elbow.

Prosthetics:	Uses one for BMX riding but otherwise prefers not to.
Sees her difference as:	"Everone's got a deficiency or two that they're dealing with. Mine is just more obvious than most other people's. It's better in a sense because I can at least understand what mine is, most people don't have that."

Key measurements:



Description:

Samantha is an energetic, cheerful, and determined girl who loves being outside all year round. When she's not doing an adventure sport, she loves spending time with her best friends. She has two younger brothers, and she dreams of traveling to France someday. Samantha has been competitively racing BMX since she was 9 years old, and last year was a finalist in the largest nationwide BMX competition.

Would love a body mod that:

1. is inspired by the tv show "Project MC2," and
2. looks awesome while I'm snowboarding, or
3. can help me swim faster

Note: This is a prototype and not intended for widespread distribution!

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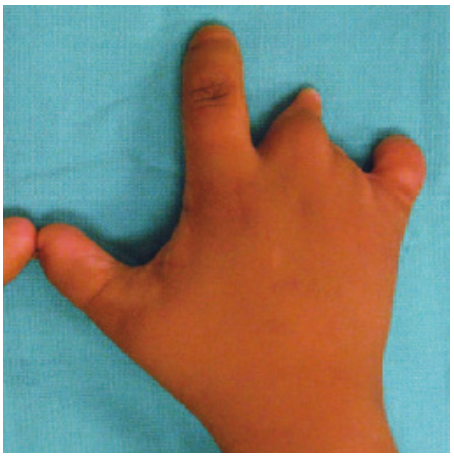
Client Profile: Chase

Essential Stats:

Age:	9 years old
Grade:	4th grade
Hometown:	Atlanta, GA
Favorite color:	bright green
Favorite music:	all music! Especially pop and hip hop
Favorite animal:	dog (boxer)
Hobbies:	playing music, learning new instruments, making art
Wants to be a:	famous musician

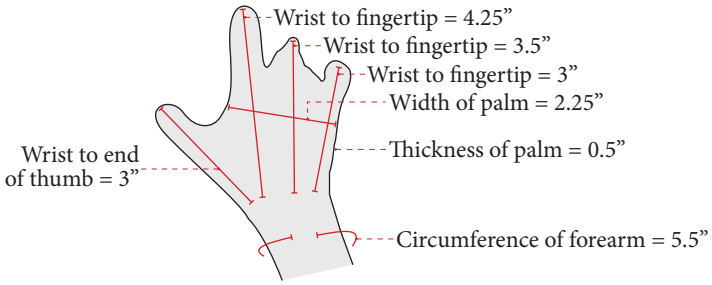


Condition:

Circulatory disruption (congenital limb difference, right hand). Chase was born with this condition. The fingers on his right hand did not develop fully, leaving him with (3) functional fingers on that hand. He has full mobility in his right shoulder, elbow, and wrist.

Past prosthetics:	None
Sees his difference as:	"It makes me more creative because I can't do everything the same way that other people can. So, I need to figure out my own way to do it."

Key measurements:



Description:

Chase loves everything music and cannot get enough of it. His dad is a musician, and sometimes they play together around Atlanta. His favorite instrument to play is the saxophone, but he also loves piano, violin, and guitar. He has one older sister and a pet dog named Rascal. When Chase is not making music, he is making art - mostly drawing, painting, and block printing.

Would love a body mod that:

1. Is stylish, and
2. Is an instrument, or
3. helps me play sax better (trouble pressing multiple keys w/ right hand)

Note: This is a prototype and not intended for widespread distribution!

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Client Profile: Andrew

Essential Stats:

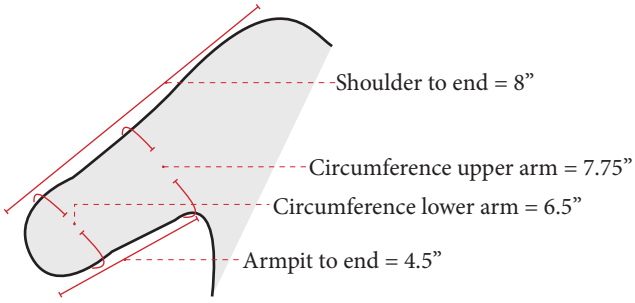
Age:	6 years old
Grade:	1st grade
Hometown:	Bakersfield, CA
Favorite color:	red
Favorite music:	upbeat and happy music!
Favorite animal:	monkey
Hobbies:	playing with friends, cub scouts, any kind of sports
Wants to be an:	veterinarian

Condition:

Circulatory disruption (congenital limb difference, right arm). Andrew was born with this condition. His right arm ends above his elbow. He has full mobility in his right shoulder.

Past prosthetics:	Likes using a traditional prosthetic, but outgrows them quickly and then can't use until the next one is made
Sees his difference as:	"I wish that people wouldn't just stare at my little arm, I wish they would come ASK me about it!"

Key measurements:



Description:

Andrew is definitely a performer and a class clown. He loves telling jokes and goofing around to make people laugh. He is constantly on the move and is bursting with energy and enthusiasm. He has one older brother, and two big dogs. Andrew is quick to smile and laugh, and he is happy when he is doing something active with others. He loves animals (all kinds) and being outside.

Would love a body mod that:

1. is inspired by Wild Kratts (tv show)
2. will make an entrance (let everyone know I've arrived)
3. can do something to make people laugh

Note: This is a prototype and not intended for widespread distribution!