



NEUROMAKER

Innovative Educators

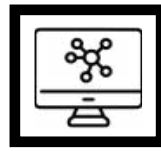
Let our Four Pillars support your vision



Hardware



Curriculum



Computer
Science



Capstone

Our complete solution offers:

Hardware

Leveraging our industry technology (within robotics, brain computer interface, biotechnology, and machine learning), students will take our technology and transform it into their prototype. With access to a prototype of award winning BrainRobotics prosthetic and the Focus EEG headband, students will receive a real world learning experience.

Curriculum, Training, and PD

The NeuroMaker curriculum will address each school's immediate STEM need and become a part of the long term mission of each school and pathway. See below for curriculum modules.

Project Guided Assembly	Engineering Design	Biotech & Biomedical Exploration	Introduction to Programming	Prosthetic 3D Printing Exploration
Signal Processing	Machine Learning	Ethics and Impact	Neuroscience	Applied AI

Computer Science

Computer Science is the language of the 21st century. Utilizing computer science platforms like Mblock, Anaconda, Python and Jupyter Notebooks, NeuroMaker programs we can utilize block based coding to develop those skills into scripted Python coding. Students can develop those transferable skills of computer science and connect it to subjects such biotechnology, AI, and machine learning.

Training/Professional Development

NeuroMaker offers several PD/training options, whether you are a new programs or would like to insert NeuroMaker into an existing program. Our Implementation managers and Account Directors can help you come up with a solution that best fits your goals.

Guided Implementation

We value our customers and want you to feel supported. Every customer will receive the services of an implementation manager---our knowledgeable implementation managers will be offering updated shipping information, scheduling trainings, guiding the onboarding process and administering product support.

NeuroMaker Creative Challenge (Capstone)

The NeuroMaker Creative Challenge* is an annual, open design competition in which middle school and high school students choose a socially conscious engineering problem they would like to solve and present a prototype on how they would solve it. Students research their problem, design a solution, create a physical prototype incorporating NeuroMaker materials and then submit their solution virtually for real world engineers to review based on a judging rubric.



Our Cutting-Edge Product: NeuroMaker Hand

NeuroMaker Hand

Build, Code, Create & Discover with real-world technology from an award-winning company.

Now you can open a world of STEM opportunities in the classroom or remote learning settings. The NeuroMaker Hand activity set introduces students from middle and high school to advanced concepts in bio and neuroscience, programming and artificial intelligence, mechanical and electrical engineering, 3D printing and more.

Our **curriculum delivers more than 100 hours** of engaging instructional content that aligns with selected **CSTA, NGSS, CC, ISTE and other national standards.**

Our hardware is reusable. Microcontrollers, servo motors, scissors, tendon wires, structural plates, a remote controller, electrical wires and more included to build right out of the box.



Our team of education professionals created a new kind of educational experience that directly ties back to a real world product. It goes way beyond simple robotic toys and delivers a truly immersive and aspirational program. This program inspires all students to enter the exciting fields that are creating the next generation of innovation.

(Pillar 1) Hardware:

[Our NeuroMaker Hand Toolkit](#)

(Pillar 2) Unlike other STEM products,

ALL of our Curriculum is included with purchase. 100+ hours of interdisciplinary content for educators to pick and choose... what you need.

The NeuroMaker Hand curriculum is separated into seven course modules, each mirroring one focus area of the creation of the BrainRobotics prosthetic hand.

Available units/modules:

- [Project Guided Assembly](#)
- [Applied AI](#)
- [Engineering Design](#)
- [Prosthetics 3D Printing Exploration](#)
- [Biotech and Biomedical Exploration](#)
- [Student projects](#)
- [Introduction to Programming](#)

(Pillars 3 and 4) Add in our included in-browser coding, PD options and Creative Challenge Capstone for a Full 4-Pillar solution. In other words, we are an affordable one-stop shop.

Our solution comes with the ability to immediately program in browser C++, MBlock and Python coding.

We have extensive training and professional development options for our product, and how it fits into your district's vision.

[Our NeuroMaker Creative Challenge \(Capstone\)](#) is an annual, open design competition for Middle and High School students. This competition is open to students around the world in order to investigate the connections between Biomedical Engineering, Artificial Intelligence, Programming and more.

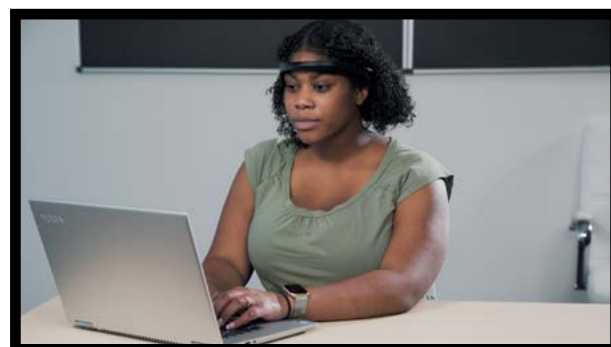


Our Cutting-Edge Product: NeuroMaker BCI

NeuroMaker BCI The World's First Brain-Computer Interface STEM Kit.

Introduce your students to the cutting-edge world of BCI technology with our powerful, accessible STEM learning platform. NeuroMaker BCI combines a precise EEG headband with dozens of activities for neuroscience, machine learning, signal processing, as well as the ethics and impact of the technology in society.

Developed in partnership with NeuroTechX, a global non-profit organization dedicated to the advancement of neurotech education, the BCI curriculum delivers hours of engaging instructional content that aligns with selected **CSTA, NGSS, CC, ISTE and other national standards.**



Student Learning Opportunities: 4 Key Tenets of Brain Computer Interface Technology

Neuroscience

Learn the structure and biology of the brain that can be measured with EEG technology.

Brain Computer Interface practitioners must master basic neuroscience to understand the source and meaning of measurable brain activity.

Signal Processing

Sort and analyze large data sets using python-based data science techniques.

BCI practitioners must recognize patterns in data and filtering relevant brain signals from unwanted noise.

Machine Learning

Apply machine learning algorithms to categorize brainwave data.

BCI practitioners must understand the application of machine learning to complicated neurological data sets.

Ethics and Impact

Evaluate the social and ethical impacts that advanced technology will have in the future.

BCI practitioners must understand the social impact of BCI technology and its ethical use to ensure the safe and moral applications of this technology.

(Pillar 1) Hardware

[Our NeuroMaker BCI](#)

(Pillar 2) Just like our NeuroMaker Hand, our standards-aligned Curriculum is included with purchase. 20+ hours of content and constantly adding.

Available units/modules with lessons:

Course Introduction

Lesson 1: NeuroMaker BCI 101

Lesson 2: Setting Up Your Technology

NeuroMaker Introduction to EEG

Lesson 1: Neuroscience Fundamentals

Lesson 2: EEG Fundamentals

Lesson 3: EEG Artifacts

Lesson 4: Attention and Meditation Lab

Lesson 5: Neurofeedback Lab

Brain Computer Interface and Machine Learning

Lesson 1: Introduction to Supervised Machine Learning

Lesson 2: Machine Learning in Python

Lesson 3: Cleaning Machine Learning Data Sets

Lesson 4: Attention Classifier

Lesson 5: Comprehensive Classification

Impact and Ethics

Lesson 1: Introduction to Neuroethics

Lesson 2: Introduction to an Open Sourced World

(Pillars 3 and 4) Add in our included in-browser coding, PD options and Creative Challenge Capstone for a Full 4-Pillar solution. In other words, we are an affordable one-stop shop.

Our solution comes with the ability to immediately access real world applications that combine BCI, machine learning, data science and Python.

We have extensive training and professional development options on our product, and how to fit it into your district's vision.

[Our NeuroMaker Creative Challenge \(Capstone\)](#) is an annual, open design competition for Middle and High School students. This competition is open to students around the world in order to investigate the connections between Biomedical Engineering, Artificial Intelligence, Programming and more.



NeuroMaker Professional Development

Learn to Build, Code, Create and Discover with Us!

All paid professional development options last for 1 hour, are recorded and are led by certified NeuroMaker training personnel. **Additionally, the recorded training is provided for you at no extra cost.** Professional Development sessions must be booked two weeks in advance of delivery. Please contact your NeuroMaker represen-

NeuroMaker Hand Professional Development Options

Title	Description	Recommended Audience
NeuroMaker Hand 101	This training will review the fundamentals of the NeuroMaker Hand hardware, programming options, curriculum and NeuroMaker Challenge. Live walkthrough will be provided for users to understand the full array of options available with their solution, technical resources, standards alignment, case studies and recommendations for implementation.	All first time Users Program Administrators Technical Support Staff
Requirements: Attendees must have a NeuroMaker Hand and computer with internet access. It is recommended that each attendee build their hand prior to the training.		
Hand Programming Overview	This training will detail the programming options available with the NeuroMaker Hand. A walkthrough of programming setup, related programming lessons, sample programming activities and other resources will be provided. By the end of this session, users will be able to program their NeuroMaker Hand using mBlock to make customized gestures and play rock, paper, scissors.	CS teachers STEM teachers Programming teachers
Requirements: Must have a NeuroMaker Hand and a Windows, Apple or Chrome Computer with USB port and wireless internet access		
Hand Artificial Intelligence Overview	This training will detail the artificial intelligence options available with the NeuroMaker Hand. A walkthrough of the AI environment set up, related lessons, sample code, AI activities and other resources will be provided. By the end of this session, attendees will be able to detect gestures, text inputs and audio inputs to control the movement of their NeuroMaker Hand.	CS teachers STEM teachers Programming teachers AI teachers
Requirements: Must have a NeuroMaker Hand and a Windows or Apple Computer with USB port and internet access		
Brain Controlled Hand Overview	This training will review the fundamentals of brain computer interface (BCI) available with the combination of the NeuroMaker Hand and NeuroMaker BCI. A walkthrough of basic neuroscience, BCI technology, the Focus 1 headband, mBlock set up and programming tips will be provided. By the end of this session, attendees will be able to control the movement of their NeuroMaker Hand by using the brain signals detected by the Focus 1 headset.	CS teachers STEM teachers Programming teachers Biology Teachers CTE Teachers
Requirements: Must have a NeuroMaker Hand, a NeuroMaker BCI Focus 1 headband and a Windows Compatible PC with wireless internet access and a USB port		

NeuroMaker BCI Professional Development Options

Title	Description	Recommended Audience
NeuroMaker BCI 101	This training will review the fundamentals of the NeuroMaker BCI hardware, curriculum portal, resources, implementation plans and examples of previous use of the product. Live walkthrough will be provided for users to understand all possible options with their solution, technical resources, lesson plans and recommendations for implementation.	First time Users Program Administrators Technical Support Staff
Requirements: Must have a NeuroMaker BCI Focus 1 Unit, a Windows Compatible PC with wireless internet access and a USB port		
BCI and Python Environment Set-Up	This training will guide users to set up all the required software, ready to use applications and programming environments needed to complete all NeuroMaker BCI related content. A walkthrough of hardware, NeuroMaker BCI Connect, Anaconda, Jupyter Notebooks and a sample lesson will be provided. By the end of this session, attendees will be able to understand how to use NeuroMaker BCI programming tools and take their first steps into using python data science techniques to visualize and process brainwave data.	STEM Teachers Programming Teachers Data Science Teachers CTE Teachers
Requirements: Must have a NeuroMaker BCI Focus 1 Unit, a Windows Compatible PC with wireless internet access and a USB port		
Neuroscience SEL Strategies	This training will review the ready-built algorithms used in NeuroMaker BCI to visualize different brain states of engagement and relaxation. A walkthrough of how to self-direct your own awareness, assess your own learning styles, how to improve your environment for better mental performance and strategies to improve SEL outcomes will be provided. By the end of this training, attendees will be able to understand the basics of applying basic neurofeedback exercises to improve the well being of themselves and their students.	SEL Directors SEL Teachers Guidance Counselors STEM Teachers Program Administrators
Requirements: Must have a NeuroMaker BCI Focus 1 Unit and a Windows Compatible PC with wireless internet access and a USB port		



Customized Solutions Designed for your district

*"I love this, but I need help on where this fits into my program."
Let us help you get to where you want to go.*

EXISTING

- Work with existing programs and pathways
- Utilizing existing CTE and/or STEM curriculum
- Connect to existing activities and offerings

NEW PROGRAMS

- Development of new courses like Artificial Intelligence
- Brain computer interface course/Biotech
- Interdisciplinary STEM classes
- Summer enrichment

PATHWAYS

- Creation of new interdisciplinary pathways
- Full utilization of Capstone
- Projects and career awareness opportunities

Skip shopping around to multiple vendors.

Check out our **complete solution.**

Our complete solution:	Included	Price
Hand (Hardware)	Yes	\$500 per unit (2/3 to 1 ratio)
BCI (Hardware)	Yes	\$500 per unit
Toolkit (Hardware)	Yes	\$75
Coding Platform included?	Yes	No extra cost
Standards aligned curriculum included?	Yes	No extra cost
Creative Challenge/Competition included?	Yes	No extra cost
Implementation Manager included?	Yes	No extra cost
Professional Development offered?	Yes	\$500 per session
On-demand training included?	Yes	No extra cost
On-demand troubleshooting included?	Yes	No extra cost
Project plan included?	Yes	No extra cost

Everything You Need to Create a Unique STEM Solution. Curriculum and Academic Materials

Kick Start BCI Experiences– Jump into BCI technology right out of the box! Use a pre-built BCI application to detect changes in your Alpha waves and race your own virtual go kart with the power of your brain.

Neuroscience and Neurotechnology– Learn foundational neuroscience concepts such as the structure of the brain and source of measurable brain signals.

Signal Processing and Python Data Science– Learn basic python programming and tools for data visualization and apply the toolkits to separate raw brainwave data into different wave bands and clean unwanted signals for processing.

Machine Learning and BCI– Build an LDA classifier on sample data sets and train your program to recognize different patterns in signal data. Record your own EEG data and use your own programs to remove noise from your signals and hone in relevant information.

BCI Impact-Open Source Research and Neuroethics– Review best practices in open source and data privacy principles crucial to the development of neurotechnology. Learn the basic tenets of ethical use of neurotechnology and ensure that the application of your creations benefit society.

Build a Sleep Detector and Attention Detecting Device– Use the skills and knowledge above to build your own attention tracking and alpha detecting program! See if you can analyze your own mental state and that of your partner. Develop your first applications to gain confidence in your skills.

Create a BCI Controlled Game– Apply your skills to the development of a brain controlled game! Use existing templates to add in different brain controlled elements programmed to react to inputs you detect from your algorithms.

Choose your Own BCI Challenge– Integrate all of your combined skills and experience to take on a real world application of BCI technology. Choose challenges ranging from the ethical evaluation of new BCI technology to refining existing BCI code to better detect selected brain states.

Webinars and Learning Resources

Discover dozens of sample lesson demos, informative webinars and interviews with education and neuroscience experts on the NeuroMaker Resources page.

NeuroMaker Creative Capstone Challenge

Challenging students to research ways that technology can improve life for upper limb different individuals. Participants can send us a video and written description of their solution virtually and we will be giving out over \$10,000 in prizes to those that are selected by our MIT and Harvard engineers! Participation is free to any group of students with our NeuroMaker Hand or NeuroMaker BCI.

Support & Professional Development

The NeuroMaker team is there to support you every step of the way. We offer comprehensive professional development courses and lots of tips and tricks to get the most out of the kit and curriculum.



Aligning to your district initiatives and strategic plan...

NeuroMaker and the Learning Gap

Creating learning resilience and reinforcing all subjects

Disruption to education systems during the COVID-19 pandemic has disproportionately affected the most vulnerable learners, exacerbating pre-existing inequalities with potentially dramatic and long-lasting implications. This requires urgent action to address learning gaps and ensure smooth and continued educational pathways for all learners. Over the longer term, systems will need to strengthen learner resilience, fostering environments in which every individual has the competences required to reach their full potential.

With NeuroMaker, students are introduced to all core concepts in the world of biomedical technology, programming, 3D printing and more. However, the true learning occurs when students use this knowledge to create their own self-guided projects. Students conduct their own research, build their own creations and guide their own learning. This fosters learner resilience—and students recovering from a lost year of instruction can now re-enter the classroom with self-guided learning that will assist their transition into an educational environment.

Furthermore, research has shown that computational thinking, which mimics the way a computer may operate, has helped educators to bridge gaps in students' understanding across different subjects. While often associated with the STEM subjects of science, technology, engineering and mathematics, this problem-solving method can also be applied to other subjects, including the arts and writing.

Addressing Social Emotional Learning and Cultural Competency

Culturally responsive and integrative content for teachers

Social Emotional Learning (SEL) is introduced from a Neuroscience and Neurofeedback standpoint. A large component of SEL involves the skills required to manage emotions, set goals, and maintain positive relationships, which are necessary for learning but also a tall order for students facing a barrage of COVID-related issues like family job loss, stressed parents, and the illness or death of friends or relatives.

Students will be able to integrate science, technology, engineering, and mathematics to wellness by developing healthy mental habits from technology. Once students learn how to better control their mental state, they use this new "superpower" to even control machines through our BCI technology!

Cultural competence—the ability to understand, appreciate, and interact with people from cultures or belief systems different from one's own—is achieved primarily through practical and content knowledge delivered from projects in assistive technology. Students will empathize with the disabled community and create technology solutions to assist them in real world, authentic learning frameworks.

NeuroMaker and Equity & Inclusion

Assistive technology for people with different abilities

From a curriculum point of view, our students are constantly engaged in the world of assistive technology assisting people with disabilities. All of the technology we create is in the service of a greater community goal, not just a project to make a car go faster.

From an organizational point of view, we have been committed to providing the opportunities for all to advance into the world of Biomedical Engineering and technology. To date, NeuroMaker has awarded over 10,000 dollars to students creating their own projects, the majority of these students coming from low SES backgrounds. Additionally, **64% of the participants in our NeuroMaker Challenge are female**, allowing us to assist and address the gender gap in STEM.

Education for Sustainable Development is important to us, and we want to empower learners of all ages with the knowledge, skills, values, and attitudes to address the interconnected global challenges we are facing, including climate change, environmental degradation, loss of biodiversity, poverty, and inequality.

Finally, our solution provides self-guided tutorials, a non-subscription based portal and continuing access to the NeuroMaker Challenge, allowing the purchase a school district makes of our materials to be reusable time after

NeuroMaker and Digital Citizenship

Inclusive, Informed, Engaged, Balanced, and Alert

Our mission is to change how every person on the planet interacts with technology. Our free curriculum is aligned with ISTE standards; the most relevant are the ISTE digital citizenship standards, particularly being open to multiple viewpoints, being respectful in digital interactions, and demonstrating inclusivity.

Authentic Learning and Cross Disciplinary Learning

All of our lessons, activities and student learning comes straight from real world engineering. Our materials are designed to bring in cross discipline knowledge and skills into tangible results, whether those be a built prosthetic hand, a more socially conscious machine learning platform, or better mental wellness with technology. Students can create their own self-guided projects, creating an engaged and balanced learning experience.